EMERGENCY OVERVIEW

CAUTION!
COMBUSTIBLE LIQUID - SLIGHT TO MODERATE IRRITANT
EFFECTS CENTRAL NERVOUS SYSTEM
HARMFUL OR FATAL IF SWALLOWED

Moderate fire hazard. Avoid breathing vapors or mists. May cause dizziness and drowsiness. May cause moderate eye irritation and skin irritation. Long-term, repeated exposure may cause skin cancer. If ingested, do NOT induce vomiting, as this may cause chemical pneumonia (fluid in the lungs).

1. CHEMICAL PRODUCT and COMPANY INFORMATION

Hess Corporation
1 Hess Plaza
Woodbridge, NJ 07095-0961

EMERGENCY TELEPHONE NUMBER (24 hrs): CHEMTREC (800) 424-9300
COMPANY CONTACT (business hours): Corporate EHS (732) 750-6000
MSDS Internet Website: www.hess.com

SYNONYMS: #5 Fuel Oil; 5 Oil; High and Low Sulfur No. 5 Fuel Oil
See Section 16 for abbreviations and acronyms.

2. COMPOSITION and INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>INGREDIENT NAME (CAS No.)</th>
<th>CONCENTRATION PERCENT BY WEIGHT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Oil, Residual (68476-33-5)</td>
<td>100</td>
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</table>

A complex combination of heavy (high boiling point) petroleum hydrocarbons. The amount of sulfur varies with product specification and does not affect the health and safety properties as outlined in this Material Safety Data Sheet.

3. HAZARDS IDENTIFICATION

EYES
Contact with eyes may cause mild to moderate irritation.

SKIN
May cause skin irritation with prolonged or repeated contact. Practically non-toxic if absorbed following acute (single) exposure. May cause dermal sensitization.

INGESTION
This material has a low order of acute toxicity. If large quantities are ingested, nausea, vomiting and diarrhea may result. Ingestion may also cause effects similar to inhalation of the product. Aspiration may result in chemical pneumonia (fluid in the lungs), severe lung damage, respiratory failure and even death.

INHALATION
Because of its low vapor pressure, this product presents a minimal inhalation hazard at ambient temperature. Upon heating, fumes may be evolved. Inhalation of fumes or mist may result in respiratory tract irritation and central nervous system (brain) effects may include headache, dizziness, loss of balance and coordination, unconsciousness, coma, respiratory failure, and death.
WARNING: the burning of any hydrocarbon as a fuel in an area without adequate ventilation may result in hazardous levels of combustion products, including carbon monoxide, and inadequate oxygen levels, which may cause unconsciousness, suffocation, and death.

CHRONIC and CARCINOGENICITY
Similar products produced skin cancer and systemic toxicity in laboratory animals following repeated applications. The significance of these results to human exposures has not been determined - see Section 11, Toxicological Information.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE
Irritation from skin exposure may aggravate existing open wounds, skin disorders, and dermatitis (rash).

FUEL OIL combustion ASH
Trace amounts of nickel, vanadium, and other metals in slurry oil can become concentrated in the oxide form in combustion ash deposits. Vanadium is a toxic metal affecting a number of organ systems. Nickel is a suspect human carcinogen (lung, nasal, and sinus), an eye, nose, and throat irritant, and can cause allergic skin reaction in some individuals. See Section 7 for appropriate work practices.

4. FIRST AID MEASURES

EYES
In case of contact with eyes, immediately flush with clean, low-pressure water for at least 15 min. Hold eyelids open to ensure adequate flushing. Seek medical attention.

SKIN
Remove contaminated clothing. Wash contaminated areas thoroughly with soap and water or waterless hand cleanser. Obtain medical attention if irritation or redness develops. Thermal burns require immediate medical attention depending on the severity and the area of the body burned.

INGESTION
DO NOT INDUCE VOMITING. Do not give liquids. Obtain immediate medical attention. If spontaneous vomiting occurs, lean victim forward to reduce the risk of aspiration. Monitor for breathing difficulties. Small amounts of material which enter the mouth should be rinsed out until the taste is dissipated.

INHALATION
Remove person to fresh air. If person is not breathing provide artificial respiration. If necessary, provide additional oxygen once breathing is restored if trained to do so. Seek medical attention immediately.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:
FLASH POINT: > 140 °F (>60 °C) (minimum) ASTM D-93
AUTOIGNITION TEMPERATURE: N/D
OSHA/NFPA FLAMMABILITY CLASS: IIIA (COMBUSTIBLE)
LOWER EXPLOSIVE LIMIT (%): N/D
UPPER EXPLOSIVE LIMIT (%): N/D

FIRE AND EXPLOSION HAZARDS
Vapors may be ignited rapidly when exposed to heat, spark, open flame or other source of ignition. When mixed with air and exposed to an ignition source, flammable vapors can burn in the open or explode in confined spaces. Being heavier than air, vapors may travel long distances to an ignition source and flash back. Runoff to sewer may cause fire or explosion hazard.

CAUTION: flammable vapor production at ambient temperature in the open is expected to be minimal unless the oil is heated above its flash point. However, industry experience indicates that light hydrocarbon vapors can build up in the headspace of storage tanks at temperatures below the flash point.
of the oil, presenting a flammability and explosion hazard. Tank headspaces should be regarded a potentially flammable, since the oil’s flash point can not be regarded as a reliable indicator of the potential flammability in tank headspaces.

**EXTINGUISHING MEDIA**

**SMALL FIRES:** Any extinguisher suitable for Class B fires, dry chemical, CO2, water spray, fire fighting foam, or Halon.

**LARGE FIRES:** Water spray, fog or fire fighting foam. Water may be ineffective for fighting the fire, but may be used to cool fire-exposed containers.

**FIRE FIGHTING INSTRUCTIONS**

Small fires in the incipient (beginning) stage may typically be extinguished using handheld portable fire extinguishers and other fire fighting equipment.

Firefighting activities that may result in potential exposure to high heat, smoke or toxic by-products of combustion should require NIOSH/MSHA- approved pressure-demand self-contained breathing apparatus with full facepiece and full protective clothing.

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.

See Section 16 for the NFPA 704 Hazard Rating.

6. **ACCIDENTAL RELEASE MEASURES**

**ACTIVATE FACILITY'S SPILL CONTINGENCY OR EMERGENCY RESPONSE PLAN.**

Evacuate nonessential personnel and remove or secure all ignition sources. Consider wind direction; stay upwind and uphill, if possible. Evaluate the direction of product travel, diking, sewers, etc. to confirm spill areas.

Carefully contain and stop the source of the spill, if safe to do so. Protect bodies of water by diking, absorbents, or absorbent boom, if possible. 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.

Take up with sand or other oil absorbing materials. Carefully shovel, scoop or sweep up into a waste container for reclamation or disposal. Response and clean-up crews must be properly trained and must utilize proper protective equipment.

7. **HANDLING and STORAGE**

**HANDLING PRECAUTIONS**

Handle as a combustible liquid. Keep away from heat, sparks, and open flame! Electrical equipment should be approved for classified area. Bond and ground containers during product transfer to reduce the possibility of static-initiated fire or explosion.

**STORAGE PRECAUTIONS**

Keep away from flame, sparks, excessive temperatures and open flame. Use approved vented containers. Keep containers closed and clearly labeled. Empty product containers or vessels may contain explosive vapors. Do not pressurize, cut, heat, weld or expose such containers to sources of ignition.

Store in a well-ventilated area. This storage area should comply with NFPA 30 "Flammable and Combustible Liquid Code". Avoid storage near incompatible materials. 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".

**WORK/HYGIENIC 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 gasoline or solvents (naphtha, kerosene, etc.) 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.

**OTHER/GENERAL PROTECTION**
Petroleum industry experience indicates that a program providing for good personal hygiene, proper use of personal protective equipment, and minimizing the repeated and prolonged exposure to liquids and fumes, as outlined in this MSDS, is effective in reducing or eliminating the carcinogenic risk of high boiling aromatic oils (polynuclear aromatic hydrocarbons) to humans.

**FUEL OIL ASH PRODUCTS**
Personnel exposed to ash should wear appropriate protective clothing (example, DuPont Tyvek ®), wash skin thoroughly, launder contaminated clothing separately, and wear respiratory protection approved for use against toxic metal dusts (such as HEPA filter cartridges). Wetted-down combustion ash may evolve toxic hydrogen sulfide (H₂S) - confined spaces should be tested for H₂S prior to entry if ash is wetted.

### 8. EXPOSURE CONTROLS and PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Components (CAS No.)</th>
<th>Source</th>
<th>Exposure Limits</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel Oil (68476-33-5)</td>
<td>OSHA</td>
<td>5 mg/m³ (as mineral oil mist) TWA</td>
<td>A2, skin</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>0.2 mg/m³ (as mineral oil) TWA</td>
<td></td>
</tr>
</tbody>
</table>

**ENGINEERING CONTROLS**
Use adequate ventilation to keep vapor concentrations of this product below occupational exposure and flammability limits, particularly in confined spaces.

**EYE/FACE PROTECTION**
Safety glasses or goggles are recommended where there is a possibility of splashing or spraying

**SKIN PROTECTION**
Gloves constructed of nitrile, neoprene, or PVC are recommended. Chemical protective clothing such as of E.I. DuPont Tyvek QC®, Saranex®, TyChem® or equivalent recommended based on degree of exposure. Note: The resistance of specific material may vary from product to product as well as with degree of exposure. Consult manufacturer specifications for further information

**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, NIOSH Respirator Decision Logic, and the manufacturer for additional guidance on respiratory protection selection.
Use a positive pressure, air-supplied respirator if there is a potential for uncontrolled release, exposure levels are not known, in oxygen-deficient atmospheres, or any other circumstance where an air-purifying respirator may not provide adequate protection.

9. PHYSICAL and CHEMICAL PROPERTIES

APPEARANCE
Black, viscous liquid

ODOR
Heavy, petroleum/asphalt-type odor

BASIC PHYSICAL PROPERTIES

BOILING RANGE: 370-700 °F (188-371 °C)
VAPOR PRESSURE: <0.004 mm Hg @ 70 °F (21 °C)
VAPOR DENSITY (air = 1): NA
SPECIFIC GRAVITY (H2O = 1): 0.887 – 0.9725 (API 28.0 – 14.0)
PERCENT VOLATILES: Negligible
EVAPORATION RATE: Negligible
SOLUBILITY (H2O): Negligible

10. STABILITY and REACTIVITY

STABILITY: Stable. Hazardous polymerization will not occur

CONDITIONS TO AVOID and INCOMPATIBLE MATERIALS
Avoid high temperatures, open flames, sparks, welding, smoking and other ignition sources. Keep away from strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS:
Carbon monoxide, carbon dioxide and non-combusted hydrocarbons (smoke).

11. TOXICOLOGICAL PROPERTIES

ACUTE TOXICITY
Based on No. 6 Fuel Oil (a similar product):
Acute dermal LD50 (rabbits): > 5 ml/kg
Acute oral LD50 (rats): 5.1 ml/kg
Primary dermal irritation: slightly irritating (rabbits)
Draize eye irritation: mildly irritating (rabbits)
Guinea pig sensitization: mildly sensitizing

CHRONIC EFFECTS AND CARCINOGENICITY
Carcinogenicity: OSHA: NO  IARC: 2B (animal)  NTP: YES  ACGIH: A2
This material contains polynuclear aromatic hydrocarbons (PNAs), some of which are animal carcinogens. Studies have shown that similar products produce 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.

The presence of carcinogenic PNAs indicates that precautions should be taken to minimize repeated and prolonged inhalation of fumes or mists.

MUTAGENICITY (genetic effects)
Materials of similar composition have been positive in mutagenicity studies.
12. ECOLOGICAL INFORMATION
Keep out of sewers, drainage and waterways. Report spills and releases, as applicable, under Federal
and State regulations.

13. DISPOSAL CONSIDERATIONS
Consult federal, state and local waste regulations to determine appropriate disposal options. Combustion
ash may be a characteristic hazardous waste.

14. TRANSPORTATION INFORMATION
PROPER SHIPPING NAME: Fuel Oil, No. 5  Placard:
HAZARD CLASS and PACKING GROUP: 3, PG III
DOT IDENTIFICATION NUMBER: NA 1993
DOT SHIPPING LABEL: Flammable liquid
May be reclassified for transportation as a COMBUSTIBLE LIQUID under the conditions of DOT 49 CFR
173.120(b)(2).

15. REGULATORY INFORMATION
U.S. FEDERAL, STATE and LOCAL REGULATORY INFORMATION
This product and its constituents listed herein are on the EPA TSCA Inventory. Any spill or uncontrolled
release of this product, including any substantial threat of release, may be subject to federal, state and/or
local reporting requirements. This product and/or its constituents may also be subject to other regulations
at the state and/or local level. Consult those regulations applicable to your facility/operation.

CLEAN WATER ACT (OIL SPILLS)
Any spill or release of this product to "navigable waters" (essentially any surface water, including certain
wetlands) or adjoining shorelines sufficient to cause a visible sheen or deposit of a sludge or emulsion
must be reported immediately to the National Response Center (1-800-424-8802) or, if not practical, the
U.S. Coast Guard with follow-up to the National Response Center, as required by U.S. Federal Law. Also
contact appropriate state and local regulatory agencies as required.

CERCLA SECTION 103 and SARA SECTION 304 (RELEASE TO THE ENVIRONMENT)
The CERCLA definition of hazardous substances contains a "petroleum exclusion" clause which exempts
crude oil, refined, and unrefined petroleum products and any indigenous components of such. However,
other federal reporting requirements (e.g., SARA Section 304 as well as the Clean Water Act if the spill
occurs on navigable waters) may still apply.

SARA SECTION 311/312 - HAZARD CLASSES

<table>
<thead>
<tr>
<th>ACUTE HEALTH</th>
<th>CHRONIC HEALTH</th>
<th>FIRE</th>
<th>SUDDEN RELEASE OF PRESSURE</th>
<th>REACTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
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</table>

SARA SECTION 313 - SUPPLIER NOTIFICATION
According to the US EPA guidance documents for reporting Persistent Bioaccumulating Toxics (PBTs),
this product contains the following toxic chemicals subject to the reporting requirements of section 313 of
the Emergency Planning and Community Right-To-Know Act (EPCRA) of 1986 and of 40 CFR 372 (US
EPA does not provide data on No 5 Fuel Oil which is a blend of 6 oil and 2 oil – the following are
estimates based on typical blend ratios):
## INGREDIENT NAME (CAS NUMBER) | CONCENTRATION [PARTS PER MILLION (PPM) BY WEIGHT]
--- | ---
Polycyclic aromatic compounds (PACs) Benzo (g,h,i) perylene (191-24-2) | 1562
Lead (7439-92-1) | 16.8
Mercury (7439-97-6) | 0.65
Vanadium (7440-62-2) | 2.33
Polychlorinated biphenyls (PCBs) | Though EPA estimates 10% of the residual fuel oil “pool” may have < 50 ppm PCBs (Ref 2), AHC has no reason to believe there are any PCBs in its residual fuel oil products.

## CALIFORNIA PROPOSITION 65 LIST OF CHEMICALS
This product contains the following chemicals that are included on the Proposition 65 "List of Chemicals" required by the California Safe Drinking Water and Toxic Enforcement Act of 1986:

<table>
<thead>
<tr>
<th>INGREDIENT NAME (CAS NUMBER)</th>
<th>Date Listed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Fuel Oil (no CAS Number listed)</td>
<td>10/01/1990</td>
</tr>
</tbody>
</table>

## CANADIAN REGULATORY INFORMATION (WHMIS)
Class B, Division 3 (Combustible Liquid)

## 16. OTHER INFORMATION

### NFPA® HAZARD RATING
- **HEALTH:** 0
- **FIRE:** 2
- **REACTIVITY:** 0

Refer to NFPA 704 “Identification of the Fire Hazards of Materials” for further information

### HMIS® HAZARD RATING
- **HEALTH:** 1* Slight
- **FIRE:** 2 Moderate
- **PHYSICAL:** 0 Negligible
- *Chronic

### SUPERSEDES MSDS DATED: 02/28/01

### ABBREVIATIONS:
- AP = Approximately
- < = Less than
- > = Greater than
- N/A = Not Applicable
- N/D = Not Determined
- ppm = parts per million

### ACRONYMS:
- **ACGIH** American Conference of Governmental Industrial Hygienists
- **AIHA** American Industrial Hygiene Association
- **ANSI** American National Standards Institute (212)642-4900
- **API** American Petroleum Institute (202)682-8000
- **CERCLA** Comprehensive Emergency Response, Compensation, and Liability Act
- **DOT** U.S. Department of Transportation [General info: (800)467-4922]
- **EPA** U.S. Environmental Protection Agency
- **HMIS** Hazardous Materials Information System
- **IARC** International Agency For Research On Cancer
- **MSHA** Mine Safety and Health Administration
- **NFPA** National Fire Protection Association (617)770-3000
- **NIOSH** National Institute of Occupational Safety and Health
- **NOIC** Notice of Intended Change (proposed change to ACGIH TLV)
- **NTP** National Toxicology Program
- **OPA** Oil Pollution Act of 1990
DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

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Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material, even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in their use of the material.