1. IDENTIFICATION

1.1 Product Identifier

Product Name: Vacuum Gas Oil
Synonym(s): Gas Oils (petroleum), heavy vacuum, VGO
Product Code(s): HSVGO, LSVGO, FCC Feedstock
CAS Number: 64741-57-7

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified use(s): Fuel for engines. Blend component.

1.3 Details of the supplier of the safety data sheet

Company Identification: Vitol Inc.
1100 Louisiana St., Suite 5500
Houston, TX 77002
(713) 230-1000
E-mail: SDSHOU@Vitol.com

1.4 Emergency telephone number

1-800-424-9300 (CHEMTRECK USA)
1-703-527-3887 (Outside USA and Canada)

2. HAZARDS IDENTIFICATION

2.1 Product Overview

Classification (GHS-US)
Acute toxicity (inhalation; dust; mist) Category 4
Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 2B
Carcinogenicity Category 2
Specific target organ toxicity (single exposure) Category 3 - Narcotic effects
Specific target organ toxicity (repeated exposure) Category 2

GHS-US labeling

Hazard Pictograms (GHS-US)

Signal word (GHS-US) Warning
Causes skin irritation
Harmful if inhaled
May cause respiratory irritation
May cause drowsiness or dizziness
Suspected of causing cancer (dermal)
May cause damage to organs (blood, hematopoietic system [blood forming], kidneys, peripheral nervous...
Precautionary statements (GHS-US)

Prevention:
Wear protective gloves/protective clothing/eye protection/face protection. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area.

Response:
If on skin (or hair): Rinse skin with water/shower.
If skin irritation occurs: Get medical advice/attention.
If exposed or concerned: Get medical advice/attention.
If swallowed: Immediately call a poison center/doctor.
Do NOT induce vomiting.
If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell. Take off contaminated clothing and wash before reuse.

Storage:
Store in a well-ventilated place. Keep container tightly closed.

Disposal:
Dispose of contents and container in accordance with all local, regional, national and international regulations.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas oils, petroleum, heavy vacuum</td>
<td>64741-57-7</td>
<td>100</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

4.1 First aid procedures

Eye contact: If substance has got into the eyes, immediately wash out with plenty of water for at least 15 minutes. Obtain medical attention.

Skin contact: Remove contaminated clothing immediately and drench affected skin with plenty of water, then wash with soap and water. Obtain medical attention. Contaminated clothing should be thoroughly cleaned.

Inhalation: Remove to fresh air. Assist breathing if necessary. Obtain medical attention.

Ingestion: Obtain immediate medical attention. Do not induce vomiting. Provided the patient is conscious, wash out mouth with water and give 200-300 ml (half a pint) of water to drink.

4.2 Notes to physician

Ensure thorough eye and skin decontamination. Treat unconsciousness, nausea, seizures and cardiac arrhythmias in the conventional manner. This material, if aspirated into the lungs, may cause chemical pneumonitis; treat the affected person appropriately. Aspiration of this product during induced emesis can result in lung injury. If evacuation of stomach contents...
5. FIRE FIGHTING MEASURES

5.1 Flammable properties: Flammable when heated.

5.2 Extinguishing media

Suitable extinguishing media: Foam, CO2 or dry powder. For large fire use water.

Unsuitable extinguishing media: Do not use water jet.

5.3 Protection of firefighters

Protective equipment and precautions for firefighters: Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions: Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Withdraw immediately in case of rising sound from venting safety devices or any discoloration of tanks due to fire. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Move containers from fire area if you can do it without risk. In the event of fire, cool tanks with water spray. Cool containers exposed to flames with water until well after the fire is out. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn. Vapors may form explosive air mixtures even at room temperature. Prevent buildup of vapors or gases to explosive concentrations. Some of these materials, if spilled, may evaporate leaving a flammable residue. Water runoff can cause environmental damage. Use compatible foam to minimize vapor generation as needed.

Specific methods: In the event of fire and/or explosion do not breathe fumes.


6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions

Eliminate sources of ignition. Vapor may create explosive atmosphere. The vapor is heavier than air; beware of pits and confined spaces. Ensure adequate ventilation. Use non-sparking hand tools and explosion proof electrical equipment. Take precautionary measures against static discharges. Avoid inhalation of vapors. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves. (See Section: 8). Contaminated clothing should be thoroughly cleaned.

6.2 Environmental precautions

Do not allow to enter drains, sewers or watercourses. Spillages or uncontrolled
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discharges into watercourses must be alerted to the Environment Agency or other appropriate regulatory body.

6.3 Methods for containment and cleaning up

Adsorb spillages onto sand, earth or any suitable adsorbent material. Sweep up carefully with non-sparking tools. Transfer to a container for disposal. Wash spill area with soapy water. Contaminated adsorbent must be removed in sealed, plastic lined drums and disposed of via an authorized waste disposal contractor.

7. HANDLING AND STORAGE

7.1 Handling

Eliminate sources of ignition. Vapor may create explosive atmosphere. The vapor is heavier than air; beware of pits and confined spaces. Provide adequate ventilation, including appropriate local extraction, to ensure that the occupational exposure limit is not exceeded. Use non-sparking hand tools and explosion proof electrical equipment. Take precautionary measures against static discharges. Avoid inhalation of vapors. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves. (See Section: 8). Do not eat, drink or smoke at the work place. Wash hands and exposed skin after use. Contaminated clothing should be thoroughly cleaned.

7.2 Storage

Keep away from heat and sources of ignition. Keep from direct incompatibilities sunlight. Keep only in the original container in a cool, well-ventilated place. Keep/store away from oxidizing agents. Keep away from food, drink and animal feedingstuffs. Keep out of the reach of children.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Occupational exposure limits

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas oils, petroleum, heavy vacuum</td>
<td>64741-57-7</td>
<td>5 mg/m³</td>
<td>5 mg/m³</td>
</tr>
</tbody>
</table>

8.2 Engineering controls

Provide adequate ventilation, including appropriate local extraction, to ensure that the occupational exposure limit is not exceeded.

8.4 Personal protective equipment

Eye / face protection: Wear safety glasses. If splash potential exists, wear full face shield or chemical goggles.

Skin protection: Wear chemical-resistant, impervious gloves. Full body suit and boots are recommended when handling large volumes or in emergency situations. Flame retardant protective clothing is recommended.

Respiratory protection: Use a properly fitted, air-purifying or air-fed respirator.
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complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If workplace exposure limits for product or components are exceeded, NIOSH approved equipment should be worn. Proper respirator selection should be determined by adequately trained personnel, based on the contaminants, the degree of potential exposure and published respiratory protection factors. This equipment should be available for nonroutine and emergency use.

General hygiene considerations: Consult supervision for special handling instructions. Avoid contact with eyes. Avoid contact with skin. Keep away from food and drink. Wash hands before breaks and immediately after handling the product. Provide eyewash station and safety shower. Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL & CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color:</td>
<td>May be colored</td>
</tr>
<tr>
<td>Odor:</td>
<td>Characteristic</td>
</tr>
<tr>
<td>Boiling Point (°C):</td>
<td>350-600</td>
</tr>
<tr>
<td>Flash Point (°C):</td>
<td>&gt; 75</td>
</tr>
<tr>
<td>Vapor Pressure (Pascal):</td>
<td>&lt; 500 (@ 20°C)</td>
</tr>
<tr>
<td>Specific Gravity:</td>
<td>0.94-0.97 (@ 15°C)</td>
</tr>
<tr>
<td>Solubility (Water):</td>
<td>Negligible</td>
</tr>
<tr>
<td>Partition Coefficient (n-Octanol/water):</td>
<td>2.7-6</td>
</tr>
<tr>
<td>Auto Ignition Temperature (°C):</td>
<td>337</td>
</tr>
<tr>
<td>Viscosity:</td>
<td>7-20.5 mm2/s (@ 40°C)</td>
</tr>
<tr>
<td>Explosive Properties:</td>
<td>Vapor may create explosive atmosphere.</td>
</tr>
<tr>
<td>Oxidizing Properties:</td>
<td>Not oxidizing</td>
</tr>
<tr>
<td>Vapor Density (Air=1):</td>
<td>&gt;1</td>
</tr>
</tbody>
</table>

10.1 Chemical stability Stable under normal temperature conditions and recommended use.

10.2 Conditions to avoid Heat, flames and sparks. Ignition sources. Direct sunlight.

10.3 Incompatible materials Oxidizing agents.

10.4 Hazardous decomposition products Carbon monoxide, Carbon dioxide. Hydrocarbons.

10.5 Possibility of hazardous reactions No information available.

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10.6 Reactivity
Reacts with strong oxidizing agents.

11. TOXICOLOGICAL INFORMATION

11.1 Toxicological data
Acute toxicity:
Ingestion: LD50 (oral/rat): >5000 mg/kg (ARCO, 1987b)
Inhalation: LC50 (inhalation/rat): 4 mg/l/4h (API, 1982)
Skin Contact: LD50 (dermal/rabbit): >2000 mg/kg (API 1982, ARCO 1987a)
Eye Contact: No information available.
Skin corrosion/irritation: Repeated and/or prolonged skin contact may cause irritation. Repeated exposure may cause skin dryness or cracking.
Serious eye damage/irritation: May cause eye irritation. Respiratory or skin sensitization: Negative.
Mutagenicity: There is no evidence of mutagenic potential.
Carcinogenicity: May cause cancer. Carc. 1B (Category 2).
Reproductive toxicity: Suspected of damaging the unborn child. (Category 2).
STOT-single exposure: May cause drowsiness or dizziness.
STOT-repeated exposure: May cause damage to organs through prolonged or repeated exposure: Skin Contact.
Aspiration hazard: Risk of aspiration. Aspiration of liquid may cause pulmonary

12. ECOLOGICAL INFORMATION

12.1 Toxicity
LC50: (Rainbow trout): <1 mg/l/96h NOEL: <1 mg/l
WGK: Not established.

12.2 Persistence and degradability
Inherently biodegradable.

12.3 Bioaccumulative potential
logKow: 3-6. The product has high potential for bioaccumulation.

12.4 Mobility in soil
The product has high mobility in soil.

12.5 Results of PBT and vPvB assessment
vPvB: very Persistent and very Bioaccumulative.

13. DISPOSAL CONSIDERATIONS

13.1 Waste codes
D001: Waste Flammable material with a flash point <140 °F

US RCRA Hazardous Waste U List: Reference
Naphthalene (CAS 91-20-3) U165

13.2 Disposal instructions
Dispose in accordance with all applicable regulations. Dispose of this material and its container to hazardous or special waste collection point. Incinerate the material under controlled conditions in an approved incinerator. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.
14. TRANSPORT INFORMATION

UN number: UN1202
Proper shipping name: Gas oil
Transport Hazard classes: 3
Packing group: III
Environmental hazards: ADR/RID/AND/IATA: Environmentally hazardous
IMDG: Marine Pollutant
Special precautions for user: Vapor may create explosive atmosphere. The vapor is heavier than air; beware of pits and confined spaces. Additional Information: This material is regulated under 49 CFR 130

15. REGULATORY INFORMATION

15.1 International Regulations
Components of this product have been checked against the following Chemical Control Inventories.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>US - TSCA</th>
<th>CANADA - DSL</th>
<th>EU – EINECS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas oils, petroleum, heavy vacuum</td>
<td>64741-57-7</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

15.2 USA Federal & State Regulations
General Material Information
Federal, state, or local regulations may apply to spills or other emissions. Check individual U.S. state requirements.

USA OSHA Hazard Communication Class
HCS CLASS: MAY CAUSE CANCER
HCS CLASS: Irritating substance.

USA Right-to-Know - Federal
None of this product's components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

USA Right-to-Know - State
Trace components appear on one or more of the following state hazardous substances lists. Some components (including those present only in trace quantities, and therefore not listed in this document) may be included on the Right To Know lists of other U.S. states. The reader is therefore cautioned to contact his or her NOVA Chemicals representative or NOVA Chemicals' Product Integrity group for further U.S. State Right To Know information.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>NJ</th>
<th>PA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas oils, petroleum, heavy vacuum</td>
<td>64741-57-7</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

15.3 Canadian Regulations - Federal and Provincial
Canadian Federal WHMIS IDL

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The following components are identified under the Canadian Hazardous Products Act
Ingredient Disclosure List:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gas oils, petroleum, heavy vacuum</td>
<td>64741-57-7</td>
<td>1% (English item 1224, French Item 977) (related to Oil, mineral)</td>
</tr>
</tbody>
</table>

**WHMIS Classification**

- Workplace Hazardous Materials Information Systems (WHMIS): This product has been classified in accordance with the hazard criteria of the Canadian Controlled Product Regulations (CPR), and the MSDS contains all of the information required by the Controlled Products Regulations.
- WHMIS Class D2A: Carcinogen
- WHMIS Class D2B: Material causing other toxic effects.

**Canadian Provincial Regulations**

Federal, provincial or local regulations may apply to spills or other emissions. Check individual provincial and local requirements.

### 16. OTHER INFORMATION

Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user and WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. Nothing is intended as a recommendation for uses which infringe valid patents or as extending license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users. Vitol Inc. and its affiliated companies assume no responsibility for accuracy of information.

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