**Material Safety Data Sheet**

**FUEL OIL NO. 6**

Date of Preparation: December 12, 2012

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### Section 1 - Chemical Product and Company Identification

**Product/Chemical Name:** FUEL OIL NO. 6  
**Chemical Formula:** A high-viscosity residual oil.  
**CAS Number:** 68553-00-4  
**Other Designations:** Bunker C, Bunker fuels; IFO 180, IFO 280 and IFO 380, utility fuel oil; heavy fuel oil; residual fuel oil; #6 residual fuel oil blendstock; ASTM No. 6 Grade Fuel Oil (D396).  
**General Use:** Used in industrial burners, boiler fuel for electric utilities and bunker fuel for ocean going vessels. A thick oil, fuel oil No. 6 is not usually used unless preheated to decrease its viscosity.  
**Manufacturer:** Enjet, LLC  
5373 W. Alabama, Suite 502  
Houston, Texas 77056

**Emergency:**  
Chemtrec +1 - (800) 424-9300  
Enjet, LLC +1 - (713) 552-1559

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### Section 2 - Composition / Information on Ingredients

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<tr>
<th>Ingredient Name</th>
<th>CAS Number</th>
<th>% vol.</th>
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<tr>
<td>Fuel Oil No. 6</td>
<td>68553-00-4</td>
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Fuel Oil No. 6 – A complex mixture of paraffinic, olefinic, naphthenic and aromatic hydrocarbons, including polycyclic aromatic hydrocarbons. Sulfur content for bunker fuels must be less than 5.0%. No. 6 Fuel Oil with low sulfur (0.3 and 1.0%) is also available.

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### Section 3 - Hazards Identification

#### Potential Health Effects

**Summary of risks:** Residual oils are generally more viscous and less toxic than kerosene due to their low volatility and limited absorption through the intestinal tract. Inhalation of heated or misted fuel oil No. 6 can cause the same systemic and local pulmonary effects seen with lighter grade fuel oils, respiratory tract irritation, headache, dizziness, nausea, stupor, convulsions, or unconsciousness, depending on concentration and time of exposure. When removed from exposure area, affected persons usually experience complete recovery. The residual (heavy) oils have a lower aspiration hazard since heavy oils are more viscous. Aspiration is limited to inhalation from vomiting after ingestion and dilution with gastric contents. Significant ingestion is unlikely. In addition, intestinal absorption of long-chain hydrocarbons is low. Its primary toxicity, then, are its laxative effects, mile GI irritation and skin irritation. After prolonged skin contact, changes in rabbit bladder linings reported.*

**Primary Entry Routes:** Inhalation, ingestion.  
**Target Organs:** Central nervous system (CNS), skin and mucous membranes.  
**Acute Effects**  
**Inhalation:** Inhalation of aerosol or mists may result in increased rate of respiration, tachycardia (excessively rapid heartbeat), and cyanosis (dark purplish coloration of the skin and mucous membranes caused by deficient oxygenation of the blood).  
**Eye:**  
**Skin:**  
**Ingestion:** Systemic effects from ingestion include gastrointestinal (GI) irritation, vomiting, diarrhea and in severe cases, CNS depression, progressing to coma and death.
Carcinogenicity: IARC, NTP, and OSHA list as a possible human carcinogen (Group 2B); animal evidence-limited.

Medical Conditions Aggravated by Long-Term Exposure: None reported.

Chronic Effects: Repeated skin contact causes dermatitis and possible systemic toxicity. Hydrogen sulfide, an irritant gas at 5 ppm concentration and above, can cause systemic toxicity. At concentrations greater than 500 ppm, rapid death due to respiratory paralysis can occur.

Section 4 - First Aid Measures

Inhalation: Hydrogen sulfide gas evolved when stored/handled at elevated temperatures may cause irritation and/or systemic effects. Remove exposed person to fresh air and support breathing as needed.

Eye Contact: Gently lift the eyelids and flush immediately and continuously with flooding amounts of water until transported to an emergency medical facility. Consult a physician immediately.

Skin Contact: Quickly remove contaminated clothing. Rinse with flooding amounts of water for at least 15 minutes. For reddened or blistered skin, consult a physician. Wash affected area with soap and water.

Ingestion: Never give anything by mouth to an unconscious or convulsing person. If ingested, do not induce vomiting. Consult a physician immediately.

After first aid, get appropriate in-plant, paramedic, or community medical support.

Note to Physicians: Gastric lavage is contraindicated due to aspiration hazard. Preferred antidotes are charcoal and milk.

Special Precautions/Procedures: Prolonged or repeated skin contact may cause irritation and block the sebaceous glands, with a rash of acne-like pimples and spots, usually on the arms and legs. Repeated prolonged dermal contact may also have systemic effects. Heavy repeated application of fuel oil No. 6 to rabbit skin gave severe skin changes and systemic toxicity including an increased incidence of hyperplasia of the urinary bladder epithelium [EPA (TOSCA) document 8EHQ-0181-0377, December 1980.]

Section 5 - Fire-Fighting Measures

Flash Point: 140°F (60°C) minimum
Flash Point Method: CC?, OC?, COC?

Burning Rate:
Autoignition Temperature: 765°F (407°C)
LEL: 3.9% v/v
UEL: 20.1% v/v

Flammability Classification:
Extinguishing Media: Use dry chemical, carbon dioxide, foam, water fog or spray. Do not use a forced water spray directly on burning oil since this scatters the fire. Use a smothering technique to extinguish fire. Cool fire-exposed containers with water spray.

Unusual Fire or Explosion Hazards: Product is an OSHA Class IIIA combustible liquid that exhibits “boil-over” characteristics.

Hazardous Combustion Products:
Fire-Fighting Instructions: Isolate hazard area and deny entry. If feasible, remove containers from fire hazard area. Do not release runoff from fire control methods to sewers or waterways.

Fire-Fighting Equipment: Because fire may produce toxic thermal decomposition products, wear a self-contained breathing apparatus (SCBA) with a full face piece operated in pressure-demand or positive-pressure mode.

Section 6 - Accidental Release Measures

Spill /Leak Procedures: Notify safety personnel, evacuate area for large spills, remove all heat and ignition sources and provide maximum explosion proof ventilation.

Small Spills:
Large Spills

Containment: For large spills, dike far ahead of liquid spill for later disposal. Do not release into sewers or waterways.

Cleanup: Personnel should protect against vapor inhalation and liquid contact. Clean up spills promptly to reduce fire or vapor hazards. Use a noncombustible absorbent material to pick up small spills or residues.

Regulatory Requirements: Follow applicable OSHA regulations (29 CFR 1910.120).

Section 7 - Handling and Storage

Handling Precautions: Hydrogen sulfide vapors may accumulate in tanks and transport compartments. Avoid breathing vapors when opening hatches and dome covers by standing upwind. Vent slowly, and keep your face away from compartment openings. Use only in a well-ventilated area. Hydrogen sulfide odor is not reliable as a warning of possible overexposure.
Storage Requirements: Use and storage conditions should be suitable for an OSHA Class IIIA combustible liquid. Store in closed containers in a well-ventilated area away from heat and ignition sources and strong oxidizing agents. Protect containers from physical damage. To prevent static sparks electrically ground and bond all containers and equipment used in shipping, receiving or transferring operations. Use non-sparking tools and explosion-proof electrical equipment. No smoking allowed in area of storage or use.

Regulatory Requirements:

Section 8 - Exposure Controls / Personal Protection

Engineering Controls: Avoid prolonged skin contact and vapor or mist inhalation. Use only in a well-ventilated area with personal protective gear. Institute a respiratory protection program that includes regular training, maintenance, inspection and evaluation. Practice good personal hygiene and housekeeping procedures. Do not wear oil-contaminated clothing. Do not put oily rags in pockets. When working with this material, wear gloves or use barrier cream.

Ventilation: Provide general or local exhaust ventilation systems to maintain airborne concentrations below OSHA PELs (Sec. 2). Local exhaust ventilation is preferred because it prevents contaminant dispersion into the work area by controlling it at its source.

Administrative Controls:

Respiratory Protection: Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, wear a MSHA/NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. For emergency or non-routine operations (cleaning spills, reactor vessels, or storage tanks), wear an SCBA. Warning! Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. If respirators are used, OSHA requires a written respiratory protection program that includes at least: medical certification, training, fit testing, periodic environmental monitoring, maintenance, inspection, cleaning, and convenient, sanitary storage areas.

Protective Clothing/Equipment: Wear chemically protective gloves, boots, aprons, and gauntlets to prevent prolonged or repeated skin contact. Wear protective eyeglasses or chemical safety goggles, per OSHA eye- and face-protection regulations (29 CFR 1910.133). Never wear contact lenses in the work area: soft lenses may absorb and all lenses concentrate irritants. Appropriate eye protection must be worn instead of contact lenses.

Safety Stations: Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work area.

Contaminated Equipment: Separate contaminated work clothes from street clothes. Launder before reuse. Remove this material from your shoes and clean personal protective equipment.

Comments: Never eat, drink, or smoke in work areas. Practice good personal hygiene after using this material, especially before eating, drinking, smoking, using the toilet, or applying cosmetics.

Section 9 - Physical and Chemical Properties

Physical State: Water Solubility: Insoluble
Appearance and Odor: Brown to black colored viscous Other Solubility’s: oil with a cracked petroleum and/or asphalt-type odor.
Odor Threshold: Boiling Point: 500°F (>260°C)
Vapor Pressure: 0.2 mm Hg at 70°F (21°C) Freezing/Melting Point:
Vapor Density (Air=1): Viscosity: 96 centistokes @ 122°F (50°C)
Formula Weight: Refractive Index:
Density: Surface Tension:
Specific Gravity (H2O=1, at 4°C): 0.90 to 1.07 @ 60°F % Volatile:
(15°C) Evaporation Rate:
pH: Blended to meet customer & regulatory requirements including viscosity, pour, sulfur and metals.

Section 10 - Stability and Reactivity

Stability: Stable at room temperature in closed containers under normal storage and handling conditions.
Polymerization: Hazardous polymerization cannot occur.
Chemical Incompatibilities: Incompatible with strong oxidizing agents; heating greatly increases fire hazard.
Conditions to Avoid: Avoid heat and ignition sources.
Hazardous Decomposition Products: Thermal oxidative decomposition can produce various hydrocarbons and hydrocarbon derivatives and partial oxidation products including carbon dioxide, carbon monoxide and sulfur dioxide.
Section 11 - Toxicological Information

Toxicity Data:

Eye Effects:

Skin Effects:

Acute Inhalation Effects:

Human, inhalation, TC_{Lo}: ?? ppm

Acute Oral Effects:

Rat, oral, LD_{50}: 9 g/kg

Chronic Effects:

Carcinogenicity:

Mutagenicity:

Teratogenicity:

* See NIOSH, RTECS (HZ1800000), for future toxicity data.

Section 12 - Ecological Information

Ecotoxicity:

Environmental Fate

Environmental Transport:

Environmental Degradation:

Soil Absorption/Mobility:

Section 13 - Disposal Considerations

Disposal: Contact your supplier or a licensed contractor for detailed recommendations. Follow applicable Federal, state, and local regulations.

Disposal Regulatory Requirements:

Container Cleaning and Disposal:

Section 14 - Transport Information

DOT Transportation Data (49 CFR 172.101):

Shipping Name: Fuel oil

Packaging Authorizations

a) Exceptions: 173.118a

b) Non-bulk Packaging: 173.???

c) Bulk Packaging: 173.??

d) Packaging Requirements: none

Quantity Limitations

a) Passenger, Aircraft, or Railcar:

b) Cargo Aircraft Only:

Special Provisions (172.102):

Section 15 - Regulatory Information

EPA Regulations:

RCRA Hazardous Waste Number: Not listed (40 CFR 261.33)

RCRA Hazardous Waste Classification (40 CFR 261.??): Not classified

CERCLA Hazardous Substance (40 CFR 302.4) unlisted specific per RCRA, Sec. 3001; CWA, Sec. 311 (b)(4); CWA, Sec. 307(a), CAA, Sec. 112

CERCLA Reportable Quantity (RQ), ?? lb. (?? kg)

SARA 311/312 Codes:

SARA Toxic Chemical (40 CFR 372.65): Not listed

SARA EHS (Extremely Hazardous Substance) (40 CFR 355): Not listed, Threshold Planning Quantity (TPQ)

OSHA Regulations:

Air Contaminant (29 CFR 1910.1000, Table Z-1, Z-1-A): Not listed

OSHA Specifically Regulated Substance (29CFR 1910.???)

State Regulations:

Section 16 - Other Information

Prepared By: R. N. Kauth

Revision Notes: December 12, 2012 – Replaces January 1992

Additional Hazard Rating Systems:
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