

	MSDS (Material Safety Data Sheet)	Product Name	MGO (Marine Gas Oil)
		Revision Date	Aug 7 2019
		Revision Number	2

0. CONTACT DETAILS

- A. Company Name: Roins Co., Ltd.
B. Company Address: Rm 1111, 90, Centum jungang-ro, Haeundae-gu, Busan, Republic of Korea

1. IDENTIFICATION

- A. Product name: Marine Gas Oil
B. Recommended use and/or restriction: Vessel operations complying with on-board compatibilities

2. HAZARD IDENTIFICATION

- A. Classification: Flammable liquids: 4
Skin corrosion / irritation: 2
Specific target organ toxicity (single exposure): 3
Aspiration hazard: 1

B. Label element, including precautionary statements:

Symbols:



Signal word(s): Danger, Warning

Hazard statement(s):

- H227: Combustible liquid
- H304: May be fatal if swallowed and enters airways
- H315: Causes skin irritation
- H335: May cause respiratory irritation: or May cause drowsiness and dizziness

Precautionary statement(s):

○ Prevention

- P210: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
- P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
- P264: Wash...thoroughly after handling.
- P271: Use only outdoors or in a well-ventilated area.
- P280: Wear protective gloves/protective clothing/eye protection/face protection

○ Response

- P301+P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
- P302+P352: IF ON SKIN: Wash with plenty of soap and water.
- P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P312: Call a POISON CENTER or doctor/physician if you feel unwell.
- P321: Specific treatment (see... on this label).
- P331: Do not include vomiting.

- P332+P313: If skin irritation occurs: Get medical advice/attention.
- P362: Take off contaminated clothing and wash before reuse.
- P370+P378: In case of fire: Use...for extinction.

○ Storage

- P403+P233: Store in a well-ventilated place. Keep container tightly closed.
- P403+P235: Store in a well-ventilated place. Keep cool.
- P405: Store locked up.

○ Disposal

- P501: Dispose of contents/container to (in accordance with local/regional/national/international regulation).

C. Other hazards which do not result in classification:

- ▣ NFPA Code: Health 3, Flammability 2, Reactivity 0

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Identity	Common Name	CAS number	Percentages (%)
MGO (Marine Gas Oil)	Diesel fuels	68334-30-5	> 98.5
Sulfur	Sulfur	7704-34-9	< 1.5

4. FIRST AID MEASURES

A. Eye contact:

- Flush with clean low-pressure water for at least 20 minutes.
- If irritation persists, obtain medical attention.

B. Skin contact:

- Remove contaminated clothing.
- Wash affected area thoroughly with soap and water.
- If irritation persists, seek medical attention.
- Wash clothing thoroughly before reuse, but discard contaminated leather goods.
- Hot liquid may cause burns flush with cool low-pressure water and get medical treatment.

C. Inhalation:

- Immediately remove from contaminated area to fresh air.
- For respiratory distress, give oxygen or administer cpr (cardiopulmonary resuscitation), if necessary.
- Obtain prompt medical attention.

D. Ingestion:

- If swallowed, do not induce vomiting: transport to nearest medical facility for additional treatment.
- If vomiting occurs spontaneously, keep head below hips to prevent aspiration.

E. Most important symptoms/effect, acute and delayed:

- May cause slight skin irritation

F. Indication of immediate medical attention and special treatment needed, if necessary:

- Treat symptomatically. Treatment of overexposure should be directed at the control of symptoms and the clinical condition of the patient.

5. FIRE-FIGHTING MEASURES

A. Suitable extinguishing media:

- Dry chemical, halon, and carbon dioxide.
- Foam and water fog are effective, but may cause frothing.

B. Specific hazards arising from the chemical:

- CO, Smoke, Toxic Fume

C. Special protective equipment and precautions for firefighters:

- For fires involving this material, do not enter any enclosed fire space without proper protective equipment, including self-contained breathing apparatus.
- Cool tanks and containers exposed to fire with water.
- Improper use of water and extinguishing media containing water may cause frothing which can spread

the fire

over a larger area.

6. ACCIDENTAL RELEASE MEASURES

A. Personal precautions, protective equipment and emergency procedures:

- Avoid contact skin or inhalation. Immediately remove all contaminated clothing.
- Avoid heat, flame, spark, and other ignition sources.
- If there are methods to stop release safely, do so.

B. Environmental precautions:

- The spilled material and any water or soil which it has contacted may be hazardous to animal/aquatic life.

C. Methods and materials for containment and cleaning up:

- Eliminate all ignition sources (no smoking, flares, sparks or flames in immediate area).
- Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely.
- Remove contaminated soil and dispose of safely.

7. HANDLING AND STORAGE

A. Precautions for safe handling:

- Parts and equipment using or containing this material must be steam-cleaned prior to all maintenance procedures.
- All material sampling should be conducted in a manner which avoids vapor inhalation or skin contact. Special care and labeling must be provided during transportation/handling of laboratory samples.
- Use good personal hygiene practices.
- Wash hands with plenty of soap and water before eating, drinking, smoking or use of toilet facilities.
- Do not use solvents (gasoline, kerosene, etc.) or abrasive skin cleaners.
- Oil-soaked clothing must be promptly removed and laundered before reuse. Discard contaminated leather goods.

B. Conditions for safe storage, including incompatibilities:

- Keep container closed. Handle containers with care. Open slowly in order to control possible pressure release.
- Store in a cool, well-ventilated area. Storage containers should be grounded and bonded. Drums must be grounded and bonded and equipped with self-closing valves, pressure vacuum bungs and flame arresters.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

A. Exposure limits in the air of the workplace, biological limit values:

- ▣ Diesel fuel
- ACGIH TWA: 100mg/m³

B. Appropriate engineering controls:

- Adequate ventilation should be provided so that exposure limits are not exceeded. Use explosion-proof ventilation equipment.

C. Individual protection measures:

■ Respiratory protection:

- If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements, if applicable. Types of respirators to be considered for this material include: Half-face filter respirator.

■ Eye Protection:

- Eye protection such as chemical splash goggles and/or face shield must be worn when possibility exists for eye contact due to splashing or spraying liquid, airborne particles, or vapor.

■ Hand protection:

- Wear chemical resistant gloves such as: Butyl rubber.

■ Body protection:

- Any specific clothing information provided is based on published literature or manufacturer data. The types of clothing to be considered for this material include:
 - If prolonged or repeated contact is likely, chemical, and oil resistant clothing is recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

A. Appearance (physical state, color, etc.):	Clear liquid
B. Odour:	Strong hydrocarbon
C. Odour threshold:	No data available
D. pH:	No data available
E. Melting point/freezing point:	No data available
F. Initial boiling point and boiling range:	150~380°C
G. Flash point:	More than 61°C
H. Evaporation rate:	No data available
I. Flammability (solid, gas):	Not applicable
J. Upper/lower flammability or explosive limits:	No data available
K. Vapour pressure:	No data available
L. Solubility(ies):	0.1 wt% of water
M. Vapour density:	Data not available
N. Specific gravity:	<0.89
O. Partition coefficient: n-octanol/water:	No data available
P. Auto-ignition temperature:	No data available
Q. Decomposition temperature:	No data available
R. Viscosity:	1.5~6.0 cst at 40°C

10. STABILITY AND REACTIVITY

A. Chemical stability:	Material is stable under normal conditions.
B. Possibility of hazardous reactivity:	No data available
C. Conditions to avoid:	Heat, sparks, open flame, other ignition sources and oxidizing conditions.
D. Incompatible materials:	Strong acids, alkalies, and strong oxidizers.

E. Hazardous decomposition products: Burning or excessive heating may produce carbon monoxide and other harmful gases and vapors including oxides and/or other compounds of sulfur and nitrogen.

11. TOXICOLOGICAL INFORMATION

A. Information on the likely routes of exposures:

- Inhalation exposure: May cause irritation, headache, dizziness, sleepiness
- Ingestion exposure: May cause nausea, vomiting, diarrhea, and restlessness
- Skin exposure: May cause skin irritation
- Eye exposure: May cause slight eye irritation

B. Delayed and immediate effects and also chronic effects from short and long term exposure:

- Acute toxicity: <Diesel fuel – 1UCLID data>
 - Oral: LD50(rat) > 5000mg/kg
 - Skin: LD50(rabbit): >2000mg/kg
 - Inhalation: LC50(rat): 4.6mg/L/4h, 7.64mg/L/4h
- Skin corrosion/irritation: May cause skin irritation
- Serious eye damage/irritation: May cause slight eye irritation
- Respiratory sensitization: No data available
- Skin sensitization: No data available
- Carcinogenicity:
 - ACGIH Group 3 – Confirmed animal carcinogen with unknown relevance to humans.
 - IARC Group 3 – Classification not possible from current data.
 - Diesel engine exhaust has been associated with cancer. IARC Group 2A-Probably carcinogenic to human.
- Germ cell mutagenicity: Not considered a mutagenic hazard.
- Reproductive toxicity: Not applicable
- Specific target organ systemic toxicity-single exposure: Inhalation of vapours or mists may cause irritation to the respiratory system.
- Specific target organ systemic toxicity-repeated exposure: No data available
- Aspiration hazard: Swallowing the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis.

C. Numerical measures of toxicity (such as acute toxicity estimate): Not applicable

12. ECOLOGICAL INFORMATION

- A. Aquatic, terrestrial organisms toxicity: No data available
- B. Persistence and degradability: No data available
- C. Bioaccumulative potential: No data available
- D. Mobility in soil: No data available
- E. Other adverse effects: No data available

13. DISPOSAL CONSIDERATIONS

A. Disposal methods:

Use only licensed transporters and permitted facilities for waste disposal.

B. Disposal considerations (Specify disposal container and methods):

Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

- A. UN Number: This material is not classified as dangerous under IMDG regulations.
- B. UN Proper Shipping Name: No data available
- C. Transport hazard class(es): No data available
- D. Packing group, if applicable: No data available
- E. Environmental hazards: No data available
- F. Special precautions for user related to transport or transportation measures
- Local transport follows in accordance with Dangerous goods Safety Management Law.
 - Package and transport follow in accordance with Department of Transportation (DOT) and other regulatory agency requirements.
 - EmS FIRE SCHEDULE: Not available
 - EmS SPILLAGE SCHEDULE: Not available
 - Air transport (IATA): Not subject to IATA regulations.

15. REGULATORY INFORMATION

- A. Safety, health and environmental regulations specific for the product in question:

<US Department of Transportation Classification (49CFR)>

Identification Number:	NA 1993	Proper shipping name:	Fuel Oil
Class/Division:	Combustible liquid	Packing group:	III
Contains:	OIL		

<EU Classification and Labeling Information>

Risk Phrases

- R40: Limited evidence of a carcinogenic effect

Safety Phrases

- S2: Keep out of the reach of children
- S36/S37: Wear suitable protective clothing and gloves

16. OTHER INFORMATION

- A. References and sources for data:

- 1) Globally Harmonized System of classification and labeling of chemicals (GHS). First revised edition, United Nations
- 2) United States National Library of Medicine
- 3) EINECS (European Inventory of Existing Commercial chemical Substances)
- 4) IARC (International Agency for Research on Cancer)
- 5) NIOSH (The National Institute for Occupational Safety and Health)
- 6) ACGIH (American Conference of Governmental Industrial Hygienists)
- 7) IUCLID Data
- 8) ICSC (International Chemical Safety Cards) - ILO
- 9) Transport of Dangerous Goods - UN
- 10) Korea Occupational Safety & Health Agency