

Environmental Protection Agency
U.S. Chemical Safety and Hazard Investigation Board



MATERIAL SAFETY DATA SHEET

1 CHEMICAL PRODUCT & COMPANY IDENTIFICATION

TRADE NAME(S)	FUEL OIL NO. 2 (LOW SULFUR)
CAS NUMBER	68476-34-6
MSDS NUMBER	5465
PRODUCT CODE	ND
SYNONYM(S)	2 OIL, NO. 2 LOW SULFUR DIESEL, NO. 2 LOW SULFUR FUEL, APPLICABLE TO ALL GRADES DESULFURIZED NO. 2 FUEL OIL DIESEL FUEL, ARCTIC DIESEL, DIESEL FUEL NO. 2, DIESEL OIL, D-GRADE FUEL OIL, RAILROAD DIESEL, VIRGIN DIESEL DK 45 HEATING OIL, PREMIUM DIESEL (LOW SULFUR) NO. 2 FUEL OIL (NO2FO) PERFORMANCE GOLD PLUS U.S. SOY FIELD DIESEL U.S. SOY PLUS DIESEL
MANUFACTURER / SUPPLIER	Flint Hills Resources, LP 2825 Sun tide Road (78409) P. O. Box 2608 Corpus Christi, TX 78403

TELEPHONE NUMBERS - 24 HOUR EMERGENCY ASSISTANCE

Chemtrec	800-424-9300
Flint Hills Resources, LP	361-241-4811

TELEPHONE NUMBERS - GENERAL ASSISTANCE

8-5 (M-F, CST)	361-241-4811
8-5 (M-F, CST) MSDS Assistance	316-828-7988

2 COMPOSITION / INFORMATION ON INGREDIENTS

Ingredient Name	CAS Number	Concentration*	Exposure Limits / Health Hazards
C9-C20 HYDROCARBONS PRODUCED BY THE PROCESSING OF CRUDE OIL	68476-34-6	99 - 100 %	ND
1,2,4-TRIMETHYLBENZENE	95-63-6	0.3 - 1 %	25 ppm 8-Hour TWA (ACGIH)
BIPHENYL	92-52-4	0 - 0.75 %	0.2 ppm 8-Hour TWA (OSHA) 0.2 ppm 8-Hour TWA (ACGIH)

Ingredient Name	CAS Number	Concentration*	Exposure Limits / Health Hazards
NAPHTHALENE	91-20-3	0 - 0.3 %	10 ppm 8-Hour TWA (OSHA) 10 ppm 8-Hour TWA (ACGIH) 15 ppm 15-Min STEL (ACGIH)
XYLEMES	1330-20-7	0 - 1 %	100 ppm 8-Hour TWA (OSHA) 100 ppm 8-Hour TWA (ACGIH) 150 ppm 15-Min STEL (ACGIH)
TOLUENE	108-88-3	< 0.2 %	200 ppm 8-Hour TWA (OSHA) 300 ppm CEILING (OSHA) 50 ppm 8-Hour TWA (ACGIH)
CUMENE	98-82-8	< 0.1 %	50 ppm 8-Hour TWA (OSHA) 50 ppm 8-Hour TWA (ACGIH) Skin Designation**
BENZENE	71-43-2	0 - 200 PPM	1 ppm 8-Hour TWA (OSHA) 5 ppm 15-Min STEL (OSHA) 0.5 ppm 8-Hour TWA (ACGIH) 2.5 ppm 15-Min STEL (ACGIH)

*Values do not reflect absolute minimums and maximums; these values are typical which may vary from time to time.

COMPOSITION COMMENTS

** Exposure to this chemical may add to the overall exposure, as it is readily absorbed through the skin.

This Material 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.

3 HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING!

HEALTH HAZARDS

MAY BE IRRITATING TO THE SKIN, EYES AND RESPIRATORY TRACT

OVEREXPOSURE MAY CAUSE CNS DEPRESSION

ASPIRATION HAZARD IF SWALLOWED-CAN ENTER LUNGS AND CAUSE DAMAGE

POTENTIAL REPRODUCTIVE HAZARD

SKIN CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS

SEE "TOXICOLOGICAL INFORMATION" (SECTION 11) FOR MORE INFORMATION

FLAMMABILITY HAZARDS

COMBUSTIBLE

PER OSHA GUIDELINES, 29 CFR 1910.1200(c)

REACTIVITY HAZARDS

STABLE

POTENTIAL HEALTH EFFECTS, SKIN

MODERATELY IRRITATING. Repeated or prolonged skin contact may cause drying, reddening, itching and cracking.

No significant effects are expected to occur following short term exposure. Repeated or prolonged contact with large amounts of this material may result in absorption through the skin to produce toxic effects.

Contact with heated material may cause thermal burns.

POTENTIAL HEALTH EFFECTS, EYE

SLIGHTLY IRRITATING. Exposure to vapors, fumes or mists may cause irritation. May cause slight transient irritation, lacrimation (tears) and a burning sensation in the eyes. Prolonged or repeated exposure may cause irritation and conjunctivitis.

Contact with heated material may cause thermal burns, destruction of eye tissue and possible permanent injury or blindness.

POTENTIAL HEALTH EFFECTS, INHALATION

Petroleum mists at high exposure levels may be irritating to the nose, throat and lungs.

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.

Overexposure to this material may cause systemic damage including target organ effects listed under "Toxicological Information" (Section 11).

Other specific symptoms of exposure are listed under "Toxicological Information" (Section 11).

POTENTIAL HEALTH EFFECTS, INGESTION

PRACTICALLY NON-TOXIC. Ingestion of large amounts may cause gastrointestinal disturbances. 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.

Exposure may also cause central nervous system symptoms similar to those listed under "Inhalation" (see Inhalation section).

Overexposure to this material may cause systemic damage including target organ effects listed under "Toxicological Information" (Section 11).

Other specific symptoms of exposure are listed under "Toxicological Information" (Section 11).

4 FIRST AID MEASURES

SKIN

Immediately wash skin with plenty of soap and water while removing contaminated clothing and shoes. GET IMMEDIATE MEDICAL ATTENTION.

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.

Flash Point	> 125 °F (> 52 °C) PENSKY-MARTENS CLOSED CUP
Autoignition Temperature	494 °F (257 °C)
Flammability Limits in Air, Lower, % by Volume	0.6 %
Flammability Limits in Air, Upper, % by Volume	7.5 %

6 ACCIDENTAL RELEASE MEASURES

EMERGENCY ACTION

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. Stay upwind. Isolate for 800 meters (1/2 mile) in all directions if tank, rail car or tank truck is involved in fire. Evacuate area endangered by release as required. (See Exposure Controls/Personal Protection, Section 8.)

ENVIRONMENTAL PRECAUTIONS

Eliminate all sources of ignition. Isolate hazard area and deny entry.

If material is released to the environment, take immediate steps to stop and contain release. Caution should be exercised regarding personnel safety and exposure to the released material. Notify local authorities and the National Response Center, if required.

SPILL OR LEAK PROCEDURE

Keep unnecessary people away. Isolate area for at least 25 to 50 meters (80 to 160 feet) to preserve public safety. For large spills, consider initial evacuation for at least 300 meters (1000 feet).

Keep ignition sources out of area and shut off all ignition sources. Absorb spill with inert material (e. g. dry sand or earth) then place in a chemical waste container. Large Spills: Dike far ahead of liquid spill for later disposal.

Use water spray, fog, or regular foam to reduce vapors. Stop leak when safe to do so.

See Exposure Controls/Personal Protection (Section 8).

7 HANDLING & STORAGE

HANDLING

Ground lines and equipment used during transfer to reduce the possibility of static spark-initiated fire or explosion. Use non-sparking tools. Do not cut, grind, drill, weld or reuse containers unless adequate precautions are taken against these hazards.

Do not eat, drink or smoke in areas of use or storage.

STORAGE

Store in tightly closed containers in a cool, dry, isolated, well-ventilated area away from heat, sources of ignition and incompatibles. Avoid contact with strong oxidizers.

Empty containers may contain material residue. Do not reuse without adequate precautions.

Do not eat, drink or smoke in areas of use or storage.

8 EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS

Ventilation and other forms of engineering controls are the preferred means for controlling exposures.

Trade Name FUEL OIL NO. 2 (LOW SULFUR)

EYE PROTECTION: PERSONAL PROTECTION EQUIPMENT (PPE)

Keep away from eyes. Eye 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: PERSONAL PROTECTION EQUIPMENT (PPE)

Avoid skin contact with this material. Use appropriate chemical protective gloves when handling.

Good personal hygiene practices such as properly handling contaminated clothing, using wash facilities before entering public areas and restricting eating, drinking and smoking to designated areas are essential for preventing personal chemical contamination.

RESPIRATORY PROTECTION: PERSONAL PROTECTION EQUIPMENT (PPE)

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 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.

a PHYSICAL & CHEMICAL PROPERTIES

ODOR AND APPEARANCE

CRYSTAL CLEAR TO PALE YELLOW OR GREEN COLORED LIQUID WITH HYDROCARBON ODOR; FOR TAX EXEMPT PURPOSES, THIS FUEL MAY CONTAIN RED DYE

Boiling Point 325 - 700 °F (163-371 °C)

MAP 100-0005

EYE PROTECTION: PERSONAL PROTECTION EQUIPMENT (PPE)

Keep away from eyes. Eye 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: PERSONAL PROTECTION EQUIPMENT (PPE)

Avoid skin contact with this material. Use appropriate chemical protective gloves when handling.

Good personal hygiene practices such as properly handling contaminated clothing, using wash facilities before entering public areas and restricting eating, drinking and smoking to designated areas are essential for preventing personal chemical contamination.

RESPIRATORY PROTECTION: PERSONAL PROTECTION EQUIPMENT (PPE)

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 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.

9 PHYSICAL & CHEMICAL PROPERTIES**ODOR AND APPEARANCE**

CRYSTAL CLEAR TO PALE YELLOW OR GREEN COLORED LIQUID WITH HYDROCARBON ODOR; FOR TAX EXEMPT PURPOSES, THIS FUEL MAY CONTAIN RED DYE

Boiling Point	325 - 700 °F (163-371 °C)
Specific Gravity	0.835 - 0.9 at 60/60 °F (15.6/15.6 °C)
Melting Point	-20 °F (-29 °C)
Percent Volatile	100 %
Vapor Pressure	2.6 mmHg at 122 °F (50 °C)
Vapor Density	8 (Air=1)
Bulk Density	6.96 - 7.51 lb./gal. at 60/60 °F (15.6/15.6 °C)
Solubility in Water	INSOLUBLE
Octanol/Water Partn	ND
Volatile Organic	ND
Pour Point	-20 to 10 °F (-29 to -12 °C) [ARCTIC DIESEL < -50 °F (< -45 °C)]
pH Value	ND
Freezing Point	ND
Viscosity	32.6 - 40.1 SUS at 100 °F (38 °C)
Evaporation Rate	ND
Molecular Formula	ND
Molecular Weight	ND
Chemical Family	HYDROCARBON MIXTURE
Odor Threshold	ND

10 STABILITY & REACTIVITY**STABILITY/INCOMPATIBILITY**

Incompatible with oxidizing agents. See precautions under Handling & Storage (Section 7).

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS

Combustion may produce CO_x, NO_x, SO_x, reactive hydrocarbons, irritating vapors, and other decomposition products in the case of incomplete combustion.

11 TOXICOLOGICAL INFORMATION**ROUTES OF EXPOSURE**

Inhalation, ingestion, skin and eye contact.

TOXICOLOGICAL DATA

Acute or chronic overexposure to this material or its components may cause systemic toxicity, including adverse effects to the following: liver and kidney.

Exposure to components of this material may cause the following specific symptoms, depending on the concentration and duration of exposure: irritation of the hair follicles and blockage of the sebaceous glands.

Short-term exposure to diesel emissions can cause lung inflammation and other illnesses, while exacerbating existing allergies and asthma symptoms.

This material may contain benzene. Acute benzene poisoning causes central nervous system depression. Chronic exposure affects the hematopoietic system causing blood disorders including anemia and pancytopenia.

This material may contain naphthalene. Naphthalene can be harmful by any route of exposure. Humans may be more sensitive to naphthalene than laboratory animals. Naphthalene can cause skin and eye irritation and acute central nervous system effects. It can also cause blood effects, including hemolytic and aplastic anemia, cataracts, liver and kidney damage. Following maternal exposure, naphthalene has also been reported to cause fetal blood system, liver and possibly eye damage. In a 2-year lifetime inhalation bioassay, female mice showed a significantly increased incidence of pulmonary alveolar and bronchiolar adenomas. On this basis, NTP has determined that there is some evidence of naphthalene carcinogenicity in female mice. Both male and female mice showed evidence of chronic inflammation and its associated response in the respiratory system.

This material contains toluene. Toluene is an eye, skin, and respiratory tract irritant as well as a central nervous system depressant. Overexposure may result in damage to the brain, liver, kidney, cardiovascular, respiratory and neurological systems. Prolonged and repeated exposure may result in behavioral effects, anemia, and color vision abnormalities, blindness and hearing loss. It has been shown to produce reproductive effects in both humans and laboratory animals. It has also been reported to produce cardiac sensitization. Repeated or prolonged exposure to toluene may result in skin absorption, which may result in toxic effects. IARC has determined that there is inadequate evidence for the carcinogenicity of toluene in humans and experimental animals (IARC Class 3).

Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage (sometimes referred to as solvent or painter's syndrome). Intentional misuse by deliberately concentrating and inhaling this product may be harmful or fatal.

WARNING: The use of any hydrocarbon fuel in an area without adequate ventilation may result in hazardous levels of combustion products and inadequate oxygen levels.

This material has not been tested as a whole for all potential health effects. Use caution in handling to avoid exposure.

CARCINOGENICITY

IARC has determined that there is limited evidence for the carcinogenicity of fuel oil #2 in experimental animals and inadequate evidence in humans.

Long-term exposure to diesel exhaust may pose a lung cancer hazard, as well as damage the lung in other ways depending on exposure.

Lifetime exposure to whole diesel exhaust has been shown to cause cancer in laboratory animals. NIOSH recommends that whole diesel exhaust be regarded as a potential occupational carcinogen.

This material may contain naphthalene. IARC has determined that there is sufficient evidence for the carcinogenicity of naphthalene in experimental animals and inadequate evidence for the carcinogenicity of naphthalene in humans. (IARC Class 2B)

This material may contain benzene. Benzene is carcinogenic to laboratory animals when given by intubation or by inhalation. There is an association between occupational exposure to benzene and human leukemia. Carcinogenic determinations: IARC human positive and animal suspected carcinogen (IARC Class 1); NTP known carcinogen; ACGIH suspected carcinogen; OSHA carcinogen. (IARC Class 1)

TERATOGENICITY, MUTAGENICITY, OTHER REPRODUCTIVE EFFECTS

This material may contain benzene. Mutagenic and clastogenic in mammalian and non-mammalian test systems. Reproductive or developmental toxicant only at doses that are maternally toxic, based on tests with animals.

This material contains components which may cause adverse reproductive and/or developmental effects.

Pregnant women may be at an increased risk from exposure. Consumption of alcoholic beverages may enhance toxic effects.

PRE-EXISTING CONDITIONS AGGRAVATED BY EXPOSURE

Pre-existing medical conditions which may be aggravated by exposure include disorders of the skin, eye and respiratory system.

12 ECOLOGICAL INFORMATION**ECOTOXICOLOGICAL INFORMATION**

ND

13 DISPOSAL CONSIDERATIONS**WASTE DISPOSAL**

This material, as supplied, when discarded or disposed of, is a hazardous waste according to Federal Regulations due to the material exhibiting a hazardous characteristic under Subpart C of 40 CFR 261. Under RCRA, it is the responsibility of the user of the material to determine, at the time of disposal, whether the material meets RCRA criteria for hazardous waste.

The transportation, storage, treatment and disposal of RCRA waste material must be conducted in compliance with 40 CFR 262, 263, 264, 268 and 270. Disposal can occur only in properly permitted facilities. Check state and local regulations for any additional requirements as these may be more restrictive than federal laws and regulations. Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Disposal of this material must be conducted in compliance with all federal, state and local regulations.

4 TRANSPORT INFORMATION

BILL OF LADING - BULK (U. S. DOT)

Fuel Oil (No. 2), Combustible Liquid, NA1993, PG III

BILL OF LADING - NON-BULK (U. S. DOT)

Non-Regulated

U. S. Department of Transportation (DOT) Requirements**General Transportation Information for Bulk Shipments**

Proper Shipping Name	Fuel Oil (No. 2)	UN/NA Code	NA1993
Hazard Class	Combustible Liquid		
Packaging Group	PG III		
Labels Required	None		
Placards Required	Combustible Liquid, NA1993		
Reportable Quantity	See Regulatory Information (Section 15)		

General Transportation Information for Non-Bulk Shipments

Proper Shipping Name	Non-Regulated	UN/NA Code	NA
Hazard Class	NA		
Packaging Group	NA		
Labels Required	NA		
Placards Required	NA		
Reportable Quantity	NA		

COMMENTS

Non-bulk shipments of this material are non-regulated for domestic ground transportation when they meet the requirements of 49 CFR 173.150(f).

The above description may not cover shipping in all cases, please consult 49 CFR 100-185 for specific shipping information.

15 REGULATORY INFORMATION**FEDERAL REGULATIONS**

All ingredients are on the TSCA inventory, or are not required to be listed on the 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 does not contain toxic chemicals (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 material contains one or more substances listed as hazardous air pollutants under Section 112 of the Clean Air Act.

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

STATE REGULATIONS

WARNING: This material contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

SARA 311/312 HAZARD CATEGORIES

Immediate Hazard:	X	Delayed Hazard:	X	Fire Hazard:	X	Pressure Hazard:
Reactivity Hazard:	-					

NFPA RATINGS

Health	1	Flammability	2	Reactivity	0	Special Hazards
--------	---	--------------	---	------------	---	-----------------

HMIS RATINGS

Health	2*	Flammability	2	Reactivity	0
--------	----	--------------	---	------------	---

16 OTHER INFORMATION**DISCLAIMER**

NOTICE: The information presented herein is based on data considered to be accurate as of the date of preparation of this Material Safety Data Sheet. However, an MSDS may not be used as a commercial specification sheet of manufacturer or seller, and no warranty or representation, expressed or implied, is made as to the accuracy or comprehensiveness of the foregoing data and safety information, nor is any authorization given or implied to practice any patented invention without a license. In addition, no responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, from any failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

Current Revision Date 18-Jul-2003

Replaces Sheet Dated 25-Jun-2002

Completed By Flint Hills Resources Operations EH&S