

MATERIAL SAFETY DATA SHEET

ISSUED: 10/23/97

FUEL OIL

REVISED: 11/01/99

SECTION I - PRODUCT IDENTIFICATION

Westlake CA&O
2468 Industrial Parkway
P O Box 527
Calvert City, KY 42029

Telephone No.: (270)395-4151
Transportation Emergency No.:
CHEMTREC: (800) 424-9300
Medical Emergency No.:
POISON CENTER: (216) 379-8562

Chemical Family: Hydrocarbon Mixture

Chemical Name/Synonyms: Aromatic fuel stream, Ethylene plant fuel oil

Trade Mark: None

Formula: Mixture

C.A.S. Registry No.: Not Applicable

TSCA Inventory Status: All ingredients are listed on the USEPA's TSCA inventory

Canadian Domestic Substances List Status: All ingredients have been nominated or are eligible for inclusion

Workplace Hazardous Materials Information System (WHMIS) Classification: B3, D2B

Product Use: Fuel

SARA 313 Information: This product contains a toxic chemical or chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372.

SECTION II - HAZARDOUS INGREDIENTS

Hazard Summary Statement: CAUTION! Inhalation of the material can cause nose and throat irritation. May cause eye and skin irritation. Overexposure may cause dizziness, headache, nausea, vomiting, drowsiness or unconsciousness. CAUTION! FLAMMABLE LIQUID.

<u>Material</u>	<u>C.A.S. Number</u>	<u>Amount in Product</u>	<u>ACGIH TLV-TWA</u>	<u>OSHA PEL-TWA</u>
Benzene ^{1,2,3,4,5,6}	71-43-2	< 1%	0.5 ppm (Skin) 2.5 ppm (STEL)	1 ppm 5 ppm Short Term Exposure Limit (STEL)

<u>Material</u>	<u>C.A.S. Number</u>	<u>Amount in Product</u>	<u>ACGIH TLV-TWA</u>	<u>OSHA PEL-TWA</u>
Styrene ^{1,2,4,5,6}	100-42-5	5-15%	20 ppm 40 ppm (STEL)	100 ppm
Indane ⁵	496-11-7	< 5%	N.E.	N.E.
Dicyclopentadiene ^{1,2,4,5,6}	77-73-6	< 4%	5 ppm	N.E.
Indene ^{2,4,5,6}	95-13-6	10-15%	10 ppm	N.E.
Naphthalene ^{1,2,4,5,6}	91-20-3	15-20%	10 ppm 15 ppm (STEL)	10 ppm
Biphenyl ^{1,2,4,5,6}	92-52-4	< 3%	0.2 ppm	0.2 ppm
Acenaphthylene ^{2,4,6}	208-96-8	< 3%	N.E.	N.E.
Acenaphthene ^{2,4,5,6}	83-32-9	< 3%	N.E.	N.E.
Fluorene ^{2,4,6}	86-73-7	< 3%	N.E.	N.E.
Anthracene ^{1,2,4,5,6}	120-12-7	< 3%	N.E.	N.E.
Ethyl Benzene ^{1,2,4,5,6}	100-41-4	< 5%	100 ppm 125 ppm (STEL)	100 ppm
Dimethyl Indene ⁵	1321-94-4	< 3%	N.E.	N.E.
Methyl Fluorene	588-59-0	< 3%	N.E.	N.E.
Methyl Indane	28106-30-1	< 3%	N.E.	N.E.
Methyl Indene ^{2,4}	1321-74-0	9-12%	N.E.	N.E.
Methyl Naphthalene ⁵	1321-94-4	5-9%	N.E.	N.E.
Methyl Styrene ^{2,4,5,6}	25013-15-4	< 3%	50 ppm 100 ppm (STEL)	100 ppm
Stilbene	588-59-0	< 3%	N.E.	N.E.

N.A. - Not Applicable

N.E. - Not Established

Benzene is shown as an OSHA cancer suspect agent, an American Conference of Governmental Industrial Hygienists (ACGIH) human carcinogen, and a National Toxicology Program (NTP) and an International Agency for Research on Cancer (IARC) human carcinogen.

Styrene is shown as an International Agency for Research on Cancer (IARC) possible human carcinogen.

Legislative Footnotes

- ¹ Ingredient listed on SARA Section 313 List of Toxic Chemicals.
- ² Ingredient listed on the *Pennsylvania Hazardous Substances List*.
- ³ Ingredient listed on the California listing of *Chemicals Known to the State to Cause Cancer or Reproductive Toxicity*.
- ⁴ Ingredient listed on the *Massachusetts Substance List*.
- ⁵ *Workplace Hazardous Materials Information System* ingredient found on the Ingredient Disclosure List - Canada.
- ⁶ Ingredient listed on the *New Jersey Right to Know Hazardous Substance List*.

Notes:

TLV-TWA - Threshold Limit Value - Time Weighted Average guideline for concentration of the chemical substance in the ambient workplace air. (The skin notation calls attention to the skin as an additional significant route of absorption of the listed chemical.) American Conference of Governmental Industrial Hygienists (ACGIH).

OSHA PEL - OSHA Permissible Exposure Limit, 8-hour TWA. 29 CFR 1910.1000, Transitional Limits column, Table Z-1-A, Table Z-2 and Table Z-3.

SECTION III - PHYSICAL DATA

Appearance: Dark Brown Liquid
Odor: Gasoline-like
Percent Volatiles: N.E.
Solubility in Water: Insoluble
Physical State: Liquid

Specific Gravity: 0.952 @ 24°C (75°F)
Melting Point: N.A.
Reid Vapor Pressure: 0.42 (PSIA) Per D.5191 EPA
Vapor Density: N.E.

SECTION IV - FIRE & EXPLOSION HAZARD DATA

Flash Point: 52°C (126°F) Closed Cup (ASTM D93)

Lower Explosive Limit (LEL): 0.9%

Upper Explosive Limit (UEL): 7.0%

Notes:

Flash Point - The lowest initial temperature of air passing around the specimen at which sufficient combustible gas is evolved to be ignited by a small external pilot flame.

Self-Ignition Temperature - The lowest initial temperature of air passing around the specimen at which, in absence of an ignition source, ignition occurs of itself, as indicated by an explosion, flame or sustained glow.

Extinguishing Media: Class II Combustible Liquid. Use water spray, ABC dry chemical, foam or carbon dioxide. Use water to keep fire-exposed containers cool.

Special Firefighting Procedures: Wear positive pressure self-contained breathing apparatus (SCBA). Personnel not having suitable respiratory protection must leave the area to prevent significant exposure to toxic combustion gases from any source. In enclosed or poorly ventilated areas, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

Unusual Fire and Explosion Hazards: Vapors are heavier than air and may travel along the ground or may be moved by ventilation and ignited by flame, sparks, heaters or other ignition sources at distant locations. Vapors can form flammable mixtures in air. The emptied container may still contain residual vapors or liquid which may ignite or explode. Do not cut, puncture, or weld on or near the container. Keep container away from heat, sparks, and open flame of any sort. Vapors may explode if ignited in an enclosed space.

SECTION V - REACTIVITY

Stability: Stable

Hazardous Polymerization: Will not occur.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide, and small amounts of aromatic and aliphatic hydrocarbons and oxides of sulfur.

Incompatibility (Materials to Avoid): Reacts with halogens, inorganic acids and molten sulfur. Reacts with strong oxidizing agents, such as, hydrogen peroxide, permanganates and perchlorates. Contact can result in intense heat, boiling, flame development, explosion or toxic gas generation depending upon the amount and specific materials involved.

SECTION VI - HEALTH HAZARD DATA

Threshold Limit Value: None Established.

Permissible Exposure Limit: None Established

Primary Routes of Exposure: Inhalation, skin and eye contact.

Effects of Overexposure: Causes eye and skin irritation. Vapors can cause nose and throat irritation, headache, dizziness, nausea, vomiting, and drowsiness or unconsciousness.

Hazardous ingredient specific medical data (if ingredient found in "pure" form):

Benzene is a severe eye and moderate skin irritant. Human systemic effects such as euphoria, somnolence, changes in motor activity, nausea, vomiting, reduced number of blood platelets, other unspecified blood effects, dermatitis and fever. Benzene is a human leukemogen. It is listed as an OSHA carcinogen, an ACGIH human carcinogen and an NTP and IARC human carcinogen. It is mutagenic in a number of short-term assays and has been reported to cause cytogenetic changes in humans. Although reports are mixed, developmental toxicity studies have generally failed to show any significant adverse effects in humans.

Toluene may cause central nervous system depression and is an ocular irritant. Inhalation and subcutaneous injections in high concentrations in rats caused high-frequency hearing loss. Toluene causes CNS narcosis; mild, transient irritation of the upper respiratory tract; hilarity; nausea; nasal discharge; drowsiness; ataxia; dizziness; cerebellar ataxia; cognitive dysfunction; metallic taste; loss of appetite; weakness; and palpitations. High concentrations are associated with CNS encephalopathy, headache, depression, and lassitude. Fetotoxicity appears at levels associated with CNS narcosis and occurs perhaps only in those with chronic

toluene-induced kidney failure. Toluene does not result in the severe bone marrow depression that is characteristic of occupational benzene poisoning.

Styrene may cause central nervous system depression, headaches, fatigue, nausea, and dizziness. Sensory nerve conduction reductions can occur of reduced peripheral nerve conduction velocity and sensory amplitude that slowed reaction time and changes in worker visual ability.

Indane (no known health effects could be identified)

Dicyclopentadiene is a severe skin and moderate eye irritant.

Indene is irritating to the skin, eyes and mucous membranes.

Naphthalene is an ocular irritant, and inhaled naphthalene has precipitated acute hemolysis. Naphthalene-induced blood dyscrasias in human beings are characterized by erythrocytic anisocytosis and poikilocytosis, icterus, anemia, decreased hemoglobin, and reduced hematocrit. Severe naphthalene poisoning in humans results in hemoglobinuria, methemoglobinemia, the production of Heinz bodies, and death in kernicterus. Life threatening acute renal failure secondary to renal blockade can ensue. Naphthalene exposure has caused cataracts in animals and in workers

Biphenyl is a powerful irritant by inhalation. Human systemic effects by inhalation of very small amounts are: flaccid paralysis, nausea or vomiting and other gastrointestinal affects.

Acenaphthylene (no known health effects could be identified).

Acenaphthene (no known health effects could be identified).

Fluorene (no known health effects could be identified).

Ethylbenzene is an irritant to the eyes and skin. Upon inhalation it can cause respiratory irritation, headaches, dizziness, drowsiness, unconsciousness, and other central nervous system effects including death. Ingestion may cause gastrointestinal irritation. Aspiration during swallowing or vomiting may cause lung damage and can be fatal. Prolonged or repeated contact/exposure may cause defatting, drying, and irritation of the skin, dermatitis, CNS effects described above, heart muscle sensitization and arrhythmia, hearing loss, and brain, liver, kidney, and testes damage.

Emergency and First Aid Procedures:

Inhalation: Remove affected individual to fresh air. If breathing has ceased, administer artificial respiration. If breathing is difficult, administer oxygen. Call a physician.

Eye Contact: Immediately flush eyes with lukewarm water for at least 15 minutes while lifting upper and lower eyelids. Continue to flush the eyes if there is any indication of residual chemical. Seek medical attention immediately.

Skin Contact: Remove contaminated clothing. Wash the affected area with soap and water. If irritation occurs, contact a physician. Launder contaminated clothing separately before reuse.

Ingestion: DO NOT INDUCE VOMITING! Aspiration into the lungs may result in chemical pneumonitis. Immediately contact a physician.

SECTION VII - SPILL & LEAK PROCEDURE

Steps to be taken in case material is released or spilled: COMBUSTIBLE VAPORS CAN SPREAD FROM SPILL. Remove all ignition sources. Ventilate the area. Isolate the hazard area. Do not flush chemical into public sewer or water system. Stop leaks. Contain by diking. Blanket large spills with foam to minimize fire hazard and reduce vaporization. Remove as much material as possible. Soak up large spill residue and small spills with inert absorbent. Place into closed, labeled containers and store in a safe outdoor location to await proper disposal. Wash the spill area with soap and water to remove final traces.

Waste disposal method: HAZARDOUS WASTE (EPA Hazardous Waste Number: D001 (Flammable Liquid)). Dispose of in a licensed hazardous waste disposal facility in accordance with all applicable Federal, State & Local health and pollution laws and regulations. (See 40 CFR 261). It is recommended that spill residues, including contaminated soil, be managed as a hazardous waste.

SECTION VIII - SPECIAL PROTECTION INFORMATION

Ventilation: General exhaust ventilation should always be provided to draw fumes and vapors away from workers to prevent routine inhalation. Ventilation should be adequate to maintain the ambient workplace atmosphere below the limits listed in Section II.

Respiratory Protection: Wear a NIOSH/MSHA-approved, organic, cartridge, airline or self-contained respirator whenever exposures exceed the limits listed in Section II. Use in accordance with the manufacturer's use limitations and OSHA Standard 1910.134 (29 CFR).

Eye Protection: Chemical goggles.

Protective Equipment: Wear impervious gloves, boots or shoes, coveralls or other protective clothing as appropriate. Check with glove/clothing manufacturers to determine materials resistant to the chemicals shown in Section II.

Do not smoke or consume food or beverages in the work area. Wash thoroughly after handling the product.

SECTION IX - SPECIAL PRECAUTIONS

Material Handling: Do not breathe vapors. Use under well-ventilated conditions. Utilize good personal hygiene practices, e.g., thoroughly washing after handling the product. Keep product away from heat, sparks and open flames. Avoid skin, eye and clothing contact.

Storage: Keep container closed when not in use. Do not reuse container for any purpose until commercially cleaned. Do not store in open, unlabeled or mislabeled containers. Do not cut, puncture or weld on or near the container.

SECTION X - HAZARD CODES

NFPA (1997)
(National Fire Protection Association)

HMIS
(Hazardous Materials Identification System)

Health: 2
Flammability: 2
Reactivity: 0
Special:

Health: 2
Flammability: 2
Reactivity: 0
Personal Protection: X*

Key:
0 = Insignificant
1 = Slight
2 = Moderate
3 = High
4 = Extreme

*See MSDS for specific protection

USER'S RESPONSIBILITY

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of the user's operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained within

this bulletin should be provided to the user's employees or customers. Westlake CA&O Corporation must rely upon the user to utilize this information to develop appropriate work practice guidelines and employee instructional programs for his or her operation.

DISCLAIMER OF LIABILITY

As the conditions or methods of use are beyond our control, we do not assume any responsibility and expressly disclaim any liability for any use of this material. Information contained herein is believed to be true and accurate but all statements or suggestions are made without warranty, expressed or implied, regarding the accuracy of the information, the hazards connected with the use of the material or the results to be obtained from the use thereof. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user.

SHIPPING INFORMATION

IDENTIFICATION - DOMESTIC TRANSPORTATION

Proper Shipping Name (172.101(c)): PETROLEUM OIL

(Technical Name(s)) 172.203(k): (CONTAINS 18% NAPHTHALENE, 12% STYRENE)

Hazard Class 172.101(d): 3

UN/NA# 172.101(e): NA 1270

Haz. Substance 171.8: BENZENE, NAPHTHALENE, STYRENE, TOLUENE

RQ LBS: BENZENE (10), NAPHTHALENE (100), BIPHENYL (100), STYRENE (1,000),
TOLUENE (1,000), ETHYL BENZENE (1,000)

Inhalation Hazard 173.115(c): N/A

Package Code 172.101(f): PG III

Placarded: FLAMMABLE LIQUID

PACKAGING (Part 173)

◆ Packaging Section (172.101(i)) - Col. 8(A): 173.150 Col. 8(B): 173.203 Col. 8(C): 173.242

◆ General Packaging Section - General 173.24

Hazard Class: **Flammable Liquid**

MARKING

A. Proper Shipping Name - 172.301(a)

(Technical Name) - 172.301(b)

B. UN/NA Number - 172.301(a)

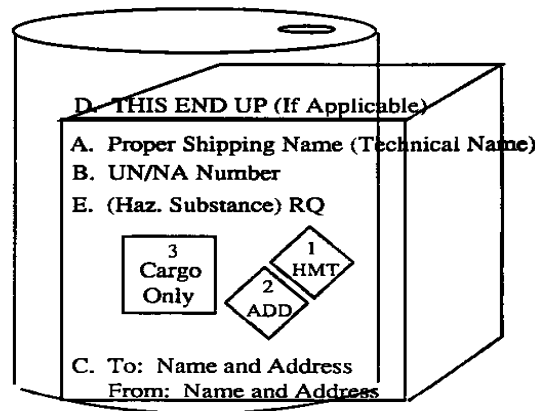
C. Name & Address - 172.301(d)

D. THIS END UP - (172.312(a))

E. Hazardous Substance RQ (Name)
(172.324)

ORM Designation - 172.316(a)

Inhalation Hazard - 172.313(a)



DOMESTIC LABELING

1. HMT LABELS (172.400)

2. Additional Subsidiary Hazard - 172.402(a)

IATA 1997 Edition

Proper Shipping Name (Col. B): FLAMMABLE LIQUIDS, N.O.S. (18% Naphthalene, 12% Styrene)

Class/Division (Col. C): 3

Subsidiary Risk (Col. D): N/A

UN/ID# (Col. A): UN 1993

U.S. Haz. Substance (US 1): SAME AS ABOVE

Other Inhalation Haz. (US 34): N/A

Carrier Special Provision (Col. K): N/A

PACKAGING

◆ Max. Qty. Per Pkg. (Cols. H/J) - Passenger: 60 L

Cargo: 220 L

◆ Packaging Instructions (Cols. G/I) - Passenger: 309

Cargo: 310