SAFETY DATA SHEET

1. IDENTIFICATION

1.1 Product identifier
Material name: Raffinate
Synonym(s): Petroleum Naphtha, Straight Run, Refined Light Raffinate
CAS #: 8030-30-6

1.2 Details of the supplier of the safety data sheet
Company Identification: Vitol Inc.
1100 Louisiana St., Suite 550
Houston, Texas 77002
Telephone: (713) 230-1000
Fax: (713) 230-1234
Email: SDSHOU@vitol.com

1.4 Emergency telephone number
Emergency Phone No. (24h): Chemtrec: 1-800-424-9300

2. HAZARDS IDENTIFICATION

2.1 Emergency overview
Danger Flammable Liquid!!

Classification (GHS-US)
- Flammable liquids Category 1
- Skin corrosion/irritation Category 2
- Germ cell mutagenicity Category 1B
- Carcinogenicity Category 1B
- Reproductive toxicity Category 2
- Specific target organ toxicity (single exposure) Category 3 - Narcotic effects
- Aspiration hazard Category 1

GHS-US labeling

Hazard Pictograms (GHS-US)

Signal word (GHS-US) Danger
Hazard statements (GHS-US)
- Extremely flammable liquid and vapor
- May be fatal if swallowed and enters airways
- Causes skin irritation
- May cause drowsiness or dizziness
- May cause genetic defects
- May cause cancer
- Suspected of damaging fertility or the unborn child
- Causes damage to organs (lung)
- May cause damage to organs (immune system)
- Causes damage to organs (blood, hematopoietic system [blood forming], kidneys, peripheral nervous system,

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Precautionary statements (GHS-US)

Prevention:
Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharges. 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): Take off immediately all contaminated clothing. 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. 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. Keep cool.

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>Ingredient</th>
<th>CAS #</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raffinate, Straight Run Naphtha</td>
<td>8030-30-6</td>
<td>99+%</td>
</tr>
<tr>
<td>- Paraffins: 40.00-70.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Cycloparaffins: 20.00-40.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Aromatic Hydrocarbons: 7.00-20.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>0.1-0.50%</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

4.1 Description of first aid measures
Emergency medical Treatment procedures:
Activated charcoal slurry may be administered. To prepare activated charcoal slurry, suspend 50 grams activated charcoal in 400 mL water and mix thoroughly. Administer 5mL/kg, or 350 mL for an average adult.
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Eyes: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician.

Skin: In case of contact, immediately wash skin with soap and water. Wash contaminated clothing before reuse. If irritation develops, consult a physician.

Ingestion: If swallowed, do not induce vomiting. Immediately give two glasses of water. Never give anything by mouth to an unconscious person. Call a physician.

Inhalation: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

Note to physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

5.1 Flammable properties Class IA Flammable Liquid. Highly flammable. Products of combustion may contain carbon monoxide, carbon dioxide, and other toxic materials. Do not enter enclosed or confined space without proper protective equipment including respiratory protection. May evolve hydrogen sulfide.

Flash point: (Method used) -40°F (Closed Cup)

Flammable limits: LEL: 1.5%
UEL: 7.6%

Auto-ignition temperature: 531°F

5.2 Extinguishing media Suitable extinguishing media: Foam, Dry chemical, Carbon dioxide

5.3 Hazardous reactions/decomposition Complete and incomplete combustion may produce nitrous oxides and oxides of carbon and sulfur. Polymerization will not occur. May produce nitrous oxides and oxides of carbon and sulfur.

5.4 Special instructions Water may be ineffective, but water should be used to keep fire-exposed containers cool. If a leak or spill has not ignited, use water spray to disperse the vapors and to protect personnel attempting to stop a leak. Water spray may be used to flush spills away from exposures.

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6. ACCIDENTAL RELEASE MEASURES

- Review FIRE AND EXPLOSION HAZARDS and SAFETY PRECAUTIONS before proceeding with clean up.
- Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean up.
- Dike spill.
- Prevent liquid from entering sewers, waterways, or low areas.
- Recover free liquid for reuse or reclamation.
- Soak up with sawdust, sand, oil dry or other absorbent material.
- Remove source of heat, sparks, flame, impact, friction, and electricity including internal combustion engines and power tools.
- If equipment is used for spill cleanup, it must be explosion-proof and suitable for flammable liquid and vapors.

Note: Vapors released from the spill may create an explosive atmosphere.

7. HANDLING AND STORAGE

Prior to working with this product, workers should be trained on its proper handling and storage
- Store in accordance with National Fire Protection Association regulations.
- Protect against physical damage to containers.
- Separate from oxidizing materials.
- Store in cool, well-ventilated area of non-combustible construction away from possible sources of ignition.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Occupational exposure limits

<table>
<thead>
<tr>
<th></th>
<th>OSHA PEL</th>
<th>ACGIH TLV (2005)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Naphtha Hydrocarbons (Aromatic &amp; Paraffin)</td>
<td></td>
</tr>
<tr>
<td>TWA</td>
<td>STEL</td>
<td>TWA</td>
</tr>
<tr>
<td>100 ppm (Coal Tar Naphtha)</td>
<td>Not applicable</td>
<td>400 ppm (Rubber Solvent)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Benzene</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA</td>
<td>STEL</td>
<td>TWA</td>
</tr>
<tr>
<td>1 ppm</td>
<td>5 ppm</td>
<td>0.5 ppm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Hydrogen sulfide</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ceiling</td>
<td>STEL</td>
<td>TWA</td>
</tr>
<tr>
<td>20 ppm</td>
<td>Not applicable</td>
<td>10 ppm</td>
</tr>
</tbody>
</table>

8.2 Exposure controls

8.2.1 Engineering controls

Both local exhaust and general room ventilation are usually required in enclosed areas.

8.2.2 Personal protective equipment

Eyes: Where the possibility of splashing exists, chemical goggles are recommended.
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Skin: Neoprene or NBR recommended protective gloves, coveralls, sleeves, and/or splash aprons.

Respiratory protection: If exposure may or does exceed occupational exposure limits, use a NIOSH approved respirator to prevent overexposure. In accordance with 29 CFR 1910.134, use either a full-face, air-supplied or air-purifying respirator with organic vapor filters.

General hygiene and work Practices: Emergency eyewash fountains and safety showers should be available in the immediate vicinity of any potential direct exposure. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using the toilet facilities. Promptly remove soiled clothing. Wash thoroughly before reuse. Shower after work using plenty of soap and water.

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Basic physical and chemical properties Boiling point (760 MM Hg): <100-435°F Specific gravity (H2O = 1): 0.70-0.75 @ 32.9°F Evaporation rate (BuAc = 1): Vapor pressure: 525 @ 68°F Appearance and odor: Colorless liquid with characteristic gasoline odor, estimated odor threshold 15 ppm. Percent volatile by volume: 100% Viscosity units, temp: Vapor density (air = 1): 4.0 Solubility in water: Negligible

10. STABILITY & REACTIVITY

10.1 Chemical stability Stable.

10.2 Conditions to avoid Heat, flame, sparks, strong oxidizing conditions.

10.3 Materials to avoid: Oxidizing agents such as oxygen, chlorine, nitric acid.

10.4 Hazardous polymerization Has not been reported.
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11. TOXICOLOGICAL INFORMATION

Benzene

Benzene is known to be a human carcinogen based on sufficient evidence in humans. Case reports and case series have reported leukemia (mostly acute myelogenous leukemia) in individuals exposed to benzene. The strongest epidemiological evidence that benzene causes cancer is from several cohort studies in various industries and geographical locations, which found that occupations exposure to benzene, increased the risk of mortality from leukemia.

<table>
<thead>
<tr>
<th>Type of dose</th>
<th>Species</th>
<th>Result</th>
<th>Type of dose</th>
<th>Species</th>
<th>Result</th>
<th>Type of dose</th>
<th>Species</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50 Oral</td>
<td>Mouse</td>
<td>4700 mg/kg</td>
<td>LC50 Inhalation</td>
<td>Mouse</td>
<td>9980 ppm</td>
<td>TDLO Oral</td>
<td>Human</td>
<td>50 mg/kg</td>
</tr>
</tbody>
</table>

Carcinogenicity

IARC: Sufficient evidence in animals
NTP: Carcinogen
California (Prop 65): Listed as a carcinogen
NIOSH: Potential Occupational Carcinogen
ACGIH: A1-Confirmed human carcinogen
OSHA: Select Carcinogen

Mutagenicity, Teratogenicity, and Reproductive Effects

Repeated or prolonged breathing of benzene vapor has been associated with the development of chromosomal damage in experimental animals and various blood diseases in humans ranging from aplastic anemia to leukemia (a form of cancer). All of these diseases can be fatal. In some individuals, benzene exposure can sensitize cardiac tissue to epinephrine which may precipitate fatal ventricular fibrillation. No birth defects have been shown to occur in pregnant laboratory animals exposed to doses not toxic to the mother.

12. ECOLOGICAL INFORMATION

12.1 Acute effects

No data available on the product, however, Benzene is considered moderately toxic to aquatic life. Insufficient data are available to evaluate or predict the short-term effects to birds or land animals.

12.2 Chronic effects

No data available on product, however, Benzene is considered moderately toxic to aquatic life. Insufficient data are available to evaluate or predict the long-term effects to birds or land animals.

12.3 Distribution and persistence in the environment

No data available.
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13. DISPOSAL CONSIDERATIONS

Treatment, storage, transportation, and disposal must be in accordance with applicable Federal, State/Provincial, and Local regulations. Do not flush to surface water or sanitary sewer system. By itself, the liquid is expected to be a RCRA ignitable hazardous waste, when disposed.

14. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>Agency</th>
<th>Shipping name</th>
<th>Packing group</th>
<th>Hazard class</th>
<th>UN/NA#</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. DOT</td>
<td>Naphtha, solvent</td>
<td>I, II, or III</td>
<td>Flammable liquid</td>
<td>UN 1256</td>
</tr>
</tbody>
</table>

15. REGULATORY INFORMATION

<table>
<thead>
<tr>
<th>CERCLA RQ's (40 CFR Part 302)</th>
<th>Benzene – 10 pounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>RCRA</td>
<td>Benzene – U019</td>
</tr>
<tr>
<td>SARA (40 CFR Part 3555) TpQ's</td>
<td>None of the ingredients are listed</td>
</tr>
<tr>
<td>SARA Title III Section 313</td>
<td>Benzene listed</td>
</tr>
<tr>
<td>California's Prop 65</td>
<td>Benzene listed</td>
</tr>
<tr>
<td>OSHA</td>
<td>All ingredients are listed as hazardous under 29 CFR 1910.1200</td>
</tr>
</tbody>
</table>

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA 704 Label:</th>
<th>Health: 2</th>
<th>Flammability: 4</th>
<th>Reactivity: 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMIS Label:</td>
<td>Health: 2</td>
<td>Flammability: 4</td>
<td>Physical: 0</td>
</tr>
</tbody>
</table>

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