



MATERIAL SAFETY DATA SHEET

Product Name:
Marine Gas Oil (MGO)
3095

SECTION 1 – PRODUCT IDENTIFICATION AND USE

Product name	Marine Gas Oil	PIN #	UN 1202
Chemical name	None	TDG, DOT class	Class 3
Common names and synonyms	Number 2 burner oil.	Packing group	III
		Shipping name	Diesel fuel; Fuel Oil; Gas Oil Or Heating oil light.
Product use	Fuel		
WHMIS classification	Combustible liquid Class B Division 3 Very toxic Class D Division 1 Subdivision A		
Hazard codes	NFPA Health 4 Flammability 2 Reactivity 0	HMIS Health 4 Flammability 2 Reactivity 0	
	<i>NFPA & HMIS Ratings: 0=Insignificant/No Hazard. 1=Slight Hazard. 2=Moderate Hazard. 3=High/Serious Hazard. 4=Extreme/Severe Hazard.</i>		
Supplier	Irving Oil Limited, Refining Division Box 1260, Saint John New Brunswick Canada E2L 4H6	Phone Emergency (Chemtrec) Refinery	(506) 202-2000 1-800-424-9300 (506) 202-3000

SECTION 2 – HAZARDOUS INGREDIENTS

Ingredients	CAS#	Wt (%)	ACGIH-TLVs (2004)	OSHA PELs (2004) (general industry)	NIOSH RELs (2004)	LD ₅₀ (rat, oral)	LC ₅₀ (rat, 4 hours)
API No. 2 fuel oil	68476-30-2	100	100 mg/m ³ TWA (vapour &	NAv for this product name or CAS#		>5 g/kg	~5g/m ³
<i>May contain:</i> Benzene	71-43-2	Trace	0.5 ppm TWA 2.5 ppm STEL	1 ppm TWA 5 ppm STEL	0.1 ppm TWA 1.0 ppm STEL	930 mg/kg	3,200 ppm
Polycyclic aromatic hydrocarbons (PAHs) <i>which may include:</i> Naphthalene	Various 91-20-3	Up to 10 Trace	Various 10 ppm TWA 15 ppm STEL	Various 10 ppm TWA	Various 10 ppm TWA 15 ppm STEL	Various 490 mg/kg	Various >170 mg/m ³
<i>May also contain:</i> Sulphur	7704-34-9	0.05-0.50	NAv	NAv	NAv	>8.4 mg/kg	NAv
<i>Which may result in the evolution of:</i> Hydrogen sulphide (H ₂ S)	7783-04-6	NAP	10 ppm TWA 15 ppm STEL	20 ppm CEILING	10 ppm CEILING	NAP	444 ppm

Marine gas oil is a complex mixture of hydrocarbons. Its exact composition depends on the source of the crude oil from which it was produced and the refining methods used. Marine gas oil contains hundreds of individual organic chemicals. This section identifies only some of the well-known chemical constituents.

SECTION 3 – PHYSICAL DATA

Form	Slightly viscous, oily, liquid	Specific gravity	0.83 to 0.879 @ 20°C
Colour	Yellowish-brown	Vapour density	NAv
Odour	H ₂ S smells like rotten eggs Note: H ₂ S deadens the sense of smell. Absence of rotten egg smell does <u>not</u> mean absence of H ₂ S.	Vapour pressure	2.12 to 26.4 mm Hg @ 21°C
Odour threshold	<0.15 ppm for H ₂ S	Evaporation rate	NAv
Coefficient of water/oil distribution	3.3 to 7.06 (Log K _{ow})	Boiling point	184 to 339°C (362 to 643°F)
		Freezing point	NAv
		pH	NAP

SECTION 4 – FIRE AND EXPLOSION HAZARDS

Flammability	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Conditions	Easily ignited by heat, sparks or flames.
Flash point	38 to 54°C (100 to 130°F) (cc)	Auto ignition temperature	257°C (494°F)
Lower flammable limit	0.6 to 1.3%	Upper flammable limit	6 to 7.5%
Explosion data: Sensitivity to:	Mechanical impact	Not expected to be sensitive	Static discharge Vapour: yes
Means of extinction	In general, do not extinguish fire unless flow can be stopped. Use carbon dioxide, dry chemical, or foam. Cool containers with flooding quantities of water until well after the fire is out.		
Special precautions	Vapour is heavier than air. It will spread along the ground & collect in low or confined areas (sewers, basements). Also travels to source of ignition and flash back. Containers may explode when heated.		
Hazardous combustion products	H ₂ S and sulphur dioxide (SO ₂). Carbon monoxide. Nitrogen oxides. PAHs and other aromatic hydrocarbons.		

The information contained in this form is based on data from sources considered to be reliable but Irving Oil Limited does not guarantee the accuracy or completeness thereof. The information is provided as a service to the persons purchasing or using the material to which it refers and Irving Oil Limited expressly disclaims all liability for loss or damage including consequential loss or for injury to persons including death. The information shall not be reproduced, published or distributed in any manner without prior consent in writing of Irving Oil Limited



MATERIAL SAFETY DATA SHEET

Product Name:
Marine Gas Oil (MGO)
3095

SECTION 5 – REACTIVITY INFORMATION

Stability	Stable
Conditions to avoid	Sources of ignition. Static discharges. High temperatures.
Incompatible substances	Oxidizers such as peroxides, nitric acid, and perchlorates.
Hazardous decomposition products	H ₂ S. SO ₂ . Carbon monoxide, nitrogen oxides, and numerous aromatic hydrocarbons.

SECTION 6 – HEALTH HAZARD INFORMATION

Route of Entry	<input type="checkbox"/> Eye	Hazardous Contact	<input checked="" type="checkbox"/> Eye
	<input checked="" type="checkbox"/> Skin absorption Gas oil itself, as well as benzene & naphthalene		<input checked="" type="checkbox"/> Skin contact
	<input checked="" type="checkbox"/> Inhalation		
	<input checked="" type="checkbox"/> Ingestion		

Acute exposure Coughing, headache, and giddiness following inhalation. Aspiration into the lungs can cause severe pneumonitis (serious lung irritation), with coughing, gagging, shortness of breath, chest pain, and/or pulmonary edema (swelling). Ingestion may produce nausea, vomiting, and cramping. Kidney effects and systemic edema have been reported after severe exposure. H₂S is very toxic. At concentrations as low as 1 to 5 ppm, nausea and severe eye irritation may occur. Sense of smell may be impaired at about 20 ppm, with headache and respiratory tract lung irritation. At 250 to 500 ppm, potentially fatal pulmonary edema (fluid in the lungs) may occur. Dizziness, sudden (often fatal) collapse, unconsciousness, and death occur at higher concentrations. Note: Pulmonary edema may be delayed as long as 48 hours after exposure.

Chronic exposure Kidney, gastrointestinal, blood, and skin disorders. Headache, nausea, vomiting. Fatigue, and severe nervous and respiratory system symptoms may follow survival of H₂S poisoning.

Carcinogenicity	Benzene and certain PAHs are known to be carcinogenic. Exposure to fuel oils during refining is considered "probably carcinogenic to humans". IARC and NTP classify untreated and mildly treated mineral oils as known human carcinogens. ACGIH, EPA, NIOSH, and OSHA have not classified them.	Mutagenicity	Not known to be mutagenic
		Sensitization	No
		Irritancy	Skin and respiratory tract
		Teratogenicity	Not available
		Reproductive toxicity	Not available

Toxicologically synergistic products Other CNS depressants can be expected to produce additive or synergistic effects.

SECTION 7 – FIRST AID

Inhalation	Move victim to fresh air Give artificial respiration if breathing has stopped and if a qualified AR administrator is available. Apply CPR if both pulse and breathing have stopped. Obtain medical attention immediately.
Ingestion	Never give anything by mouth if the person is unconscious, rapidly losing consciousness, or convulsing. If the person is conscious, have them drink 8 to 10 ounces of water or milk to dilute the material in the stomach. Do not induce vomiting. If vomiting occurs spontaneously, have the person lean forward to avoid aspiration. Obtain medical attention immediately.
Eye	If irritation occurs, flush eye with lukewarm, gently flowing fresh water for at least 10 minutes.
Skin	Quickly and gently blot away excess chemical. Gently remove contaminated clothing and shoes under running water. Wash gently and thoroughly with water and non-abrasive soap. Obtain medical assistance.

SECTION 8 – PRECAUTIONARY MEASURES

Do not attempt rescue of an H₂S knockdown victim without the use of proper respiratory protective equipment.

Personal protective equipment	Gloves Nitrile, Viton™, Polyvinylchloride, Tychem®BR/LV, or Tychem®TK preferred.
	Eye Chemical safety goggle or face shield, as a good general safety practice.
	Respirator NIOSH-approved SCBA or air line respirator with escape cylinder.
	Clothing & footwear Coveralls to prevent skin contact with product. If clothing or footwear becomes contaminated with product, completely decontaminate it before re-use, or discard it.
Engineering controls	Enclose processes. Use local exhaust ventilation to remove vapour at its site of generation. Handle laboratory samples in a fume hood. Use mechanical ventilation in confined spaces.
Handling procedures & equipment	Avoid heating open containers of product so as to minimize vapour production and accumulation. Use non-sparking equipment, explosion-proof ventilation, and intrinsically safe electrical equipment. Ground handling equipment. Have clean emergency eyewash and shower readily available in the work area.
Leak & spill Procedure	Keep unauthorized persons away Eliminate all sources of ignition. Ventilate area. Stop leak if it can be done safely. Prevent entry into sewers, waterways, or confined spaces. Absorb or cover with dry earth, sand or other non-combustible material and use clean, non-sparking tools to transfer to container.
Waste disposal	Consult local authorities for advice.
Storage	May be stored at ambient temperatures. Containers should be vented and equipped with a flame arrester.
Shipping	Stable during transport. May be transported hot.

The information contained in this form is based on data from sources considered to be reliable but Irving Oil Limited does not guarantee the accuracy or completeness thereof. The information is provided as a service to the persons purchasing or using the material to which it refers and Irving Oil Limited expressly disclaims all liability for loss or damage including consequential loss or for injury to persons including death. The information shall not be reproduced, published or distributed in any manner without prior consent in writing of Irving Oil Limited



MATERIAL SAFETY DATA SHEET

Product Name:
Marine Gas Oil (MGO)
3095

SECTION 9 – PREPARATION DATE OF MSDS

Prepared by	Irving Oil Limited, Refining Division	Phone	(506) 202-3000
Revision date	July 28, 2005 TDG updated Mar 11, 2008	To re-order MSDS, phone	(506) 202-2000

The information contained in this form is based on data from sources considered to be reliable but Irving Oil Limited does not guarantee the accuracy or completeness thereof. The information is provided as a service to the persons purchasing or using the material to which it refers and Irving Oil Limited expressly disclaims all liability for loss or damage including consequential loss or for injury to persons including death. The information shall not be reproduced, published or distributed in any manner without prior consent in writing of Irving Oil Limited