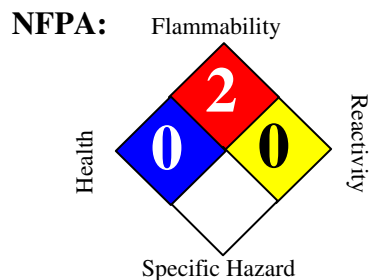


Material Safety Data Sheet

Marine Gas Oil



HMIS III:

HEALTH	1
FLAMMABILITY	2
PHYSICAL	0

0 = Insignificant, 1 = Slight, 2 = Moderate,
3 = High, 4 = Extreme

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name	: Marine Gas Oil		
Synonyms	: MGO, MDO, Marine Diesel oil, DMA, DMB, Marine Diesel Fuel, 888100005492		
MSDS Number	: 888100005492	Version	: 1.10
Product Use Description	: Fuel		
Company	: For: Tesoro Refining & Marketing Co. 19100 Ridgewood Parkway, San Antonio, TX 78259		
Tesoro Call Center	: (877) 783-7676	Chemtrec (Emergency Contact)	: (800) 424-9300

SECTION 2. HAZARDS IDENTIFICATION

Emergency Overview

Regulatory status	: This material is considered hazardous by the Occupational Safety and Health Administration (OSHA) Hazard Communication Standard (29 CFR 1910.1200).
Signal Word	: WARNING
Hazard Summary	: Combustible Liquid
	Toxic

Potential Health Effects

Inhalation	: Vapors or mists from this material can irritate the nose, throat, and lungs, and can cause signs and symptoms of central nervous system depression, depending on the concentration and duration of exposure.
Eyes	: Eye irritation may result from contact with liquid, mists, and/or vapors.
Skin	: Skin irritation leading to dermatitis may occur upon prolonged or repeated contact. Liquid may be absorbed through the skin in toxic amounts if large areas of skin are repeatedly exposed. Long-term, repeated skin contact may cause skin cancer.
Ingestion	: Harmful or fatal if swallowed. Do NOT induce vomiting. This material can irritate the mouth, throat, stomach, and cause nausea, vomiting, diarrhea and restlessness. Aspiration hazard if liquid is inhaled into lungs, particularly from vomiting after ingestion. Aspiration may result in chemical pneumonia, severe lung damage, respiratory failure and even death.

Target Organs : Kidney, Liver, Central nervous system, Eyes, Skin

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No.	Weight %
Fuels, diesel, No 2; Gasoil - unspecified	68476-34-6	100%
Naphthalene	91-20-3	1 - 5%
Xylene	1330-20-7	1 - 5%
Nonane	111-84-2	0.75 - 1%
1,2,4-Trimethylbenzene	95-63-6	0.75 - 1%
Sulfur	7704-34-9	1.5% Maximum-DMA 2.5% Maximum-DMB

SECTION 4. FIRST AID MEASURES

Inhalation : Move to fresh air. Give oxygen. If breathing is irregular or stopped, administer artificial respiration. Seek medical attention immediately.

Skin contact : Take off all contaminated clothing immediately. Wash off immediately with soap and plenty of water. Wash contaminated clothing before re-use. If skin irritation persists, seek medical attention.

Eye contact : Remove contact lenses. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If eye irritation persists, seek medical attention.

Ingestion : Do NOT induce vomiting. Ingestion may result in nausea, vomiting, diarrhea and restlessness. Aspiration may cause pulmonary edema and pneumonitis. Seek medical attention immediately.

Notes to physician : Symptoms: Dizziness, Discomfort, Headache, Nausea, Disorder, Vomiting, Lung edema, Aspiration may cause pulmonary edema and pneumonitis. Liver disorders, Kidney disorders.

SECTION 5. FIRE-FIGHTING MEASURES

Form : Liquid

Flash point : 52°C Minimum for #2 MGO ; 60°C Minimum for DMA and DMB

Lower explosive limit : 0.7 %(V)

Upper explosive limit : 5 %(V)

Suitable extinguishing media : Carbon dioxide (CO2), Water spray, Dry chemical, Foam, Keep containers and surroundings cool with water spray.

Specific hazards during fire fighting : Fire Hazard Do not use a solid water stream as it may scatter and spread fire. Cool closed containers exposed to fire with water spray.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus and protective suit. Use personal protective equipment.

Further information : Exposure to decomposition products may be a hazard to health. Isolate area around container involved in fire. Cool tanks, shells, and containers exposed to fire and excessive heat with water. For massive fires the use of unmanned hose holders or monitor nozzles may be advantageous to further minimize personnel exposure. Major fires may require withdrawal, allowing the tank to burn. Large storage tank fires typically require specially trained personnel and equipment to extinguish the fire, often including the need for properly applied fire fighting foam.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions : Consider wind direction; stay upwind and uphill, if possible. Evacuate nonessential personnel and remove or secure all ignition sources. Evaluate the direction of product travel, diking, sewers, etc. to contain spill areas. Spills may infiltrate subsurface soil and groundwater; professional assistance may be necessary to determine the extent of subsurface impact. Ensure adequate ventilation. Use personal protective equipment.

Environmental precautions : Carefully contain and stop the source of the spill, if safe to do so. Do not flush down sewer or drainage systems, unless system is designed and permitted to handle such material. The use of fire fighting foam may be useful in certain situations to reduce vapors. The proper use of water spray may effectively disperse product vapors or the liquid itself, preventing contact with ignition sources or areas/equipment that require protection. Discharge into the environment must be avoided. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up : Take up with sand or oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal - caution, flammable vapors may accumulate in closed containers. Response and clean-up crews must be properly trained and must utilize proper protective equipment (see Section 8).

SECTION 7. HANDLING AND STORAGE

Handling : Keep away from fire, sparks and heated surfaces. No smoking near areas where material is stored or handled. The product should only be stored and handled in areas with intrinsically safe electrical classification.

Advice on protection against fire and explosion : Hydrocarbon liquids including this product can act as a non-conductive flammable liquid (or static accumulators), and may form ignitable vapor-air mixtures in storage tanks or other containers. Precautions to prevent static-initated fire or explosion during transfer, storage or handling, include but are not limited to these examples:
 (1) Ground and bond containers during product transfers. Grounding and bonding may not be adequate protection to prevent ignition or explosion of hydrocarbon liquids and vapors that are static accumulators.
 (2) Special slow load procedures for "switch loading" must be followed to avoid the static ignition hazard that can exist when higher flash point material (such as fuel oil or diesel) is loaded into tanks previously containing low flash point products (such as gasoline or naphtha).
 (3) Storage tank level floats must be effectively bonded.
 For more information on precautions to prevent static-initated fire or explosion, see NFPA 77, Recommended Practice on Static Electricity (2007), and API Recommended Practice 2003, Protection Against Ignitions Arising Out of Static, Lightning, and Stray Currents (2008).

Dust explosion class : Not applicable

Requirements for storage areas and containers : Keep away from flame, sparks, excessive temperatures and open flame. Use approved containers. Keep containers closed and clearly labeled. Empty or partially full product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose containers to sources of ignition. Store in a well-ventilated area. The storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". The cleaning of tanks previously containing this product should follow API Recommended Practice (RP) 2013 "Cleaning Mobile Tanks In Flammable and Combustible Liquid Service" and API RP 2015 "Cleaning Petroleum Storage Tanks".

Hydrogen sulfide may accumulate in tanks and bulk transport compartments. Consider appropriate respiratory protection (see Section 8). Stand upwind. Avoid vapors when opening hatches and dome covers. Confined spaces should be ventilated and gas tested prior to entry.

Advice on common storage : Keep away from food, drink and animal feed. Incompatible with oxidizing agents. Incompatible with acids.

Other data : No decomposition if stored and applied as directed.

SECTION 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

List	Components	CAS-No.	Type:	Value
OSHA Z1	Naphthalene	91-20-3	PEL	10 ppm 50 mg/m3
	Xylene	1330-20-7	PEL	100 ppm 435 mg/m3
ACGIH	Diesel Fuel	68476-30-2	TWA	100 mg/m3
ACGIH	Naphthalene	91-20-3	TWA	10 ppm
		91-20-3	STEL	15 ppm
	Xylene	1330-20-7	TWA	100 ppm
		1330-20-7	STEL	150 ppm
	Nonane	111-84-2	TWA	200 ppm

Engineering measures : Use only intrinsically safe electrical equipment approved for use in classified areas.

Eye protection : Safety glasses with side-shields reference to 29 CFR 1910.133

Hand protection : Gloves constructed of nitrile, neoprene, or PVC are recommended. Consult manufacturer specifications for further information.

Skin and body protection : If needed to prevent skin contact, chemical protective clothing such as of DuPont TyChem®, Saranex or equivalent recommended based on degree of exposure. The resistance of specific material may vary from product to product as well as with degree of exposure.

- Respiratory protection** : A NIOSH/ MSHA-approved air-purifying respirator with organic vapor cartridges or canister may be permissible under certain circumstances where airborne concentrations are or may be expected to exceed exposure limits or for odor or irritation. Protection provided by air-purifying respirators is limited. Refer to OSHA 29 CFR 1910.134, ANSI Z88.2-1992, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection. NIOSH/MSHA approved positive-pressure self-contained breathing apparatus (SCBA) or Type C positive-pressure supplied air with escape bottle must be used for gas concentrations above occupational exposure limits, for potential of uncontrolled release, if exposure levels are not known, or in an oxygen-deficient atmosphere.
- Work / Hygiene practices** : Emergency eye wash capability should be available in the near proximity to operations presenting a potential splash exposure. Use good personal hygiene practices. Avoid repeated and/or prolonged skin exposure. Wash hands before eating, drinking, smoking, or using toilet facilities. Do not use as a cleaning solvent on the skin. Do not use solvents or harsh abrasive skin cleaners for washing this product from exposed skin areas. Waterless hand cleaners are effective. Promptly remove contaminated clothing and launder before reuse. Use care when laundering to prevent the formation of flammable vapors which could ignite via washer or dryer. Consider the need to discard contaminated leather shoes and gloves.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Form** : Liquid
- Appearance** : Clear, straw colored
- Odor** : Characteristic petroleum (kerosene) odor
- Flash point** : 52°C Minimum for #2 MGO ; 60°C Minimum for DMA and DMB
- Thermal decomposition** : No decomposition if stored and applied as directed.
- Lower explosive limit** : 0.7 %(V)
- Upper explosive limit** : 5 %(V)
- Freezing point** : Not applicable
- Boiling point** : 160 °C(320 °F)
- Vapor Pressure** : 1.33 hPa
at 20 °C (68 °F)
- Relative Vapor Density** : 5.7 (Air = 1.0)
- Water solubility** : Negligible
- Percent Volatiles** : 100 %
- Conductivity (conductivity can be reduced by environmental factors such as a decrease in temperature)** : Hydrocarbon liquids without static dissipater additive may have conductivity below 1 picoSiemens per meter (pS/m). The highest electro-static ignition risks are associated with "ultra-low conductivities" below 5 pS/m. See Section 7 for sources of information on defining safe loading and handling procedures for low conductivity products.

SECTION 10. STABILITY AND REACTIVITY

- Conditions to avoid** : Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources. Keep away from strong oxidizers. Viton ® ; Fluorel ®
- Materials to avoid** : Strong oxidizing agents Peroxides
- Hazardous decomposition products** : Carbon monoxide, carbon dioxide and noncombusted hydrocarbons (smoke). Diesel exhaust particulates may be a lung hazard - see Section 11.
- Thermal decomposition** : No decomposition if stored and applied as directed. No decomposition if used as directed.
- Hazardous reactions** : Keep away from oxidizing agents, and acidic or alkaline products.

SECTION 11. TOXICOLOGICAL INFORMATION

Carcinogenicity

- NTP** : Naphthalene (CAS-No.: 91-20-3)
- IARC** : Naphthalene (CAS-No.: 91-20-3)
- OSHA** : No component of this product which is present at levels greater than or equal to 0.1 % is identified as a carcinogen or potential carcinogen by OSHA.
- CA Prop 65** : WARNING! This product contains a chemical known to the State of California to cause cancer.
Naphthalene (CAS-No.: 91-20-3)
- Skin irritation** : Irritating to skin.
- Eye irritation** : Irritating to eyes.
- Further information** : Studies have shown that similar products produce skin cancer or skin tumors in laboratory animals following repeated applications without washing or removal. The significance of this finding to human exposure has not been determined. Other studies with active skin carcinogens have shown that washing the animal's skin with soap and water between applications reduced tumor formation. Positive mutagenicity results have been reported. Repeated over-exposure may cause liver and kidney injury
IARC classifies whole diesel fuel exhaust particulates as probably carcinogenic to humans (Group 2A). NIOSH regards whole diesel fuel exhaust particulates as a potential cause of occupational lung cancer based on animal studies and limited evidence in humans.

Component:

- | | | |
|--|------------|---|
| Fuels, diesel, No 2; Gasoil - unspecified | 68476-34-6 | <p><u>Acute oral toxicity:</u> LD50 rat
Dose: 5,001 mg/kg</p> <p><u>Acute dermal toxicity:</u> LD50 rabbit
Dose: 2,001 mg/kg</p> <p><u>Acute inhalation toxicity:</u> LC50 rat
Dose: 7.64 mg/l
Exposure time: 4 h</p> <p><u>Skin irritation:</u> Classification: Irritating to skin.
Result: Severe skin irritation</p> <p><u>Eye irritation:</u> Classification: Irritating to eyes.
Result: Mild eye irritation</p> |
| Naphthalene | 91-20-3 | <u>Acute oral toxicity:</u> LD50 rat |

Dose: 2,001 mg/kg

Acute dermal toxicity: LD50 rat
Dose: 2,501 mg/kg

Acute inhalation toxicity: LC50 rat
Dose: 101 mg/l
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Mild skin irritation

Eye irritation: Classification: Irritating to eyes.
Result: Mild eye irritation

Carcinogenicity: N11.00422130

Xylene 1330-20-7

Acute oral toxicity: LD50 rat
Dose: 2,840 mg/kg

Acute dermal toxicity: LD50 rabbit
Dose: ca. 4,500 mg/kg

Acute inhalation toxicity: LC50 rat
Dose: 6,350 mg/l
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Mild skin irritation

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation: Classification: Irritating to eyes.
Result: Mild eye irritation

Nonane 111-84-2

Acute oral toxicity: LD50 mouse
Dose: 218 mg/kg

Acute inhalation toxicity: LC50 rat
Exposure time: 4 h

1,2,4-Trimethylbenzene 95-63-6

Acute inhalation toxicity: LC50 rat
Dose: 18 mg/l
Exposure time: 4 h

Skin irritation: Classification: Irritating to skin.
Result: Skin irritation

Eye irritation: Classification: Irritating to eyes.
Result: Eye irritation

Sulfur 7704-34-9

Acute oral toxicity: LD50 rat
Dose: 5,001 mg/kg

Acute dermal toxicity: LD50 rabbit
Dose: 2,001 mg/kg

Acute inhalation toxicity: LC50 rat
Dose: 9.24 mg/l
Exposure time: 4 h

Eye irritation: Classification: Irritating to eyes.
Result: Mild eye irritation

SECTION 12. ECOLOGICAL INFORMATION

Biochemical Oxygen Demand (BOD) : No data available

Chemical Oxygen Demand (COD) : No data available

Adsorbed organic bound halogens (AOX) : Not included

Additional ecological information : Keep out of sewers, drainage areas, and waterways. Report spills and releases, as applicable, under Federal and State regulations.

Component:

Naphthalene 91-20-3 Toxicity to algae:
 EC50
 Species:
 Dose: 33 mg/l
 Exposure time: 24 h

1,2,4-Trimethylbenzene 95-63-6 Toxicity to fish:
 LC50
 Species: Pimephales promelas (fathead minnow)
 Dose: 7.72 mg/l
 Exposure time: 96 h

Acute and prolonged toxicity for aquatic invertebrates:
 EC50
 Species: Daphnia
 Dose: 3.6 mg/l
 Exposure time: 48 h

Sulfur 7704-34-9 Acute and prolonged toxicity for aquatic invertebrates:
 EC0
 Species: Daphnia magna (Water flea)
 Dose: > 10,000 mg/l
 Exposure time: 24 h

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal : Consult federal, state and local waste regulations to determine appropriate waste characterization of material and allowable disposal methods.

SECTION 14. TRANSPORT INFORMATION

CFR

Proper shipping name : DIESEL FUEL
 UN-No. : 1202
 Class : 3
 Packing group : III

TDG

Proper shipping name : DIESEL FUEL
 UN-No. : UN1202
 Class : 3
 Packing group : III

IATA Cargo Transport

UN UN-No. : UN1202
 Description of the goods : DIESEL FUEL
 Class : 3
 Packaging group : III

ICAO-Labels : 3
 Packing instruction (cargo aircraft) : 366
 Packing instruction (cargo aircraft) : Y344

IATA Passenger Transport

UN UN-No. : UN1202
 Description of the goods : DIESEL FUEL
 Class : 3
 Packaging group : III
 ICAO-Labels : 3
 Packing instruction (passenger aircraft) : 309
 Packing instruction (passenger aircraft) : Y309

IMDG-Code

UN-No. : UN 1202
 Description of the goods : DIESEL FUEL
 Class : 3
 Packaging group : III
 IMDG-Labels : 3
 EmS Number : F-E S-E
 Marine pollutant : No

SECTION 15. REGULATORY INFORMATION

OSHA Hazards : Combustible Liquid
 Toxic by ingestion
 Severe skin irritant
 Moderate eye irritant
 Possible Cancer Hazard

TSCA Status : On TSCA Inventory

DSL Status : All components of this product are on the Canadian DSL list.

SARA 311/312 Hazards : Fire Hazard
 Acute Health Hazard
 Chronic Health Hazard

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIROMENT)

The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts crude oil. Fractions of crude oil, and products (both finished and intermediate) from the crude oil refining process and any indigenous components of such from the CERCLA Section 103 reporting requirements. However, other federal reporting requirements, including SARA Section 304, as well as the Clean Water Act may still apply.

SARA III US. EPA Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65) - Supplier Notification Required

<u>Components</u>	<u>CAS-No.</u>
Naphthalene	91-20-3

Xylene 1330-20-7

1,2,4-trimethylbenzene 95-63-6

PENN RTK US. Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Components CAS-No.

Sulfur 7704-34-9

1,2,4-trimethylbenzene 95-63-6

Nonane 111-84-2

Xylene 1330-20-7

Naphthalene 91-20-3

Fuels, diesel, No 2; Gasoil - unspecified 68476-34-6

MASS RTK US. Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Components CAS-No.

Sulfur 7704-34-9

1,2,4-Trimethylbenzene 95-63-6

Nonane 111-84-2

Xylene 1330-20-7

Naphthalene 91-20-3

NJ RTK US. New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Components CAS-No.

Sulfur 7704-34-9

1,2,4-Trimethylbenzene 95-63-6

Nonane 111-84-2

Xylene 1330-20-7

Naphthalene 91-20-3

Fuels, diesel, No 2; Gasoil - unspecified 68476-34-6

California Prop. 65 : WARNING! This product contains a chemical known to the State of California to cause cancer.

Naphthalene 91-20-3

SECTION 16. OTHER INFORMATION

Further information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in

combination with any other materials or in any process, unless specified in the text.

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116, 117, 118, 1000, 1001, 1231, 1260, 1320, 1321, 1323, 1466