INGESTION:
May be irritating to mouth, throat, and stomach. Symptoms may include pain, nausea, vomiting, and diarrhea.

LONG TERM TOXIC EFFECTS:
Suspect cancer hazard. Contains a component(s) that may cause cancer. Risk of cancer depends on duration and level of exposure.
Toxic gas hazard.
See section 11 for additional information.

4. FIRST AID

SKIN CONTACT:
Wash skin thoroughly with plenty of water, using soap if available. Remove contaminated clothing. In case of burns through contact with hot product, cool with plenty of running water. Get medical attention.

EYE CONTACT:
Rinse immediately with plenty of water until irritation subsides, or at least 15 min. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Splashes of hot product should be immediately flushed with clean water until irritation subsides. Get immediate medical attention.

INHALATION:
In emergency situations use proper respiratory protection to immediately remove the affected victim from exposure. If not breathing, ensure clear airway. Remove to fresh air. Administer artificial respiration if breathing has stopped. If breathing is difficult, qualified medical personnel may administer oxygen. Keep at rest. Call for prompt medical attention.

INGESTION:
If swallowed, DO NOT induce vomiting. Aspiration of the material can cause serious lung injury such as chemical pneumonitis. Call a doctor immediately. If spontaneous vomiting occurs, keep head below hips to prevent aspiration and monitor for breathing difficulty. Never give anything by mouth to an unconscious person.

ADVICE TO DOCTOR:
This product may present an aspiration hazard. See related comments in this MSDS. If spontaneous vomiting has occurred after ingestion, the patient should be monitored for difficult breathing, as adverse effects of aspiration into the lungs may be delayed up to 48 hours. The use of nitrites in H2S poisoning is recommended as part of the treatment regimen, although the efficacy has not been unequivocally demonstrated. Hyperbaric oxygen therapy (as used in cyanide poisoning with some success) may also benefit if other measures are ineffective.

5. FIRE-FIGHTING MEASURES

APPROPRIATE EXTINGUISHING MEDIA:
Use water fog, foam, dry chemical or carbon dioxide (CO2) to extinguish flames.

INAPPROPRIATE EXTINGUISHING MEDIA:
Straight Streams of Water

FIRE EXTINGUISHING AGENTS:
Combustible material, low hazard. The product can form flammable mixtures or can burn only on heating above the flash point. However, in a small percentage of residual fuels, light hydrocarbon components can generate flammable headspace gases not detectable by the flash point test.
If leak or spill has not ignited, ventilate area and use water spray to disperse gas or vapor and to protect personnel attempting to stop leak. Use water to flush spills away from sources of ignition.

**SPECIAL FIRE-FIGHTING PROCEDURES:**

- Water fog or spray, to cool fire-exposed surfaces (e.g. containers) and to protect personnel, should only be used by personnel trained in fire fighting. Cut off "fuel"; depending on circumstances, either allow the fire to burn out under controlled conditions or use foam or dry chemical powder to extinguish the fire.
- Respiratory and eye protection required for fire fighting personnel exposed to fumes or smoke.

**HAZARDOUS COMBUSTION PRODUCTS:**

- Smoke, sulphur oxides, and carbon monoxide in the event of incomplete combustion.
- Possible release of hydrogen sulphide during heating or hot storage.

### 6. ACCIDENTAL RELEASE MEASURES

#### PERSONAL PRECAUTIONS:

See Section 8.

#### NOTIFICATION PROCEDURES:

In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations. In the event of a spill or accidental release, notify immediately relevant authorities in accordance with all applicable regulations. US regulations require reporting releases of this material to the environment which exceed the applicable reportable quantity or oil spills which could reach any waterway including intermittent dry creeks. Isolate spill or leak area immediately for at least 25 to 50 meters (80 to 160 feet) in all directions. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. **STOP LEAK IF YOU CAN DO IT WITHOUT RISK**

#### PROTECTIVE MEASURES:

- Avoid contact with spilled material. Warn or evacuate occupants in surrounding and downwind areas if required due to toxicity or flammability of the material. See Section 5 for fire fighting information. See the Hazard Identification Section for Significant Hazards. See Section 4 for First Aid Advice. See Section 8 for Personal Protective Equipment.

#### SPILL MANAGEMENT:

**LAND SPILL:**

- Shut off source taking under normal safety precautions. Prevent liquid from entering sewers, water courses or low lying areas; advise the relevant authorities if it has, or if it contaminates soil/vegetation. Take measures to minimise the effects on ground water.
- Recover by skimming or pumping using explosion-proof equipment, or contain spilled liquid with booms, sand, or other suitable absorbent and remove mechanically into containers. If necessary, dispose of adsorbed residues as directed in Section 13.

**WATER SPILL:**

- Confine the spill immediately with booms. Warn other shipping. Notify port and other relevant authorities. Remove from the surface by skimming or with suitable absorbents. Disperse the residue in unconfined waters, if permitted by local authorities and environmental agencies.

#### ENVIRONMENTAL PRECAUTIONS:

- Large Spills: Dike far ahead of liquid spill for later recovery and disposal. Prevent entry into waterways, sewers, basements or confined areas.

### 7. HANDLING AND STORAGE

#### HANDLING:

- Avoid contact with skin. Use proper bonding and/or grounding procedures. Prevent small spills and leakage to avoid slip hazard. Material can accumulate static charges which may cause an electrical spark (ignition source).

#### STORAGE:

- 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 AND PERSONAL PROTECTION

#### ENGINEERING CONTROLS:

- Ventilation and other forms of engineering controls are often the preferred means for controlling chemical exposure.

#### EYE/FACE PROTECTION:

- Avoid eye contact. The wearing of chemicals safety goggles or face shield is recommended.

#### SKIN PROTECTION:

- Avoid contact with skin or clothing. Skin contact can be minimized by wearing impervious protective clothing including gloves. Protective clothing made from neoprene, nitrile, or n-butyl rubber is suitable in these applications.

#### 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:
  - No special requirements under ordinary conditions of use and with adequate ventilation.
  - For high airborne concentrations, use an approved supplied-air respirator, operated in positive pressure mode. Supplied air respirators with an escape bottle may be appropriate when oxygen levels are inadequate, gas/vapor warning properties are poor, or if air purifying filter capacity/rating may be exceeded.

#### PERSONAL PROTECTION:

- In open systems where contact is likely, wear safety goggles, chemical-resistant overalls, and chemically impervious gloves.
- Where only incidental contact is likely, wear safety glasses with side shields. No other special precautions are necessary provided skin/eye contact is avoided.
9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: > 204.4 °C
FLASH POINT: > 60 deg C
FLAMMABILITY: Not determinate
VAPOUR PRESSURE: Not determinate
VAPOUR DENSITY AT 1 BAR (Air=1): Heavyer than air
DENSITY: g/ml: at 15 deg. C range 0.94 - 1.01 (varies with grade)
AUTO-IGNITION: Not determinate
VISCOSITY: mm²/S: 30-700 at 50 deg. C
POUR POINT: < 10 °C
HYDROGEN SULPHIDE: Not determinate
SULPHUR: < 4.5%
APPEARANCE / ODOR: Black viscous liquid with a petroleum oil odour

TOXICITY DATA:
ACUTE: The exact composition of this product may vary and the potential health hazards described were based upon the possible components.
CHRONIC: Based on what is known of this product and of materials of similar composition and refining history, this product would be expected to have carcinogenic potential.

12. ECOLOGICAL INFORMATION
In the absence of specific environmental data for this product, this assessment is based on information for general hydrocarbon components found in residual fuels. Residual fuels, immediately following a release into the environment, will remain largely on the soil surface, and in water, will distribute largely between the water and sediment surfaces. Based on chemical/physical information from the literature for selected components in this product, harmful effects to terrestrial and aquatic habitats could occur. This product is expected to be resistant to biodegradation and to persist in the environment.

13. DISPOSAL CONSIDERATIONS
This product contains hazardous ingredients listed in Section 2. Collect and dispose of it at an authorised disposal facility, in conformance with national and local regulations, and in accordance with directives on hazardous waste.

14. TRANSPORT INFORMATION

USUAL SHIPPING CONTAINERS:
Tankers, rail cars, tank trucks, drums. Do not use galvanised steel, zinc/lead or zinc/copper alloys or natural rubber tank material.

TRANSPORT TEMPERATURE:
deg. C: 10 – 60

AIR (IATA):
Not Regulated for Air Transport

15. REGULATORY INFORMATION
For current health and safety information on marine fuels, contact any Sales representative in the country where the bunker purchase took place.

16. OTHER INFORMATION

PRODUCT TYPE / USES:
Heavy fuel oil for large slow speed marine diesel engines, steamships and as blending stock for intermediate marine diesel fuels.

SOURCE OF KEY DATA:
The recommendations presented in this Material Safety Data Sheet were compiled from actual test data (when available), comparison with similar products, component information from suppliers and from recognised codes of good practice.

NOTE
The information and recommendations contained herein are, to the best of knowledge and belief, accurate and reliable as of the date issued, but are offered without guarantee or warranty. They relate to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Conditions of use of the material are under the control of the user; therefore, it is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use.

END