SAFETY DATA SHEET

1. IDENTIFICATION

1.1 Product identifier
Trade name: Pyrolysis Gasoline
CAS #: 68606-10-0
Synonym(s): DAC/RPG, DISTILLATION, RESIDUES C5-C11, Debutanized Aromatic Concentrate, Aromatic Concentrate, Aromatic Distillate, Debutanizer Bottoms, DAC, Raw Pyrolysis Gasoline, Slop Oil, Dripoline, Pygas

1.2 Details of the supplier of the safety data sheet
Contact information:
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 Classification of the substance or mixture
Classification (GHS-US)
Flammable liquids Category 1
Acute toxicity (oral) Category 4
Skin corrosion/irritation Category 2
Serious eye damage/eye irritation Category 2A
Germ cell mutagenicity Category 1B
Carcinogenicity Category 1A
Reproductive toxicity Category 2
Specific target organ toxicity (single exposure) Category 3 - Narcotic effects Specific target organ toxicity (single exposure) Category 3 - Respiratory irritation
Specific target organ toxicity (repeated exposure) Category 1 Aspiration hazard Category 1
Chronic aquatic toxicity Category 2

GHS-US labeling
Signal Word: Danger
Hazard Statements: Extremely flammable liquid and vapor. Toxic if swallowed or if inhaled.
SAFETY DATA SHEET

May be fatal if swallowed and enters airways. 
Causes skin irritation.
Causes serious eye irritation.
May cause genetic defects.
May cause cancer.
Causes damage to organs (Blood) through prolonged or repeated exposure.
May cause damage to organs through prolonged or repeated exposure.
May cause damage to organs (Auditory organs) through prolonged or repeated exposure if inhaled.
Toxic to aquatic life with long lasting effects.

Precautionary Statements:
Prevention:
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Take precautionary measures against static discharge.
Do not breathe dust/fume/gas/mist/vapor/spray.
Wash skin thoroughly after handling.
Do not eat, drink or smoke when using this product.
Avoid release to the environment.
Wear protective gloves/ protective clothing/ eye protection/ face protection.
Response:
IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
Do NOT induce vomiting.
IF exposed or concerned: Get medical advice/ attention.
Collect spillage.
Storage:
Store in a well-ventilated place. Keep container tightly closed.
Disposal:
Dispose of contents/ container to an approved waste disposal plant.

Carcinogenicity:

IARC

Group 1: Carcinogenic to humans
Benzene 71-43-2
1,3-Butadiene 106-99-0

Group 2B: Possibly carcinogenic to humans
Ethylbenzene 100-41-4
Styrene 100-42-5
Isoprene 78-79-5
Naphthalene 91-20-3

NTP

Known to be human carcinogen
Benzene 71-43-2
1,3-Butadiene 106-99-0
Phenanthrene 85-01-8
Reasonably anticipated to be a human carcinogen
Styrene 100-42-5
Isoprene 78-79-5
Naphthalene 91-20-3
Phenanthrene 85-01-8
SAFETY DATA SHEET

ACGIH

Confirmed human carcinogen: The agent is carcinogenic to humans based on the weight of evidence from epidemiologic studies.

Benzene 71-43-2

Suspected human carcinogen: Human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as a confirmed human carcinogen OR, the agent is carcinogenic in experimental animals at dose(s), by route(s) of exposure, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. The A2 is used primarily when there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in

1,3-Butadiene 106-99-0

Confirmed animal carcinogen with unknown relevance to humans: The agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) that may not be relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

Ethylbenzene 100-41-4

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrocarbons, ethylene-manuf.-by-product distn. residues</td>
<td>68921-67-5</td>
<td>100</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>0 - 80</td>
</tr>
<tr>
<td>Dicyclopentadiene</td>
<td>77-73-6</td>
<td>0 - 30</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>0 - 30</td>
</tr>
<tr>
<td>Benzene, dimethyl-</td>
<td>1330-20-7</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Cyclopentadiene</td>
<td>542-92-7</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Styrene</td>
<td>100-42-5</td>
<td>0 - 10</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>142-82-5</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Hexane</td>
<td>110-54-3</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Isopentane</td>
<td>78-78-4</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Isoprene</td>
<td>78-79-5</td>
<td>0 - 5</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>106-99-0</td>
<td>0 - 5</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>91-20-3</td>
<td>0 - 1</td>
</tr>
<tr>
<td>n-Butane</td>
<td>106-97-8</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Biphenyl</td>
<td>92-52-4</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Phenanthrene</td>
<td>85-01-8</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Cyclopentane</td>
<td>287-92-3</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Cumene</td>
<td>98-82-8</td>
<td>0 - 1</td>
</tr>
<tr>
<td>1,2,4-Trimethylbenzene</td>
<td>95-63-6</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Indene</td>
<td>95-13-6</td>
<td>0 - 1</td>
</tr>
<tr>
<td>2-Butene, 2-methyl-</td>
<td>513-35-9</td>
<td>0 - 1</td>
</tr>
</tbody>
</table>
**SAFETY DATA SHEET**

### 4. FIRST AID MEASURES

#### 4.1 Description of first aid measures

**General advice:** Move out of dangerous area. Consult a physician. Show this material safety data sheet to the doctor in attendance. Material may produce a serious, potentially fatal pneumonia if

**If inhaled:** If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.

**In case of skin contact:** If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

**In case of eye contact:** Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irrigation persists, consult a specialist.

**If swallowed:** Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. If symptoms persist, call a physician. Take victim immediately to hospital.

### 5. FIRE FIGHTING MEASURES

#### 5.1 Flammable properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point:</td>
<td>&gt; -11 °C (&gt; 12 °F)</td>
</tr>
<tr>
<td>Method:</td>
<td>Tag</td>
</tr>
<tr>
<td>closed cup</td>
<td></td>
</tr>
<tr>
<td>Autoignition temperature:</td>
<td>348 °C (658 °F)</td>
</tr>
</tbody>
</table>

#### 5.2 Extinguishing media

- Suitable extinguishing: Alcohol-resistant foam. Carbon dioxide (CO2). Dry media: chemical.
- Unsuitable extinguishing: High volume water jet. media:

#### 5.3 Specific hazards during firefighting

- Do not allow run-off from firefighting to enter drains or water courses.

#### 5.4 Special protective equipment for fire-fighters

- Wear self-contained breathing apparatus for fire fighting if necessary.

#### 5.5 Further information

- Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.

#### 5.6 Fire and explosion

- Do not spray on an open flame or any other
SAFETY DATA SHEET

5.7 Hazardous decomposition  Carbon Dioxide. Carbon monoxide.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

6.2 Environmental precautions Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods for cleaning up Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

7. HANDLING AND STORAGE

7.1 Handling
Advice on safe handling: Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion: Do not spray on an open flame or any other incandescent material. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition.

7.2 Storage
Requirements for storage containers: No smoking. Keep container tightly closed in a dry areas and well-ventilated place. Containers which are opened

Revision: 002  Pygas  Date: June 2015  Page: 5/17
8. EXPOSURE CONTROLS/PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>US Ingredients</th>
<th>Basis</th>
<th>Value</th>
<th>Control parameters</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene</td>
<td>ACGIH</td>
<td>TWA</td>
<td>0.5 ppm,</td>
<td>BEI, A1, Skin</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>STEL</td>
<td>2.5 ppm,</td>
<td>BEI, A1, Skin</td>
</tr>
<tr>
<td></td>
<td>OSHA Z2</td>
<td>TWA</td>
<td>10 ppm,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z2</td>
<td>CEIL</td>
<td>25 ppm,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIOSH REL</td>
<td>TWA</td>
<td>0.1 ppm,</td>
<td>Ca,</td>
</tr>
<tr>
<td></td>
<td>NIOSH REL</td>
<td>ST</td>
<td>1 ppm,</td>
<td>Ca,</td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>1 ppm,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>CEIL</td>
<td>10 ppm,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>Peak</td>
<td>50 ppm,</td>
<td></td>
</tr>
<tr>
<td>Dicyclopentadiene</td>
<td>ACGIH</td>
<td>TWA</td>
<td>5 ppm,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>5 ppm, 30 mg/m3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIOSH REL</td>
<td>TWA</td>
<td>5 ppm, 30 mg/m3</td>
<td></td>
</tr>
<tr>
<td>Toluene</td>
<td>ACGIH</td>
<td>TWA</td>
<td>20 ppm,</td>
<td>BEI, A4,</td>
</tr>
<tr>
<td></td>
<td>OSHA Z2</td>
<td>TWA</td>
<td>200 ppm,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z2</td>
<td>CEIL</td>
<td>300 ppm,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z2</td>
<td>Peak</td>
<td>500 ppm,</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>100 ppm, 375 mg/m3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>STEL</td>
<td>150 ppm, 560 mg/m3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIOSH REL</td>
<td>TWA</td>
<td>100 ppm, 375 mg/m3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIOSH REL</td>
<td>ST</td>
<td>150 ppm, 560 mg/m3</td>
<td></td>
</tr>
<tr>
<td>Benzene, dimethyl-</td>
<td>ACGIH</td>
<td>TWA</td>
<td>100 ppm,</td>
<td>BEI, A4,</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>STEL</td>
<td>150 ppm,</td>
<td>BEI, A4,</td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>100 ppm, 435 mg/m3</td>
<td>(b),</td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>100 ppm, 435 mg/m3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>STEL</td>
<td>150 ppm, 655 mg/m3</td>
<td></td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>ACGIH</td>
<td>TWA</td>
<td>100 ppm,</td>
<td>(b), BEI, A3,</td>
</tr>
<tr>
<td></td>
<td>ACGIH</td>
<td>STEL</td>
<td>125 ppm,</td>
<td>(b), BEI, A3,</td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1</td>
<td>TWA</td>
<td>100 ppm, 435 mg/m3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>TWA</td>
<td>100 ppm, 435 mg/m3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>STEL</td>
<td>125 ppm, 545 mg/m3</td>
<td></td>
</tr>
</tbody>
</table>
## SAFETY DATA SHEET

<table>
<thead>
<tr>
<th>Compound</th>
<th>ACGIH</th>
<th>NIOSH REL</th>
<th>Permissible Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclohexadiene</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AC120</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1</td>
<td>TWA: 75 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>TWA: 75 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIOSH REL</td>
<td>TWA: 75 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Styrene</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-2</td>
<td>TWA: 100 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-2</td>
<td>CEIL: 200 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-2</td>
<td>Peak: 600 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>TWA: 50 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1-A</td>
<td>STEL: 100 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NIOSH REL</td>
<td>TWA: 50 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>TWA: 2 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1</td>
<td>TWA: 1 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>OSHA Z-1</td>
<td>STEL: 5 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isoprene</td>
<td>US WEEL: 2 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isopentane</td>
<td>ACGIH: 600 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hexane</td>
<td>ACGIH: 50 ppm</td>
<td></td>
<td>BEI, A4, Skin, mg/m3</td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1: 500 ppm, 1,800 mg/m3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A: 50 ppm, 180 mg/m3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N-Heptane</td>
<td>OSHA Z-1: 500 ppm, 2,000 mg/m3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A: 500 ppm, 2,000 mg/m3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>TWA: 400 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ACGIH</td>
<td>STEL: 500 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naphthalene</td>
<td>ACGIH: 10 ppm</td>
<td></td>
<td>A4, Skin, mg/m3</td>
</tr>
<tr>
<td></td>
<td>ACGIH: 15 ppm</td>
<td></td>
<td>A4, Skin, mag/m3</td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1: 10 ppm, 50 mg/m3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A: 10 ppm, 50 mg/m3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A: 15 ppm, 75 mg/m3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n-Butane</td>
<td>OSHA Z-1-A: 800 ppm, 1,900 mg/m3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>ACGIH: 1,000 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIOSH REL: 800 ppm, 1,900 mg/m3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biphenyl</td>
<td>ACGIH: 0.2 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1: 0.2 ppm, 1 mg/m3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A: 0.2 ppm, 1 mg/m3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIOSH REL: 0.2 ppm, 1 mg/m3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Revision: 002    Pygas    Date: June 2015    Page: 7/17
## SAFETY DATA SHEET

<table>
<thead>
<tr>
<th>Substance</th>
<th>OSHA Z-1</th>
<th>TWA</th>
<th>AcGIH TWA</th>
<th>NIOSH REL TWA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenanthrene</td>
<td></td>
<td>0.2 mg/m³</td>
<td>600 ppm,</td>
<td>600 ppm, 1,720 mg/m³</td>
</tr>
<tr>
<td>Cyclopentane</td>
<td></td>
<td>0.2 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>600 ppm,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,720 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIOSH REL</td>
<td>600 ppm,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,720 mg/m³</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>AcGIH</td>
<td>50 ppm,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1</td>
<td>50 ppm,</td>
<td>245 mg/m³</td>
<td>X, (b),</td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>50 ppm,</td>
<td>245 mg/m³</td>
<td>X,</td>
</tr>
<tr>
<td></td>
<td>NIOSH REL</td>
<td>50 ppm,</td>
<td>245 mg/m³</td>
<td>skin,</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,2,4-Trimethylbenzene</td>
<td>NIOSH REL</td>
<td>25 ppm,</td>
<td>125 mg/m³</td>
<td></td>
</tr>
<tr>
<td>Indene</td>
<td>AcGIH</td>
<td>5 ppm,</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>NIOSH REL</td>
<td>10 ppm,</td>
<td>45 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA Z-1-A</td>
<td>10 ppm,</td>
<td>45 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

() Adopted values or notations enclosed are those for which changes are proposed in the NIC
(b) The value in mg/m³ is approximate.

A1 Confirmed human carcinogen: The agent is carcinogenic to humans based on the weight of evidence from epidemiologic studies.

A2 Suspected human carcinogen: Human data are accepted as adequate in quality but are conflicting or insufficient to classify the agent as a confirmed human carcinogen. OR, the agent is carcinogenic in experimental animals at dose(s), by route(s) of exposure, at site(s), of histologic type(s), or by mechanism(s) considered relevant to worker exposure. The A2 is used primarily when there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals with relevance to humans.

A3 Confirmed animal carcinogen with unknown relevance to humans: The agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) that may not be relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence does not suggest that the agent is likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure.

A4 Not classifiable as a human carcinogen: Agents which cause concern that they could be carcinogenic for humans but which cannot be assessed conclusively because of a lack of data. In vitro or animal studies do not provide indications of carcinogenicity which are sufficient to classify the agent into one of the other categories.

BEI Substances for which there is a Biological Exposure Index or Indices (see BEI® section) Ca

Potential Occupational Carcinogen

Skin Potential for dermal absorption

Skin Danger of cutaneous absorption X

Skin notation

Revision: 002 Pygas Date: June 2015

Page: 8/17
<table>
<thead>
<tr>
<th>Substance name</th>
<th>CAS #</th>
<th>Control parameters</th>
<th>Update</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>Immediately Dangerous to Life or Health Concentration Value 500 parts per million</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>Immediately Dangerous to Life or Health Concentration Value 500 parts per million</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Benzene, dimethyl-</td>
<td>1330-20-7</td>
<td>Immediately Dangerous to Life or Health Concentration Value 900 parts per million</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>Immediately Dangerous to Life or Health Concentration Value 800 parts per million</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Cyclopentadiene</td>
<td>542-92-7</td>
<td>Immediately Dangerous to Life or Health Concentration Value 750 parts per million</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Styrene</td>
<td>100-42-5</td>
<td>Immediately Dangerous to Life or Health Concentration Value 700 parts per million</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>106-99-0</td>
<td>Immediately Dangerous to Life or Health Concentration Value 2000 parts per million</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Hexane</td>
<td>110-54-3</td>
<td>Immediately Dangerous to Life or Health Concentration Value 1100 parts per million</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>142-82-5</td>
<td>Immediately Dangerous to Life or Health Concentration Value 750 parts per million</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Cumene</td>
<td>98-82-8</td>
<td>Immediately Dangerous to Life or Health Concentration Value 900 parts per million</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Phenanthrene</td>
<td>85-01-8</td>
<td>Immediately Dangerous to Life or Health Concentration Value 80 milligram per cubic meter</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Biphenyl</td>
<td>92-52-4</td>
<td>Immediately Dangerous to Life or Health Concentration Value 100 milligram per cubic meter</td>
<td>1995-03-01</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>91-20-3</td>
<td>Immediately Dangerous to Life or Health Concentration Value 250 parts per million</td>
<td>1995-03-01</td>
</tr>
</tbody>
</table>
8.2 Exposure controls

8.2.1 Engineering measures

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

8.2.2 Personal protective equipment

Respiratory protection: Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as:. Full-Face Supplied-Air Respirator. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection: The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection: Eye wash bottle with pure water. Tightly fitting safety goggles.

Skin and body protection: Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Flame retardant antistatic protective clothing. Personal protection
SAFETY DATA SHEET

through wearing a tightly closed chemical protection suit and a self-contained breathing apparatus. Workers should wear antistatic footwear.

Hygiene measures: Avoid contact with skin, eyes and clothing. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties
Physical state: Liquid
Color: Amber
Flash point: > -11 °C (> 12 °F) Method: Tag closed cup
Lower explosion limit: 1.3 % (V)
Upper explosion limit: 7.5 % (V)
Oxidizing properties: no
Autoignition temperature: 348 °C (658 °F)
Molecular formula: UVCB
Molecular Weight: Not applicable
pH: Not applicable
Pour point: No data available
Freezing point: -62 °C (-80 °F)
Boiling point/boiling range: 32 - 204 °C (90 - 399 °F)
Overpoint-Endpoint
Vapor pressure: 11.00 PSI at 38 °C (100 °F)
Relative density: 0.825
Water solubility: Soluble in hydrocarbon solvents; insoluble in water.
Partition coefficient:
n-octanol/water No data available
Viscosity, kinematic: 0.9 cSt at 40 °C (104 °F)
Relative vapor density: 2.8 (Air = 1.0)
Evaporation rate: 3.9
Percent volatile: 99 %

10. STABILITY & REACTIVITY

10.1 Chemical stability: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

10.2 Possibility of hazardous reactions
SAFETY DATA SHEET

Conditions to avoid: heat, light, catalysts, halogens or any other chemicals. Heat, flames and sparks.

Materials to avoid: May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Other data: No decomposition if stored and applied as directed.

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

DAC / RPG
Acute oral toxicity: No data available

DAC / RPG
Acute inhalation toxicity: No data available

DAC / RPG
Acute dermal toxicity: No data available

DAC / RPG
Skin irritation: Irritating to skin. May cause skin irritation in susceptible persons.

DAC / RPG
Eye irritation: Eye irritation

DAC / RPG
Sensitization: Did not cause sensitization on laboratory animals. Information refers to the main ingredient.

DAC / RPG
Repeated dose toxicity: This information is not available.

DAC / RPG
Carcinogenicity: Remarks: Suspect cancer hazard

DAC / RPG
Reproductive toxicity: This information is not available.

DAC / RPG
Teratogenicity: This information is not available.

DAC / RPG
Aspiration toxicity: May be fatal if swallowed and enters airways.
SAFETY DATA SHEET

Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

Toxicology Assessment

DAC / RPG CMR effects:

<table>
<thead>
<tr>
<th>Carcinogenicity:</th>
<th>Not available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teratogenicity:</td>
<td>Not available</td>
</tr>
<tr>
<td>Reproductive toxicity:</td>
<td>Not available</td>
</tr>
</tbody>
</table>

DAC / RPG Further information: Solvents may degrease the skin.

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicological data

Toxicity to fish: No data available

Toxicity to daphnia and other aquatic invertebrates: No data available

Toxicity to algae: No data available

Elimination information (persistence and degradability)

Bioaccumulation: This material is not expected to bioaccumulate.

Biodegradability: This material is volatile and is expected to partition to air.

Ecotoxicology Assessment

Acute aquatic toxicity: Toxic to aquatic organisms.

Chronic aquatic toxicity: May cause long-term adverse effects in the aquatic environment.

Results of PBT assessment Non-classified

PBT substance Additional ecological information: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Toxic to aquatic life with long lasting effects.
SAFETY DATA SHEET

13. DISPOSAL CONSIDERATIONS

The information in this MSDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product: The product should not be allowed to enter drains, watercourses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

Contaminated packaging: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

14. TRANSPORT INFORMATION

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

US DOT (United States Department of Transportation)
UN1268, PETROLEUM DISTILLATES, N.O.S., 3, I

IMO / IMDG (International Maritime Dangerous Goods)
UN1268, PETROLEUM DISTILLATES, N.O.S., 3, I, (> -11 °C)

IATA (International Air Transport Association)
UN1268, PETROLEUM DISTILLATES, N.O.S., 3, I

ADR (Agreement on Dangerous Goods by Road (Europe))
UN1268, PETROLEUM PRODUCTS, N.O.S., 3, I, (D/E)

RID (Regulations concerning the International Transport of Dangerous Goods (Europe))
UN1268, PETROLEUM PRODUCTS, N.O.S., 3, I

ADN (European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways)
UN1268, PETROLEUM PRODUCTS, N.O.S., 3, I

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
SAFETY DATA SHEET

15. REGULATORY INFORMATION

National legislation
SARA 311/312 Hazards: Fire Hazard
Acute Health Hazard
Chronic Health Hazard

EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO – KNOW

CERCLA Reportable Quantity: 13 lbs
Benzene

SARA 302 Reportable Quantity: This material does not contain any components
with a SARA 302 RQ.

SARA 302 Threshold Planning SARA 302: No chemicals in this material are
Quantity: subject to the reporting requirements of SARA Title
III, Section 302.

SARA 304 Reportable Quantity: This material does not contain any components
with a section 304 EHS RQ.

SARA 313 Ingredients: The following components are subject to reporting
levels established by SARA Title III, Section 313:

Benzene 71-43-2
Dicyclopentadiene 77-73-6
Benzene, dimethyl- 1330-20-7
Ethylbenzene 100-41-4
Toluene 108-88-3
Styrene 100-42-5
1,3-Butadiene 106-99-0
Hexane 110-54-3

Clean Air Act
Ozone-Depletion Potential: This product neither contains, nor was
manufactured with a Class I or Class II ODS as defined
by the U.S. Clean Air Act Section 602 (40

US State Regulations
Pennsylvania Right To Know

:Indene 95-13-6
:1,2,4-Trimethylbenzene 95-63-6
:Cumene 98-82-8
:Cyclopentane 287-92-3
:Phenanthrene 85-01-8
:Biphenyl 92-52-4
:n-Butane 106-97-8

Revision: 002 Pygas Date: June 2015
Page: 15/17
SAFETY DATA SHEET

- Naphthalene 91-20-3
- 1,3-Butadiene 106-99-0
- Isoprene 78-79-5
- Isopentane 78-78-4
- Hexane 110-54-3
- n-Heptane 142-82-5
- Styrene 100-42-5
- Cyclopentadiene 542-92-7
- Ethylbenzene 100-41-4
- Benzene, dimethyl- 1330-20-7
- Toluene 108-88-3
- Dicyclopentadiene 77-73-6
- Benzene 71-43-2

New Jersey Right To Know

- Indene 95-13-6
- 1,2,4-Trimethylbenzene 95-63-6
- Cumene 98-82-8
- Cyclopentane 287-92-3
- Biphenyl 92-52-4
- n-Butane 106-97-8
- Naphthalene 91-20-3
- 1,3-Butadiene 106-99-0
- Isoprene 78-79-5
- Isopentane 78-78-4
- Hexane 110-54-3
- n-Heptane 142-82-5
- Styrene 100-42-5
- Cyclopentadiene 542-92-7
- Ethylbenzene 100-41-4
- Benzene, dimethyl- 1330-20-7
- Toluene 108-88-3
- Dicyclopentadiene 77-73-6
- Benzene 71-43-2

California Prop. 65 Ingredients:

WARNING! This product contains a chemical known in the State of California to cause cancer.

WARNING! This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

Notification status

Europe REACH: On the inventory, or in compliance with the inventory

United States of America US.TSCA: On the inventory, or in compliance with the inventory

Canada DSL: On the inventory, or in compliance with the inventory.

Revision: 002 Pygas Date: June 2015
Page: 16/17
SAFETY DATA SHEET

Australia AICS: On the inventory, or in compliance with the inventory
New Zealand NZIoC: Not in compliance with the inventory
Japan ENCS: Not in compliance with the inventory
Korea KECl: Not in compliance with the inventory
Philippines PICCS: Not in compliance with the inventory
China IECSC: Not in compliance with the inventory

16. OTHER INFORMATION

NFPA Classification: Health Hazard: 2
Fire Hazard: 3
Reactivity Hazard: 0

Disclaimer:
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. Alteration of this document is strictly prohibited. Vitol Inc. assumes no responsibility for accuracy of information.