

Safety Data Sheet

Material Name: ULSD NO. 2 FUEL OIL

SDS ID: NCR10100

*** Section 1 - PRODUCT AND COMPANY IDENTIFICATION ***

Synonyms

DIESEL OIL; HOME HEATING OIL; NO. 2 FUEL OIL; NUMBER 2 BURNER FUEL; FUEL OIL NO. 2

Material Name: ULSD NO. 2 FUEL OIL

Manufacturer Information

National Cooperative Refinery Association EMERGENCY Phone: (620) 241-2340
RESPONSE

1391 Iron Horse Road

McPherson, KS 67460

Mfg Contact: National Cooperative Refinery Association

Chemical Family

petroleum hydrocarbons

Product Use

fuel, oils

*** Section 2 - HAZARDS IDENTIFICATION ***

EMERGENCY OVERVIEW

Color: blue to green light-colored

Odor: mild odor, petroleum odor

Health Hazards: skin irritation, aspiration hazard, central nervous system depression

Physical Hazards: Flash back hazard. Combustible liquid and vapor.

POTENTIAL HEALTH EFFECTS

Inhalation

Short Term: irritation, nausea, vomiting, headache, drowsiness, dizziness, loss of coordination, unconsciousness

Long Term: irritation

Skin

Short Term: irritation

Long Term: irritation

Eye

Short Term: irritation

Long Term: irritation

Ingestion

Short Term: nausea, vomiting, diarrhea, stomach pain, headache, drowsiness, dizziness, loss of coordination, aspiration hazard

Long Term: no information on significant adverse effects

*** Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS ***

CAS	Component	Percent	Symbol(s)	Risk Phrase(s)
68476-30-2	FUEL OIL NO. 2 270-671-4	>99	---	R:40
7704-34-9	SULFUR 231-722-6	<=0.0015	Xi	R:36-37-38

Safety Data Sheet

Material Name: ULSD NO. 2 FUEL OIL

SDS ID: NCR10100

*** Section 4 - FIRST AID MEASURES ***

Inhalation

If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin

Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed. Thoroughly clean and dry contaminated clothing and shoes before reuse.

Eyes

Flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion

Aspiration hazard. DO NOT induce vomiting. If vomiting occurs, keep head lower than hips to help prevent aspiration. Get immediate medical attention. Give artificial respiration if not breathing.

Note to Physicians

For inhalation, consider oxygen.

*** Section 5 - FIRE FIGHTING MEASURES ***

See Section 9 for Flammability Properties

NFPA Ratings: Health: 2 Fire: 2 Reactivity: 0

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Flammable Properties

Moderate fire hazard. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back. Vapor/air mixtures are explosive above flash point.

Extinguishing Media

regular dry chemical, carbon dioxide, water, regular foam

Large fires: Use regular foam or flood with fine water spray.

Fire Fighting Measures

Move container from fire area if it can be done without risk. Dike for later disposal. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks. Withdraw immediately in case of rising sound from venting safety device or any discoloration of tanks due to fire. For tank, rail car or tank truck, evacuation radius: 800 meters (1/2 mile). Do not attempt to extinguish fire unless flow of material can be stopped first. Flood with fine water spray. Do not scatter spilled material with high-pressure water streams. Cool containers with water spray until well after the fire is out. Apply water from a protected location or from a safe distance. Avoid inhalation of material or combustion by-products. Stay upwind and keep out of low areas.

*** Section 6 - ACCIDENTAL RELEASE MEASURES ***

Occupational spill/release

Avoid heat, flames, sparks and other sources of ignition. Stop leak if possible without personal risk. Reduce vapors with water spray. Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate container for disposal. Large spills: Dike for later disposal. Remove sources of ignition. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal to RQ (U.S. SARA Section 304). If release occurs in the U.S. and is reportable under CERCLA Section 103, notify the National Response Center at (800)424-8802 (USA) or (202)426-2675 (USA).

Safety Data Sheet

Material Name: ULSD NO. 2 FUEL OIL

SDS ID: NCR10100

*** Section 7 - HANDLING AND STORAGE ***

Handling Procedures

Subject to handling regulations: U.S. OSHA 29 CFR 1910.119.

Storage Procedures

Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.106. Grounding and bonding required. Notify State Emergency Response Commission for storage or use at amounts greater than or equal to the TPQ (U.S. EPA SARA Section 302). SARA Section 303 requires facilities storing a material with a TPQ to participate in local emergency response planning (U.S. EPA 40 CFR 355 Part B). See original container for storage recommendations. Keep separated from incompatible substances.

*** Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION ***

Component Exposure Limits

FUEL OIL NO. 2 (68476-30-2)

ACGIH: 100 mg/m³ TWA (as total hydrocarbons, inhalable fraction and vapor)

Skin - potential significant contribution to overall exposure by the cutaneous route

Ventilation

Provide local exhaust ventilation system. Ensure compliance with applicable exposure limits.

PERSONAL PROTECTIVE EQUIPMENT

Eyes/Face

Wear splash resistant safety goggles. Provide an emergency eye wash fountain and quick drench shower in the immediate work area.

Protective Clothing

Wear appropriate chemical resistant clothing. Remove any chemical soaked clothing immediately.

Glove Recommendations

Wear appropriate chemical resistant gloves.

Respiratory Protection

Under conditions of frequent use or heavy exposure, respiratory protection may be needed.

Respiratory protection is ranked in order from minimum to maximum.

Consider warning properties before use.

Any chemical cartridge respirator with organic vapor cartridge(s).

Any chemical cartridge respirator with a full facepiece and organic vapor cartridge(s).

Any air-purifying respirator with a full facepiece and an organic vapor canister.

For Unknown Concentrations or Immediately Dangerous to Life or Health -

Any supplied-air respirator with a full facepiece that is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

*** Section 9 - PHYSICAL AND CHEMICAL PROPERTIES ***

Safety Data Sheet

Material Name: ULSD NO. 2 FUEL OIL

SDS ID: NCR10100

Physical State:	Liquid	Appearance:	clear bright
Color:	blue to green light-colored	Physical Form:	
Odor:	mild odor, petroleum odor	Odor Threshold:	0.11 ppm (FUEL OIL NO. 2)
pH:	Not available	Melting Point:	-6 °C (FUEL OIL NO. 2)
Boiling Point:	150 - 370 °C (FUEL OIL NO. 2)	Flash Point:	52 - 96 °C (CC, FUEL OIL NO. 2)
Evaporation Rate:	slower than, FUEL OIL NO. 2	OSHA Flammability Class:	II
LEL:	0.6 % (FUEL OIL NO. 2)	UEL:	7.5 % (FUEL OIL NO. 2)
Vapor Pressure:	2.6 mmHg @ 50 °C (FUEL OIL NO. 2)	Vapor Density (air = 1):	>1
Density:	Not available	Specific Gravity (water = 1):	<1 (FUEL OIL NO. 2)
Water Solubility:	insoluble	Coeff. Water/Oil Dist:	Not available
Auto Ignition:	257 °C (FUEL OIL NO. 2)	Viscosity:	2 - 3.6 cSt @ 38 °C (FUEL OIL NO. 2)
Volatility:	Not available		

* * * Section 10 - STABILITY AND REACTIVITY * * *

Chemical Stability

Stable at normal temperatures and pressure.

Conditions to Avoid

Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep out of water supplies and sewers. Dangerous gases may accumulate in confined spaces.

Materials to Avoid

oxidizing materials
FUEL OIL NO. 2:
STRONG OXIDIZERS: Incompatible.

Decomposition Products

oxides of carbon, oxides of sulfur
Thermal decomposition products: oxides of sulfur, carbon.

Possibility of Hazardous Reactions

Will not polymerize.

* * * Section 11 - TOXICOLOGICAL INFORMATION * * *

Component Analysis - LD50/LC50

The components of this material have been reviewed in various sources and the following selected endpoints are published:

FUEL OIL NO. 2 (68476-30-2)

Oral LD50 Rat: 12 g/kg; Dermal LD50 Rabbit: 4720 µL/kg; Dermal LD50 Rabbit: >2000 mg/kg; Inhalation LC50 Rat: 4.6 mg/L/4H

SULFUR (7704-34-9)

Inhalation LC50 Rat: >9.23 mg/L/4H; Oral LD50 Rat: >3000 mg/kg; Dermal LD50 Rabbit: >2000 mg/kg

Safety Data Sheet

Material Name: ULSD NO. 2 FUEL OIL

SDS ID: NCR10100

RTECS Acute Toxicity (selected)

The components of this material have been reviewed, and RTECS publishes the following endpoints:

FUEL OIL NO. 2 (68476-30-2)

Oral: 12 gm/kg oral rat LD50

Skin: 4720 ul/kg skin rabbit LD50

Acute Toxicity Level

FUEL OIL NO. 2 (68476-30-2)

Slightly Toxic: dermal absorption, ingestion.

SULFUR (7704-34-9)

Highly Toxic: inhalation.

Component Carcinogenicity

FUEL OIL NO. 2 (68476-30-2)

ACGIH: A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans

RTECS Irritation

The components of this material have been reviewed, and RTECS publishes the following endpoints:

FUEL OIL NO. 2 (68476-30-2)

100 mg/30 second(s) eyes rabbit mild; 500 mg/24 hour(s) skin rabbit moderate; 500 ul/24 hour(s) skin rabbit moderate

Local Effects

FUEL OIL NO. 2 (68476-30-2)

Irritant: skin.

SULFUR (7704-34-9)

Irritant: inhalation, skin, eye.

Target Organs

FUEL OIL NO. 2 (68476-30-2)

central nervous system.

One sample tested by skin application produced skin carcinoma and papillomas in mice (see also, additional data below).

RTECS Tumorigenic

The components of this material have been reviewed, and RTECS publishes the following endpoints:

FUEL OIL NO. 2 (68476-30-2)

243 gm/kg skin mouse TDLo (97 week(s))

Animal studies have confirmed an association between the induction of cancer, primarily of the lung, and inhalation exposure to whole diesel exhaust. Limited epidemiologic evidence also suggests an association between occupational exposure to diesel engine emissions and lung cancer (NIOSH, 1988).

HEALTH EFFECTS

Inhalation - Acute Exposure

FUEL OIL NO. 2: Inhalation hazard is low unless heated or misted. High concentrations of mist or vapor may cause respiratory tract irritation and central nervous system depression with symptoms of headache, dizziness, nausea, vomiting, anorexia, incoordination, unconsciousness and even asphyxiation.

Inhalation - Chronic Exposure

FUEL OIL NO. 2: Prolonged or repeated exposure may cause irritation.

Skin Contact - Acute Exposure

FUEL OIL NO. 2: Direct contact may cause irritation. A study on three different no. 2 fuel oils reported that they were all moderately irritating to rabbit skin causing moderate erythema and edema.

Safety Data Sheet

Material Name: ULSD NO. 2 FUEL OIL

SDS ID: NCR10100

Skin Contact - Chronic Exposure

FUEL OIL NO. 2: Repeated or prolonged contact may cause defatting of the skin leading to dermatitis and may cause irritation of hair follicles and block the sebaceous glands. Repeated applications to the rabbit skin produced mortality ranging from 0 to 100% from doses of 1 to 10 ml/kg. All samples caused weight loss, anorexia and various degrees of dermal irritation. Necropsy revealed necrotic pyodermas, renal and hepatic congestion and at the highest dose level, multifocal hepatic necrosis. The primary causes of death were depression and anorexia induced by dermal irritation with infection rather than systemic toxicity. Skin application with one sample of fuel oil no. 2 produced skin carcinomas and papillomas in mice.

Eye Contact - Acute Exposure

FUEL OIL NO. 2: In a study on three different no. 2 fuel oils, application to rabbit eyes resulted in only mild irritation.

Eye Contact - Chronic Exposure

FUEL OIL NO. 2: Repeated and prolonged exposure may cause irritation.

Ingestion - Acute Exposure

FUEL OIL NO. 2: Lung damage may occur if aspirated into the lungs and may be fatal. Symptoms may include coughing, difficulty breathing, cyanosis, and pulmonary edema. May cause nausea, vomiting, cramps, diarrhea and possibly central nervous system depression. A study on three different no. 2 fuel oils reported oral LD50 values in rats ranging from 12.0 to 17.5 gm/kg. Mortality generally occurred 2-3 days after dosing. Necropsy revealed hemorrhagic gastroenteritis, gastrointestinal tympani, and pneumonia with abscessation. The cause of death was believed to be physical trauma rather than metabolidysfunction.

Ingestion - Chronic Exposure

FUEL OIL NO. 2: No data available.

*** Section 12 - ECOLOGICAL INFORMATION ***

Component Analysis - Aquatic Toxicity

FUEL OIL NO. 2 (68476-30-2)

Fish: 96 Hr LC50 Pimephales promelas: 35 mg/L [flow-through]

SULFUR (7704-34-9)

Fish: 96 Hr LC50 Brachydanio rerio: 866 mg/L [static]; 96 Hr LC50 Lepomis macrochirus: <14 mg/L [static]; 96 Hr LC50 Oncorhynchus mykiss: >180 mg/L [static]

*** Section 13 - DISPOSAL CONSIDERATIONS ***

Disposal Methods

Dispose in accordance with all applicable regulations. Subject to disposal regulations: U.S. EPA 40 CFR 262. Hazardous Waste Number(s): D001. Dispose in accordance with all applicable regulations.

Component Waste Numbers

The U.S. EPA has not published waste numbers for this product's components.

*** Section 14 - TRANSPORT INFORMATION ***

US DOT Information

Shipping Name: Diesel fuel

UN/NA #: UN1202 Hazard Class: 3 Packing Group: III

Required Label(s): 3

Safety Data Sheet

Material Name: ULSD NO. 2 FUEL OIL

SDS ID: NCR10100

TDG Information

Shipping Name: Diesel fuel

UN #: UN1202 **Hazard Class:** 3 **Packing Group:** III

Required Label(s): 3

ADR Information

Shipping Name: Diesel fuel

UN #: UN1202 **Hazard Class:** 3 **Packing Group:** III

Required Label(s): 3

ADR Tunnel Code Restrictions

SULFUR (7704-34-9)

E (UN1350; UN2448)

RID Information

Shipping Name: Diesel fuel

UN #: UN1202 **Hazard Class:** 3 **Packing Group:** III

Required Label(s): 3

IATA Information

Shipping Name: Diesel fuel

UN #: UN1202 **Hazard Class:** 3 **Packing Group:** III

Required Label(s): 3

ICAO Information

Shipping Name: Diesel fuel

UN #: UN1202 **Hazard Class:** 3 **Packing Group:** III

Required Label(s): 3

IMDG Information

Shipping Name: Diesel fuel

UN #: UN1202 **Hazard Class:** 3 **Packing Group:** III

* * * Section 15 - REGULATORY INFORMATION * * *

U.S. Federal Regulations

None of this products components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 311/312 (40 CFR 370.21), SARA Section 313 (40 CFR 372.65), CERCLA (40 CFR 302.4), TSCA 12(b), or require an OSHA process safety plan.

SARA Section 311/312 (40 CFR 370 Subparts B and C)

Acute Health: Yes **Chronic Health:** No **Fire:** Yes **Pressure:** No **Reactive:** No

Safety Data Sheet

Material Name: ULSD NO. 2 FUEL OIL

SDS ID: NCR10100

U.S. State Regulations

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
SULFUR	7704-34-9	Yes	Yes	No	Yes	Yes	Yes

Not regulated under California Proposition 65

Canada

Germany Water Classification

SULFUR (7704-34-9)

Number 842, not considered hazardous to water

SULFUR (7704-34-9)

Number 753, hazard class 1 - low hazard to waters

EU Marking and Labelling

Symbols

F Highly flammable

Xn Harmful

Risk Phrases

R11 Highly flammable.

R40 Limited evidence of a carcinogenic effect.

Component Analysis - Inventory

Component	CAS	US	CA	EU	AU	PH	JP	KR	CN	NZ
FUEL OIL NO. 2	68476-30-2	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes
SULFUR	7704-34-9	Yes	DSL	EIN	Yes	Yes	No	Yes	Yes	Yes

*** Section 16 - OTHER INFORMATION ***

Key / Legend

ACGIH - American Conference of Governmental Industrial Hygienists; ADR - European Road Transport; AU - Australia; BOD - Biochemical Oxygen Demand; C - Celsius; CA - Canada; CAS - Chemical Abstracts Service; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CN - China; CPR - Controlled Products Regulations; DFG - Deutsche Forschungsgemeinschaft; DOT - Department of Transportation; DSL - Domestic Substances List; EEC - European Economic Community; EINECS - European Inventory of Existing Commercial Chemical Substances; EPA - Environmental Protection Agency; EU - European Union; F - Fahrenheit; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; ICAO - International Civil Aviation Organization; IDL - Ingredient Disclosure List; IDLH - Immediately Dangerous to Life and Health; IMDG - International Maritime Dangerous Goods; JP - Japan; Kow - Octanol/water partition coefficient; KR - Korea; LEL - Lower Explosive Limit; LOLI - List Of Lists™ - ChemADVISOR's Regulatory Database; MAK - Maximum Concentration Value in the Workplace; MEL - Maximum Exposure Limits; NFPA - National Fire Protection Agency; NIOSH - National Institute for Occupational Safety and Health; NJTSR - New Jersey Trade Secret Registry; NTP - National Toxicology Program; NZ - New Zealand; OSHA - Occupational Safety and Health Administration; PH - Philippines; RCRA - Resource Conservation and Recovery Act; RID - European Rail Transport; RTECS - Registry of Toxic Effects of Chemical Substances®; SARA - Superfund Amendments and Reauthorization Act; STEL - Short-term Exposure Limit; TDG - Transportation of Dangerous Goods; TSCA - Toxic Substances Control Act; TWA - Time Weighted Average; UEL - Upper Explosive Limit; US - United States

Safety Data Sheet

Material Name: ULSD NO. 2 FUEL OIL

SDS ID: NCR10100

Full text of R phrases in Section 3

R36 Irritating to eyes.

R37 Irritating to respiratory system.

R38 Irritating to skin.

R40 Limited evidence of a carcinogenic effect.

Other Information

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. **Disclaimer:** Supplier gives no warranty of merchantability or of fitness for a particular purpose. Any product purchased is sold on the assumption the purchaser will make his own tests to determine the quality and suitability of the product. Supplier expressly disclaims any and all liability for incidental and/or consequential property damage arising out of the use of this product. No information provided shall be deemed to be a recommendation to use any product in conflict with any existing patent rights. THIS MSDS IS TO BE UTILIZED SOLEY AS A REFERENCE DOCUMENT AND IT IS NOT TO BE USED TO SATISFY THE DISTRIBUTION REQUIREMENTS OF OSHA'S HAZARD COMMUNICATION STANDARD (HCS) NOR CANADA'S CONTROLLED PRODUCT REGULATION (CPR). Read the Material Safety Data Sheet before handling product.

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