SAFETY DATA SHEET

1. Identification

Product identifier **DIESEL NO. 2 PRODUCTS**

Other means of identification

SDS number 5465

Synonyms 70/30 DIESEL * 80/20 DIESEL * 30/70 DIESEL * APPLICABLE TO ALL GRADES OF DIESEL OIL NO. 2 WITH SULFUR LEVEL 500 PPM OR LESS; INCLUDING ULTRA LOW SULFUR DIESEL (S15) AND BIODIESEL BLENDS (< or = 20%), * ARCTIC DIESEL® * HEATING OIL * GOLD DIESEL® PRODUCTS * RAILROAD FUEL

Recommended use Motor fuel

Recommended restrictions Other uses are not recommended unless an assessment is completed, prior to commencement of that use, which demonstrates that the use will be controlled.

Manufacturer/Importer/Supplier/Distributor information

Supplier

Flint Hills Resources, LP
4111 E. 37th St. North
Wichita, KS 67220
67220-3203
United States

Telephone numbers – 24 hour emergency assistance

Chemtrec 800-424-9300 (CCN:8586)

Telephone numbers – general assistance

8-5 (M-F, CST) SDS Assistance 316-828-7988

Email: msdsrequest@fhr.com

2. Hazard(s) identification

Physical hazards	Flammable liquids	Category 3
Health hazards	Acute toxicity, inhalation	Category 4
	Skin corrosion/irritation	Category 2
	Carcinogenicity	Category 2
	Specific target organ toxicity, repeated exposure	Category 2 (liver, thymus, bone marrow)
	Aspiration hazard	Category 1
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 2
	Hazardous to the aquatic environment, long-term hazard	Category 2

OSHA defined hazards Not classified.

Label elements

Signal word Danger

Hazard statement Flammable liquid and vapor. Harmful if inhaled. Causes skin irritation. Suspected of causing cancer. May cause damage to organs (liver, thymus, bone marrow) through prolonged or repeated exposure. May be fatal if swallowed and enters airways. Toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Do not breathe mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Avoid release to the environment.
Response	If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/ doctor if you feel unwell. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. If swallowed: Immediately call a poison center/doctor. Do NOT induce vomiting. If exposed or concerned: Get medical advice/attention. Specific treatment (see first aid instructions on this label). In case of fire: Use water spray, dry chemical, carbon dioxide, or fire-fighting foam to extinguish. Wash contaminated clothing before reuse. Collect spillage.
Storage	Store in a well-ventilated place. Keep cool. Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Hazard(s) not otherwise classified (HNOC)	Static accumulating flammable material.
Supplemental information	Static accumulating material can become electrostatically charged even in bonded and grounded equipment. Sparks may ignite liquid and vapor. May cause flash fire or explosion. Keep away from heat/sparks/open flames/hot surfaces. – No smoking. Ground/bond container and receiving equipment. These alone may be insufficient to remove static electricity. Eliminate all ignition sources if safe to do so.

3. Composition/information on ingredients

Mixtures

Chemical name	Common name and synonyms	CAS number	%
DISTILLATES (PETROLEUM), HYDRODESULFURIZED MIDDLE		64742-80-9	≤ 100
FUELS, DIESEL, NO. 2		68476-34-6	≤ 100

Additional components

Chemical name	Common name and synonyms	CAS number	%
KEROSENE (PETROLEUM), HYDRODESULFURIZED		64742-81-0	≤ 45
DISTILLATES (PETROLEUM), HYDRODESULFURIZED LIGHT CATALYTIC CRACKED	C9-C25 HYDRODESULFURIZED DISTILLATE, LIGHT CAT CRACKED	68333-25-5	≤ 40
KEROSENE, STRAIGHT RUN		8008-20-6	≤ 25
BIODIESEL		Mixture	≤ 20
1,2,4-TRIMETHYLBENZENE	PSEUDOCUMENE	95-63-6	0.1 - 1
XYLENE		1330-20-7	≤ 1
BIPHENYL		92-52-4	< 0.8
NAPHTHALENE		91-20-3	≤ 0.3
BENZENE		71-43-2	< 0.1

*Designates that a specific chemical identity and/or percentage of composition has been withheld as a trade secret.

Composition comments	Values do not reflect absolute minimums and maximums; these values are typical which may vary from time to time. This Safety Data Sheet is intended to communicate potential health hazards and potential physical hazards associated with the product(s) covered by this sheet, and is not intended to communicate product specification information. For product specification information, contact your Flint Hills Resources, LP representative.

4. First-aid measures

Inhalation	Remove to fresh air. If not breathing, institute rescue breathing. If breathing is difficult, ensure airway is clear and give oxygen. If heart has stopped, immediately begin cardiopulmonary resuscitation (CPR). Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.
Skin contact	Immediately wash skin with plenty of soap and water after removing contaminated clothing and shoes. Get medical attention if irritation develops or persists. Place contaminated clothing in closed container for storage until laundered or discarded. If clothing is to be laundered, inform person performing operation of contaminant's hazardous properties. Discard contaminated leather goods.
Eye contact	Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get medical attention if irritation develops or persists.
Ingestion	Do not induce vomiting because of danger of aspirating liquid into lungs, causing serious damage and chemical pneumonitis. If spontaneous vomiting occurs, keep head below hips to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person. Keep affected person warm and at rest. GET IMMEDIATE MEDICAL ATTENTION.
Most important symptoms/effects, acute and delayed	INHALATION: Breathing high concentrations may be harmful. May cause central nervous system depression or effects. Symptoms may include headache, excitation, euphoria, dizziness, incoordination, drowsiness, light-headedness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death, depending on the concentration and duration of exposure. Breathing of the mists, vapors or fumes may irritate the nose, throat and lungs. SKIN: Contact may cause reddening, itching and inflammation. Prolonged skin contact may defat the skin and cause drying, cracking and/or dermatitis. Skin contact may cause harmful effects in other parts of the body. EYES: May cause slight to mild eye irritation with tearing, redness, or a stinging or burning sensation. May cause temporary swelling of the eyes with blurred vision. Effects may become more serious with repeated or prolonged contact. INGESTION: May cause irritation of the mouth, throat and gastrointestinal tract. Symptoms may include salivation, pain, nausea, vomiting and diarrhea. Aspiration into lungs may cause chemical pneumonia and lung damage.
Indication of immediate medical attention and special treatment needed	INHALATION: Inhalation overexposure can produce toxic effects. Monitor for respiratory distress. If cough or difficulty in breathing develops, evaluate for upper respiratory tract inflammation, bronchitis, and pneumonitis. Administer supplemental oxygen with assisted ventilation, as required. INGESTION: If ingested this material represents a significant aspiration and chemical pneumonitis hazard. Induction of emesis is not recommended.

5. Fire-fighting measures

Suitable extinguishing media	Use water spray, dry chemical, carbon dioxide or fire-fighting foam for Class B fires to extinguish fire.
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter and spread fire.

Specific hazards arising from the chemical	Combustion may produce COx, NOx, SOx, reactive hydrocarbons, irritating vapors, and other decomposition products in the case of incomplete combustion. Vapors may form explosive mixtures with air. Vapors may travel considerable distance to a source of ignition and flash back. Static accumulator (nonconductive) flammable or combustible material may form ignitable vapor-air mixtures in storage tanks and other confined spaces. Bonding and grounding may be insufficient to eliminate the hazard from static accumulation. Explosion hazard if exposed to extreme heat.
Special protective equipment and precautions for firefighters	Shut off source of flow, if possible. Evacuate area and fight fire from a safe distance. If leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor, cool adjacent structures, and to protect personnel attempting to stop a leak. Containers can build up pressure if exposed to heat (fire). Stay away from storage tank ends. Withdraw immediately in case of rising sound from venting safety device or any discoloration of storage tank due to fire. Always stay away from tanks engulfed in flame. Firefighters must wear NIOSH approved positive pressure breathing apparatus (SCBA) with full face mask and full protective equipment.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Eliminate and/or shut off ignition sources and keep ignition sources out of the area. Keep unnecessary people away; isolate hazard area and deny entry. For spills in confined areas, ensure adequate ventilation. For spills outdoors, stay upwind. IF TANK, RAILCAR OR TANK TRUCK IS INVOLVED IN A FIRE, isolate for 800 meters (1/2 mile) in all directions. Evacuate area endangered by release as required. Wear appropriate personal protective equipment. See Exposure Controls/Personal Protection (Section 8).
Methods and materials for containment and cleaning up	Do not touch or walk through spilled material. This material is classified as a water pollutant under the Clean Water Act and should be prevented from contaminating soil or from entering sewage and drainage systems which lead to waterways. Absorb spill with inert material (e.g., dry sand or earth), then place in a chemical waste container. Small Spills: Keep unnecessary people away. Isolate area for at least 50 meters (164 feet) in all directions to preserve public safety. For large spills, if downwind consider initial evacuation for at least 300 meters (1000 feet). Keep ignition sources out of area and shut off all ignition sources. Use non-sparking tools and grounded equipment for clean-up. Large Spills: Dike far ahead of liquid spill for later disposal. Use vapor-suppressing foam to reduce vapors. Avoid clean up procedures that may result in water pollution. Stop leak when safe to do so. See Exposure Controls/Personal Protection (Section 8).
Environmental precautions	Prevent entry into water ways, sewers, basements or confined areas. Notify local authorities and National Response Center, if required.

7. Handling and storage

Precautions for safe handling

Electrostatic charge may accumulate and create a hazardous condition when handling this material.

Static accumulator (nonconductive) flammable or combustible material may form ignitable vapor-air mixtures in storage tanks. Bond and ground lines and equipment (tank, transfer lines, pump, floats, etc.) used during transfer to reduce the possibility of static spark-initiated fire or explosion.

Review all operations which have the potential of generating and accumulating an electrostatic charge and/or a flammable atmosphere (such as tank and container filling, splash filling, tank cleaning, sampling, gauging, switch loading, filtering, mixing, agitation, and vacuum truck operations) and use appropriate procedures to mitigate the hazard.

Bonding and grounding may be insufficient to eliminate the hazard from static accumulation. Additional precautions should be considered consistent with the current NFPA 77, Recommended Practice on Static Electricity, the current API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents and OSHA Standard 29 CFR 1910.106, Flammable and Combustible Liquids.

Use non-sparking tools. Do not cut, grind, drill, weld (or introduce any other ignition source) on empty containers. Do not reuse containers unless adequate precautions are taken. Do not use electronic devices while handling, unless the device is certified as intrinsically safe as they could present ignition sources.

Avoid contact with strong oxidizing agents. Prevent small spills to minimize slip hazard or release to the environment.

Avoid personal contact with this material. Always observe good personal hygiene measures, such as removing contaminated clothing and protective equipment, washing after handling the material and before entering public areas. Restrict eating, drinking and smoking to designated areas to prevent personal chemical contamination. Routinely wash work clothing and protective equipment to remove contaminants. Do not breathe mist or vapor. See Section 8 of the SDS for Personal Protective Equipment.

Conditions for safe storage, including any incompatibilities

Store in tightly closed containers in a cool, dry, isolated, well-ventilated area away from heat, sources of ignition and incompatibles. Ground/bond container and equipment. Avoid contact with strong oxidizing agents. Empty containers may contain material residue. Do not reuse without adequate precautions.

8. Exposure controls/personal protection

Occupational exposure limits

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Additional components	Type	Value
BENZENE (CAS 71-43-2)	STEL	5 ppm
	TWA	1 ppm

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Type	Value
DISTILLATES (PETROLEUM), HYDRODESULFURIZED MIDDLE (CAS 64742-80-9)	PEL	100 ppm

Additional components	Type	Value
XYLENE (CAS 1330-20-7)	TWA	100 ppm
BIPHENYL (CAS 92-52-4)	TWA	0.2 ppm
NAPHTHALENE (CAS 91-20-3)	PEL	10 ppm

US. OSHA Table Z-2 (29 CFR 1910.1000)

Additional components	Type	Value
BENZENE (CAS 71-43-2)	TWA	10 ppm

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
FUELS, DIESEL, NO. 2 (CAS 68476-34-6)	TWA	100 mg/m3	Inhalable fraction and vapor; Skin

Additional components	Type	Value	Form
KEROSENE, STRAIGHT RUN (CAS 8008-20-6)	TWA	200 mg/m3	Skin; P
KEROSENE (PETROLEUM), HYDRODESULFURIZED (CAS 64742-81-0)	TWA	200 mg/m3	Skin; P
1,2,4-TRIMETHYLBENZENE (CAS 95-63-6)	TWA	25 ppm	
XYLENE (CAS 1330-20-7)	STEL	150 ppm	
	TWA	100 ppm	
BIPHENYL (CAS 92-52-4)	TWA	0.2 ppm	
NAPHTHALENE (CAS 91-20-3)	TWA	10 ppm	Skin
BENZENE (CAS 71-43-2)	STEL	2.5 ppm	Skin
	TWA	0.5 ppm	Skin

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Type	Value
DISTILLATES (PETROLEUM), HYDRODESULFURIZED MIDDLE (CAS 64742-80-9)	TWA	100 ppm

Additional components	Type	Value
KEROSENE, STRAIGHT RUN (CAS 8008-20-6)	TWA	100 mg/m3
KEROSENE (PETROLEUM), HYDRODESULFURIZED (CAS 64742-81-0)	TWA	100 mg/m3
1,2,4-TRIMETHYLBENZENE (CAS 95-63-6)	TWA	25 ppm
XYLENE (CAS 1330-20-7)	STEL	150 ppm
	TWA	100 ppm
BIPHENYL (CAS 92-52-4)	TWA	0.2 ppm
NAPHTHALENE (CAS 91-20-3)	STEL	15 ppm
	TWA	10 ppm
BENZENE (CAS 71-43-2)	STEL	1 ppm
	TWA	0.1 ppm

Biological limit values

ACGIH Biological Exposure Indices

Additional components	Value	Determinant	Specimen	Sampling Time
XYLENE (CAS 1330-20-7)	1.5 g/g	Methylhippuric acids	Creatinine in urine	*

ACGIH Biological Exposure Indices

Additional components	Value	Determinant	Specimen	Sampling Time
BENZENE (CAS 71-43-2)	25 µg/g	S-Phenylmercapturic acid	Creatinine in urine	*

* - For sampling details, please see the source document.

Exposure guidelines

US - California OELs: Skin designation

BENZENE (CAS 71-43-2)	Can be absorbed through the skin.
NAPHTHALENE (CAS 91-20-3)	Can be absorbed through the skin.

US ACGIH Threshold Limit Values: Skin designation

BENZENE (CAS 71-43-2)	Can be absorbed through the skin.
FUELS, DIESEL, NO. 2 (CAS 68476-34-6)	Can be absorbed through the skin.
KEROSENE (PETROLEUM), HYDRODESULFURIZED (CAS 64742-81-0)	Can be absorbed through the skin.
KEROSENE, STRAIGHT RUN (CAS 8008-20-6)	Can be absorbed through the skin.
NAPHTHALENE (CAS 91-20-3)	Can be absorbed through the skin.

Appropriate engineering controls

Consider the following when employing engineering controls and selecting personal protective equipment: potential hazards of the material, applicable exposure limits, job activities, and other substances in the work place.

Explosion-proof ventilation and other forms of engineering controls are the preferred means for controlling exposures below occupational exposure limits and guidelines.

Individual protection measures, such as personal protective equipment

Eye/face protection

Keep away from eyes and face. Contact can be avoided by using chemical safety glasses, goggles and/or face shield. Have eye washing facilities readily available where eye contact can occur.

Skin protection

Hand protection

Avoid skin contact with this material. Use chemical resistant gloves when handling this material. Contact the glove manufacturer for specific advice on glove selection regarding permeability and breakthrough times for your use conditions. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Other

Dermal exposure to this chemical may add to the overall exposure.

Avoid skin contact with this material. Additional protective clothing may be necessary.

Respiratory protection

A NIOSH approved air purifying respirator with an appropriate cartridge or canister, such as an organic vapor cartridge, may be used in circumstances where airborne organic vapor concentrations may exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive pressure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air purifying respirators may not provide adequate protection. See OSHA 29 CFR 1910.134 for more information regarding respiratory protection and Assigned Protection Factors (APFs).

Thermal hazards

No special precautions required.

9. Physical and chemical properties

Appearance

Physical state

Liquid.

Form

Not applicable

Color

Pale yellow or green; for tax exempt purposes, this fuel may contain red dye

Odor

Hydrocarbon

Odor threshold

Not available.

pH

Not available

Melting point/freezing point

Not available

Initial boiling point and boiling range

> 300 °F (> 148.9 °C) ASTM D86

Flash point

> 125 °F (> 51.67 °C) ; Wisconsin: >100 °F (>37.8 °C) PMCC

Evaporation rate

Not available

Flammability (solid, gas)

Not applicable.

Upper/lower flammability or explosive limits

Flammability limit - lower (%)	0.6 %
Flammability limit - upper (%)	7.5 %
Explosive limit - lower (%)	See flammability limit
Explosive limit - upper (%)	See flammability limit
Vapor pressure	2.6 mmHg at 122 °F (50 °C)
Vapor density	> 1 (Air=1)
Relative density	0.84 - 0.888 at 60/60 °F (15.6/15.6 °C)
Solubility(ies)	
Solubility (water)	Insoluble
Partition coefficient (n-octanol/water)	Not available
Auto-ignition temperature	494 °F (256.67 °C)
Decomposition temperature	Not available.
Viscosity	1.7 - 4.1 cSt at 104 °F (40 °C)
Other information	
Bulk density	7 - 7.4 lb./gal.
Chemical family	Hydrocarbon Mixture
Electrostatic properties	
Conductivity	<= 50 pS/m
Pour point	-15 °F (-26.11 °C) (Winter) 0 °F (-17.78 °C) (Fall) 10 °F (-12.22 °C) (Summer)

10. Stability and reactivity

Reactivity	See statements below.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Not anticipated under normal conditions.
Conditions to avoid	Avoid unventilated areas, heat, open flames, sparks and ungrounded electrical equipment.
Incompatible materials	Incompatible with strong oxidizing agents. See precautions under Handling & Storage (Section 7).
Hazardous decomposition products	Not anticipated under normal conditions.

11. Toxicological information

Information on likely routes of exposure

Inhalation	Likely route of exposure
Skin contact	Likely route of exposure
Eye contact	Likely route of exposure
Ingestion	Likely route of exposure

Symptoms related to the physical, chemical and toxicological characteristics

INHALATION:
Breathing high concentrations may be harmful. May cause central nervous system depression or effects. Symptoms may include headache, excitation, euphoria, dizziness, incoordination, drowsiness, light-headedness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death, depending on the concentration and duration of exposure.

Breathing of the mists, vapors or fumes may irritate the nose, throat and lungs.

SKIN:
Contact may cause reddening, itching and inflammation. Prolonged skin contact may defat the skin and cause drying, cracking and/or dermatitis. Skin contact may cause harmful effects in other parts of the body.

EYES:
May cause slight to mild eye irritation with tearing, redness, or a stinging or burning sensation. May cause temporary swelling of the eyes with blurred vision. Effects may become more serious with repeated or prolonged contact.

INGESTION:
May cause irritation of the mouth, throat and gastrointestinal tract. Symptoms may include salivation, pain, nausea, vomiting and diarrhea.

Aspiration into lungs may cause chemical pneumonia and lung damage.

Information on toxicological effects

Acute toxicity Harmful if inhaled.

Components	Species	Test Results
DISTILLATES (PETROLEUM), HYDRODESULFURIZED MIDDLE (CAS 64742-80-9)		
Acute		
Dermal		
LD50	Rat	> 2000 mg/kg
Inhalation		
Mist		
LC50	Rat	4.6 mg/l, 4 hr
Oral		
LD50	Rat	> 5000 mg/kg
FUELS, DIESEL, NO. 2 (CAS 68476-34-6)		
Acute		
Dermal		
LD50	Rabbit	> 4300 mg/kg
Inhalation		
Mist		
LC50	Rat	4.1 mg/l, 4 hr
Oral		
LD50	Rat	> 7600 mg/kg

Skin corrosion/irritation Causes skin irritation.

Serious eye damage/eye irritation Not classified.

Respiratory or skin sensitization

Respiratory sensitization Not classified.

Skin sensitization Not classified.

Germ cell mutagenicity Not classified.

Carcinogenicity Suspected of causing cancer.

ACGIH Carcinogens

BENZENE (CAS 71-43-2)	A1 Confirmed human carcinogen.
FUELS, DIESEL, NO. 2 (CAS 68476-34-6)	A3 Confirmed animal carcinogen with unknown relevance to humans.

KEROSENE (PETROLEUM), HYDRODESULFURIZED (CAS 64742-81-0)	A3 Confirmed animal carcinogen with unknown relevance to humans.
KEROSENE, STRAIGHT RUN (CAS 8008-20-6)	A3 Confirmed animal carcinogen with unknown relevance to humans.
NAPHTHALENE (CAS 91-20-3)	A3 Confirmed animal carcinogen with unknown relevance to humans.
XYLENE (CAS 1330-20-7)	A4 Not classifiable as a human carcinogen.

IARC Monographs. Overall Evaluation of Carcinogenicity

BENZENE (CAS 71-43-2)	1 Carcinogenic to humans.
FUELS, DIESEL, NO. 2 (CAS 68476-34-6)	2B Possibly carcinogenic to humans.
NAPHTHALENE (CAS 91-20-3)	2B Possibly carcinogenic to humans.
XYLENE (CAS 1330-20-7)	3 Not classifiable as to carcinogenicity to humans.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

BENZENE (CAS 71-43-2)	Cancer

US. National Toxicology Program (NTP) Report on Carcinogens

BENZENE (CAS 71-43-2)	Known To Be Human Carcinogen.
NAPHTHALENE (CAS 91-20-3)	Reasonably Anticipated to be a Human Carcinogen.

Reproductive toxicity Not classified.

Specific target organ toxicity - single exposure Not classified.

Specific target organ toxicity - repeated exposure May cause damage to organs (liver, thymus, bone marrow) through prolonged or repeated exposure.

Aspiration hazard May be fatal if swallowed and enters airways.

Toxicological data

BENZENE: Studies of workers exposed to benzene show clear evidence that overexposure can cause cancer of the blood forming organs (acute myelogenous leukemia) and aplastic anemia, an often fatal disease. Some studies suggest overexposure to benzene may also be associated with other blood disorders including myelodysplastic syndrome. Some studies of workers exposed to benzene have shown an association with increased rates of chromosome aberrations in circulating lymphocytes. One study of women workers exposed to benzene suggested a weak association with irregular menstruation. However, other studies of workers exposed to benzene have not demonstrated clear evidence of an effect on fertility or reproductive outcome in humans. Benzene can cross the placenta and affect the developing fetus. Cases of aplastic anemia have been reported in the offspring of persons severely overexposed to benzene. Animal studies indicate that prolonged, repeated exposure to high levels of benzene vapor can cause bone marrow suppression and cancer in multiple organ systems. Studies in laboratory animals also show evidence of adverse effects on male reproductive organs following high levels of exposure but no significant effects on reproduction have been observed. Embryotoxicity has been reported in studies of laboratory animals but effects were limited to reduced fetal weight and skeletal variations has been classified as a known human carcinogen by OSHA and a Group 1 (carcinogenic to Humans) material by IARC, the International Agency for Research on Cancer.

NAPHTHALENE: Severe jaundice, neurotoxicity (kernicterus) and fatalities have been reported in young children and infants as a result of hemolytic anemia from overexposure to naphthalene. Persons with Glucose 6-phosphate dehydrogenase (G6PD) deficiency are more prone to the hemolytic effects of naphthalene. Adverse effects on the kidney have been reported in persons overexposed to naphthalene but these effects are believed to be a consequence of hemolytic anemia, and not a direct effect. Hemolytic anemia has been observed in laboratory animals exposed to naphthalene. Laboratory rodents exposed to naphthalene vapor for 2 years (lifetime studies) developed non-neoplastic and neoplastic tumors and inflammatory lesions of the nasal and respiratory tract. Cataracts and other adverse effects on the eye have also been observed in laboratory animals exposed to high levels of naphthalene. Findings from a large number of bacterial and mammalian cell mutation assays were negative. A few studies have shown chromosomal effects (elevated levels of sister chromatid exchanges or chromosomal aberrations) in vitro. Naphthalene has been classified as possibly carcinogenic to humans (Group 2B) by IARC, the International Agency for Research on Cancer, based on findings from studies in laboratory animals.

XYLENES, ALL ISOMERS: Acute effects of xylene may be increased by the use of alcoholic beverages. Evidence of liver and kidney impairment were reported in workers recovering from a gross overexposure. Prolonged or repeated exposure to xylene was reported to cause impaired neurological function in workers exposed to solvents (including xylene). Studies in rats have shown evidence of impaired hearing following prolonged exposure to high concentrations of paraxylene. Studies in laboratory animals also suggest some changes in reproductive organs following high levels of exposure but no significant effects on reproduction were observed. Developmental toxicity studies in laboratory animals indicate skeletal and visceral malformations, developmental delays, and increased fetal resorptions following extremely high levels of maternal exposure. The relevance of these observations to humans is not clear at this time. In addition, adverse effects on the liver, kidney, bone marrow (changes in blood cell parameters) were observed in laboratory animals following high levels of exposure. The relevance of these observations to humans is not clear at this time.

1,2,4-TRIMETHYLBENZENE: Inhalation exposure to an aromatic hydrocarbon solvent mixture which contained approximately 40% 1,2,4-trimethylbenzene resulted in developmental effects in rats at maternally toxic doses. In another inhalation study in rats on 1,2,4-trimethylbenzene, fetal body weight was reduced at inhalation levels of 2950 mg/m3, but there was no evidence of embryolethal or teratogenic effects. No effects were observed at the 1470 mg/m3 level.

MIDDLE DISTILLATES, PETROLEUM: Long-term repeated (lifetime) skin exposure to similar materials has been reported to result in an increase in skin tumors in laboratory rodents. The relevance of these findings to humans is not clear at this time.

DIESEL EXHAUST: NIOSH recommends that whole diesel exhaust be regarded as a potential carcinogen, and the National Toxicology Program (NTP) classifies diesel exhaust particulate as "reasonably anticipated to be a human carcinogen". In addition, the International Agency for Cancer (IARC) has classified diesel engine exhaust as a Group 1 carcinogen (carcinogenic to humans), based on sufficient evidence that exposure is associated with an increased risk for lung cancer, and limited evidence of a positive association with an increased risk of bladder cancer. Lifetime exposure to whole diesel exhaust also has been shown to cause cancer in laboratory animals.

12. Ecological information

Ecotoxicity Toxic to aquatic life with long lasting effects.

Components		Species	Test Results
DISTILLATES (PETROLEUM), HYDRODESULFURIZED MIDDLE (CAS 64742-80-9)			
Aquatic			
Acute			
Algae	EC50	Pseudokirchnerella subcapitata	1.714 mg/l, 72 hr
Crustacea	EC50	Daphnia magna	7.35 mg/l, 48 hr
Fish	LC50	Fish	1.13 mg/l, 96 hr
Chronic			
Crustacea	NOEL	Daphnia magna	0.163 mg/l, 21 d
Fish	NOEL	Oncorhynchus mykiss	1.2 mg/l, 28 d
FUELS, DIESEL, NO. 2 (CAS 68476-34-6)			
Aquatic			
Acute			
Algae	EC50	Pseudokirchnerella subcapitata	10 mg/l, 72 hr
Crustacea	EC50	Daphnia magna	68 mg/l, 48 hr
Fish	LC50	Oncorhynchus mykiss	21 mg/l, 96 hr
Chronic			
Crustacea	NOEC	Daphnia magna	0.2 mg/l, 21 d
Fish	NOEC	Oncorhynchus mykiss	0.08 mg/l, 14 d

Persistence and degradability Not readily biodegradable.

Bioaccumulative potential May bioaccumulate in aquatic organisms.

Mobility in soil May partition into air, soil and water.

Other adverse effects No other adverse effects expected.

13. Disposal considerations

Disposal instructions
The transportation, storage, treatment and disposal of waste material must be conducted in compliance with federal, state, and local regulations. Under RCRA it is the responsibility of the user of the material to determine, at the time of disposal, whether this material meets RCRA criteria for hazardous waste. For additional handling information and protection of employees, see Section 7 (Handling and Storage) and Section 8 (Exposure Controls/Personal Protection).

Hazardous waste code
The proper waste code must be evaluated at the time of disposal and should be determined by the user and waste disposal company.

Waste from residues / unused products
Dispose of this material in accordance with all applicable local and national regulations.

Contaminated packaging
Empty containers should be taken to an approved waste handling site for recycling or disposal in accordance with government regulations. Packaging may contain residue that can be hazardous.

14. Transport information

General information
DOT Regulated Marine Pollutant. BILL OF LADING - BULK (U. S. DOT): See Bill of Lading for proper shipping description, or consult 49 CFR 100-185 for specific shipping information.

BILL OF LADING - NON-BULK (U. S. DOT): See Bill of Lading for proper shipping description, or consult 49 CFR 100-185 for specific shipping information.

Due to the possible variances of this material, the shipping classification must be evaluated at the time of shipment. Please consult 49 CFR 171 - 180 for specific shipping information.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not classified for MARPOL. Please contact the Transportation Compliance CSO if transportation mode is ship or vessel to determine the need for a MARPOL classification.

15. Regulatory information

US federal regulations
All ingredients are on the active TSCA inventory, or are not required to be listed on the active TSCA inventory.

Consult OSHA's Benzene standard 29 CFR 1910.1028 for provisions on air monitoring, employee training, medical monitoring, etc.

A release of this material, as supplied, may be exempt from reporting under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA - 40 CFR 302) by the petroleum exclusion. Releases may be reportable to the National Response Center (800-424-8802) under the Clean Water Act, 33 U.S.C. 1321(b)(3) and (5).

This material may contain toxic chemical(s) in excess of the applicable de minimis concentration that are subject to the annual toxic chemical release reporting requirements of the Superfund Amendments and Reauthorization Act (SARA) Section 313 (40 CFR 372). This information must be included in all SDSs that are copied and distributed for this material.

Check local, regional or state/provincial regulations for any additional requirements as these may be more restrictive than federal laws and regulations. Failure to comply may result in substantial civil and criminal penalties.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

CERCLA Hazardous Substance List (40 CFR 302.4)

BENZENE (CAS 71-43-2)	Listed.
BIPHENYL (CAS 92-52-4)	Listed.
NAPHTHALENE (CAS 91-20-3)	Listed.
XYLENE (CAS 1330-20-7)	Listed.

SARA 304 Emergency release notification

Not regulated.

US EPCRA (SARA Title III) Section 313 - Toxic Chemical: De minimis concentration

1,2,4-TRIMETHYLBENZENE (CAS 95-63-6)	1.0 %
BENZENE (CAS 71-43-2)	0.1 %
BIPHENYL (CAS 92-52-4)	1.0 %
NAPHTHALENE (CAS 91-20-3)	0.1 %
XYLENE (CAS 1330-20-7)	1.0 %

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1052)

BENZENE (CAS 71-43-2)	Cancer
	Central nervous system

Blood
Aspiration
Skin
Eye
respiratory tract irritation
Flammability

Superfund Amendments and Reauthorization Act of 1986 (SARA)

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous chemical Yes

Classified hazard categories
Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)
Skin corrosion or irritation
Carcinogenicity
Specific target organ toxicity (single or repeated exposure)
Aspiration hazard
Hazard not otherwise classified (HNOC)

SARA 313 (TRI reporting)

Chemical name	CAS number	% by wt.
1,2,4-TRIMETHYLBENZENE	95-63-6	0.1 - 1
NAPHTHALENE	91-20-3	≤ 0.3
XYLENE	1330-20-7	≤ 1

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

BENZENE (CAS 71-43-2)
BIPHENYL (CAS 92-52-4)
NAPHTHALENE (CAS 91-20-3)
XYLENE (CAS 1330-20-7)

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Clean Water Act (CWA) Section 112(r) (40 CFR 68.130) Hazardous substance

Safe Drinking Water Act (SDWA) Not regulated.

FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace

BIPHENYL (CAS 92-52-4) Low priority

US state regulations

California Proposition 65

WARNING: This product can expose you to chemicals including BENZENE, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California Proposition 65 - CRT: Listed date/Carcinogenic substance

BENZENE (CAS 71-43-2) Listed: February 27, 1987
NAPHTHALENE (CAS 91-20-3) Listed: April 19, 2002

California Proposition 65 - CRT: Listed date/Developmental toxin

BENZENE (CAS 71-43-2) Listed: December 26, 1997

California Proposition 65 - CRT: Listed date/Male reproductive toxin

BENZENE (CAS 71-43-2) Listed: December 26, 1997

16. Other information, including date of preparation or last revision

Issue date 12-01-2014
Revision date 02-12-2018
Version # 05

Further information	WARNING: THIS PRODUCT, AS INDICATED, CONTAINS BIODIESEL. BIODIESEL, OR FUELS BLENDED WITH BIODIESEL, MAY UNDER CERTAIN COLD WEATHER CONDITIONS GEL, CLOG, DAMAGE OR HARM FUEL STORAGE TANKS, PIPING, METERS, DIESEL ENGINES AND/OR RELATED FUEL SYSTEMS (INCLUDING, BUT NOT LIMITED TO MARINE EQUIPMENT). IT IS IMPERATIVE THAT BEFORE YOU USE OR STORE THIS PRODUCT YOU CONDUCT AN ASSESSMENT TO DETERMINE WHETHER THIS FUEL IS COMPATIBLE WITH YOUR PARTICULAR EQUIPMENT/MACHINERY IN WHICH THIS FUEL MIGHT BE STORED, TRANSPORTED OR COMBUSTED. AS SOME MANUFACTURERS MAY VOID ENGINE WARRANTIES IF THIS FUEL IS USED, IT IS IMPORTANT YOU REVIEW THE TERMS OF YOUR MANUFACTURER's WARRANTY AND DETERMINE IF THIS FUEL IS RIGHT FOR YOUR APPLICATION. DISCLAIMER OF ALL WARRANTIES: FLINT HILLS RESOURCES MAKES NO WARRANTY EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR WARRANTY FOR FITNESS FOR ANY PARTICULAR PURPOSE AND HEREBY DISCLAIMS ALL SUCH WARRANTIES REGARDING THIS PRODUCT.
HMIS® ratings	Health: 1* Flammability: 2 Physical hazard: 0 * Indicates chronic health hazard
NFPA ratings	Health: 1 Flammability: 2 Instability: 0
Disclaimer	THIS SDS HAS BEEN PREPARED TO COMPLY WITH FEDERAL REGULATIONS THAT ARE INTENDED TO QUICKLY PROVIDE USEFUL INFORMATION TO THE USER(S) OF THIS MATERIAL OR PRODUCT - IT IS NOT INTENDED TO SERVE AS A COMPREHENSIVE DISCUSSION OF ALL POSSIBLE RISKS OF HAZARDS, BUT RATHER PROVIDES INFORMATION GENERALLY ACCEPTED IN THE SCIENTIFIC COMMUNITY AS RELEVANT REGARDING THE POTENTIAL HAZARDS OF THIS PRODUCT. ADEQUATE TRAINING, INSTRUCTION, WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS. USERS SHOULD REVIEW THE INFORMATION IN THE SDS, AND SATISFY THEMSELVES AS TO ITS SUITABILITY AND COMPLETENESS, INCLUDING ENSURING THAT THIS IS THE MOST CURRENT SDS.
Revision information	This document has undergone significant changes and should be reviewed in its entirety.
Completed by	Flint Hills Resources, LP - Operations EH&S