Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

Product identifier
Product Name: Raw Pyrolysis Gas
Synonyms: Py Gas, Pyrolysis Gasoline, C5s/C5+, Aromatic Concentrate

Relevant identified uses of the substance or mixture and uses advised against
Relevant identified use(s): Fuel, chemical reclamation

Details of the supplier of the safety data sheet
Manufacturer: Westlake Chemical OpCo LP
900 Highway 108
Sulphur, LA 70665
United States
www.westlake.com

Telephone (General): 270-395-3151
Emergency telephone number: 800-424-9300 – CHEMTREC

Section 2: Hazards Identification

United States (US)
According to OSHA 29 CFR 1910.1200 HCS
Classification of the substance or mixture

OSHA HCS 2012
• Flammable Liquids 3 - H226
  Acute Toxicity Oral 4 - H302
  Aspiration 1 - H304
  Acute Toxicity Dermal 4 - H312
  Skin Irritation 2 - H315
  Eye Irritation 2 - H319
  Acute Toxicity Inhalation 4 - H332
  Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation - H335
  Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects - H336
  Germ Cell Mutagenicity 1B - H340
  Carcinogenicity 1A - H350
  Reproductive Toxicity 2 - H361
  Specific Target Organ Toxicity Repeated Exposure 1 - H372

Label elements

OSHA HCS 2012

Hazard statements
• DANGER

Flammable liquid and vapor - H226
Harmful if swallowed - H302
May be fatal if swallowed and enters airways - H304
Harmful in contact with skin - H312
Causes skin irritation - H315
Causes serious eye irritation - H319
Harmful if inhaled - H332
May cause respiratory irritation - H335
May cause drowsiness or dizziness - H336
May cause genetic defects. - H340
May cause cancer. - H350
Suspected of damaging fertility or the unborn child. - H361
Causes damage to organs through prolonged or repeated exposure. - H372

Precautionary Statements

Prevention
• Obtain special instructions before use. - P201
• Do not handle until all safety precautions have been read and understood. - P202
• Keep away from heat, sparks, open flames and/or hot surfaces. - No smoking. - P210
• Keep container tightly closed. - P233
• Ground and/or bond container and receiving equipment. - P240
• Use explosion-proof electrical/ventilating/lighting/equipment. - P241
• Use only non-sparking tools. - P242
• Take precautionary measures against static discharge. - P243
• Do not breathe mists, vapors, and/or spray. - P260
• Wash thoroughly after handling. - P264
• Do not eat, drink or smoke when using this product. - P270
• Use only outdoors or in a well-ventilated area. - P271
• Wear protective gloves, clothing, and eye/face protection. - P280

Response
• In case of fire: Use appropriate media for extinction. - P370+P378
• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. - P304+P340
• Call a POISON CENTER or doctor/physician if you feel unwell. - P312
• If on skin: Wash with plenty of water.
• Take off contaminated clothing and wash before reuse. - P362
• Specific treatment, see supplemental first aid information. - P321
• If skin irritation occurs: Get medical advice/attention. - P332+P313
• IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. - P305+P351+P338
• If eye irritation persists: Get medical advice/attention. - P337+P313
• IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician if you feel unwell. - P301+P312
• Rinse mouth. - P330
• Do NOT induce vomiting. - P331
• IF exposed or concerned: Get medical advice/attention. - P308+P313

Storage/Disposal
• Store in a well-ventilated place. Keep container tightly closed. - P403+P233
• Keep cool. - P235
• Store locked up. - P405
• Dispose of content and/or container in accordance with local, regional, national, and/or international regulations. - P501

Other hazards
OSHA HCS 2012

Canada
According to: WHMIS

Classification of the substance or mixture
### WHMIS
- Compressed Gas - A
- Flammable Liquids - B2
- Toxic - D1B
- Other Toxic Effects - D2A
- Other Toxic Effects - D2B

### Label elements
- Flammable Liquids - B2
- Toxic - D1B
- Other Toxic Effects - D2A
- Other Toxic Effects - D2B

### Other hazards
- In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

#### Section 3 - Composition/Information on Ingredients

### Substances
- Material does not meet the criteria of a substance.

### Mixtures

#### Composition

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Identifiers (CAS)</th>
<th>%</th>
<th>LD50/LC50</th>
<th>Classifications According to Regulation/Directive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>38% TO 50%</td>
<td>Skin-Rabbit LD50 • &gt;9400 µg/kg  &lt;br&gt; Ingestion/Oral-Rat LD50 • 930 mg/kg  &lt;br&gt; Inhalation-Rat LC50 • 7 Hour(s)</td>
<td>OSHA HCS 2012: Flam. Liq. 2; Skin Irrit. 2; Muta. 1B; Carc. 1A; Asp. Tox. 1; STOT RE 1 (Blood and Bone marrow); Repr. 2; STOT SE 3: Narc.; Acute Tox. 4 (orl)</td>
</tr>
<tr>
<td>4,7-Methanoindene, 3a,4,7,7a-tetrahydro-</td>
<td>77-73-6</td>
<td>&lt; 15%</td>
<td>NDA</td>
<td>OSHA HCS 2012: Flam. Liq. 3; Skin Irrit. 2; Eye Irrit. 2; Acute Tox. 4 (orl); Acute Tox. 3 (inhl); STOT SE 3: Resp. Irrit.;</td>
</tr>
<tr>
<td>Toluene</td>
<td>108-88-3</td>
<td>8% TO 12%</td>
<td>Ingestion/Oral-Rat LD50 • 636 mg/kg  &lt;br&gt; Inhalation-Rat LC50 • 49 g/m³ 4 Hour(s)  &lt;br&gt; Skin-Rabbit LD50 • 14100 µL/kg</td>
<td>OSHA HCS 2012: Flam. Liq. 2; Acute Tox. 4 (orl); Skin Irrit. 2; Eye Irrit. 2; Muta. 1B; Repr. 2; STOT SE 3: Narc.; STOT RE 1 (CNS, Inhl); Asp. Tox. 1</td>
</tr>
<tr>
<td>1,3-Cyclopentadiene</td>
<td>542-92-7</td>
<td>0% TO 8%</td>
<td>NDA</td>
<td>OSHA HCS 2012: Flam. Liq. 3; Acute Tox. 3 (skn); Acute Tox. 3 (orl);</td>
</tr>
<tr>
<td>Isoprene</td>
<td>78-79-5</td>
<td>&lt; 5%</td>
<td>Inhalation-Rat LC50 • 180 g/m³ 4 Hour(s)</td>
<td>OSHA HCS 2012: Flam. Liq. 1; Carc. 2; Muta. 2; Repr. 2; STOT SE 3: Resp. Irrit. &amp; Narc.;</td>
</tr>
<tr>
<td>Ethylen/benzene</td>
<td>100-42-5</td>
<td>&lt; 5%</td>
<td>Ingestion/Oral-Rat LD50 • 2650 mg/kg  &lt;br&gt; Inhalation-Rat LC50 • 11800 mg/m³ 4 Hour(s)</td>
<td>OSHA HCS 2012: Flam. Liq. 3; Acute Tox. 4 (inhl); Skin Irrit. 2; Eye Irrit. 2; Muta. 2 (Inhl); Carc. 2 (Inhl); Repr. 2 (Inhl); STOT SE 3: Narc.; STOT SE 3: Resp. Irrit. (Inhl); Asp. Tox. 1</td>
</tr>
<tr>
<td>Cyclopentene</td>
<td>142-29-0</td>
<td>&lt; 5%</td>
<td>Skin-Rabbit LD50 • 1.59 mL/kg  &lt;br&gt; Ingestion/Oral-Rat LD50 • 2.14 mL/kg</td>
<td>OSHA HCS 2012: Flam. Liq. 2; Acute Tox. 4 (orl, skn)</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>91-20-3</td>
<td>&lt; 2%</td>
<td>Skin-Rabbit LD50 • &gt;20 g/kg  &lt;br&gt; Ingestion/Oral-Rat LD50 • 490 mg/kg</td>
<td>OSHA HCS 2012: Flam. Sol. 2; Acute Tox. 4 (orl); Skin Irrit. 2; Muta. 2; Carc. 2; Repr. 2; STOT SE 3: Narc.; STOT RE 1 (Blood, Eyes, Orl, Inhl)</td>
</tr>
<tr>
<td>Methanol</td>
<td>67-56-1</td>
<td>&lt; 2%</td>
<td>Inhalation-Rat LC50 • 64000 ppm 4 Hour(s)  &lt;br&gt; Skin-Rabbit LD50 • 15800 mg/kg  &lt;br&gt; Ingestion/Oral-Rat LD50 • 5600 mg/kg</td>
<td>OSHA HCS 2012: Flam. Liq. 2; Acute Tox. 3; Skin Irrit. 2; Eye Irrit. 2; Muta. 2; STOT SE 3: Narc.</td>
</tr>
<tr>
<td>1-Pentene</td>
<td>109-67-1</td>
<td>&lt; 2%</td>
<td>Inhalation-Rat LC50 • 175000 mg/m³ 4 Hour(s)</td>
<td>OSHA HCS 2012: Flam. Liq. 1; STOT SE 3: Narc.</td>
</tr>
</tbody>
</table>
Section 4 - First Aid Measures

Description of first aid measures

Inhalation  • Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. Get medical attention.

Skin  • In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin. Wash the contaminated area of body with soap and fresh water. Remove and isolate contaminated clothing. If irritation develops and persists, get medical attention.

Eye  • Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first five minutes, then continue rinsing eye. If eye irritation persists: Get medical advice/attention.

Ingestion  • Do NOT induce vomiting. Get medical attention immediately.

Most important symptoms and effects, both acute and delayed  • Refer to Section 11 - Toxicological Information.

Indication of any immediate medical attention and special treatment needed  • All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Notes to Physician  • All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.

Section 5 - Firefighting Measures

Extinguishing media

Suitable Extinguishing Media  • Use ABC dry chemical, foam or carbon dioxide.

Unsuitable Extinguishing Media  • Water may be ineffective but water should be used to keep fire exposed containers cool.

Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards  • Containers may explode when heated.
• Vapor explosion hazard indoors, outdoors or in sewers.
• HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.
• Many liquids are lighter than water.
• Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
• Runoff to sewer may create fire or explosion hazard.
• Vapors may form explosive mixtures with air.
• Vapors may travel to source of ignition and flash back.

Hazardous Combustion Products  • No data available
Advice for firefighters

- Structural firefighters’ protective clothing will only provide limited protection.
- Wear positive pressure self-contained breathing apparatus (SCBA).
- Move containers from fire area if you can do it without risk.
- LARGE FIRES: Cool containers with flooding quantities of water until well after fire is out.

Section 6 - Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures

Personal Precautions
- CAUTION: Victim may be a source of contamination. Do not walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Wear appropriate personal protective equipment, avoid direct contact.

Emergency Procedures
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. LARGE SPILL: Consider initial downwind evacuation for at least 300 meters (1000 feet) ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering.

Environmental precautions
- Prevent entry into waterways, sewers, basements or confined areas.

Methods and material for containment and cleaning up

Containment/Clean-up
- Stop leak if you can do it without risk.
- Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
- Use clean non-sparking tools to collect absorbed material.
- A vapor suppressing foam may be used to reduce vapors.
- All equipment used when handling the product must be grounded.
- LARGE SPILLS: Dike far ahead of liquid spill for later disposal.
- LARGE SPILLS: Water spray may reduce vapor; but may not prevent ignition in closed spaces.

Section 7 - Handling and Storage

Precautions for safe handling

Handling
- Use only with adequate ventilation.
- Keep away from heat, sparks, and flame.
- All equipment used when handling the product must be grounded.
- Take precautionary measures against static charges.
- Wear appropriate personal protective equipment, avoid direct contact.
- Do not breathe mist, vapours and/or spray.
- Avoid contact with skin, eyes, and clothing.
- Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

Conditions for safe storage, including any incompatibilities

Storage
- Keep container closed when not in use.
- Store away from oxidizing materials.
- Store in a cool/low-temperature, well-ventilated place away from heat and ignition sources.
- Do not cut, puncture or weld on or near the container.
Control parameters

<table>
<thead>
<tr>
<th>Substance</th>
<th>Exposure Limits/Guidelines</th>
<th>ACGIH</th>
<th>Canada Manitoba</th>
<th>NIOSH</th>
<th>OSHA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1,3-Cyclopentadiene (542-92-7)</strong></td>
<td>TWAs</td>
<td>75 ppm TWA</td>
<td>Not established</td>
<td>75 ppm TWA; 200 mg/m3 TWA</td>
<td>75 ppm TWA; 200 mg/m3 TWA</td>
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<tr>
<td><strong>Ethylbenzene (100-41-4)</strong></td>
<td>TWAs</td>
<td>20 ppm TWA</td>
<td>Not established</td>
<td>100 ppm TWA; 435 mg/m3 TWA</td>
<td>100 ppm TWA; 435 mg/m3 TWA</td>
</tr>
<tr>
<td></td>
<td>STELs</td>
<td>Not established</td>
<td>Not established</td>
<td>125 ppm STEL; 545 mg/m3 TWA</td>
<td>Not established</td>
</tr>
<tr>
<td><strong>1,3-Butadiene (106-99-0)</strong></td>
<td>TWAs</td>
<td>2 ppm TWA</td>
<td>Not established</td>
<td>Not established</td>
<td>1 ppm TWA (listed under Butadiene)</td>
</tr>
<tr>
<td><strong>Naphthalene (91-20-3)</strong></td>
<td>TWAs</td>
<td>10 ppm TWA</td>
<td>Not established</td>
<td>10 ppm TWA; 50 mg/m3 TWA</td>
<td>10 ppm TWA; 50 mg/m3 TWA</td>
</tr>
<tr>
<td></td>
<td>STELs</td>
<td>15 ppm STEL</td>
<td>Not established</td>
<td>15 ppm STEL; 75 mg/m3 STEL</td>
<td>Not established</td>
</tr>
<tr>
<td><strong>Methanol (67-56-1)</strong></td>
<td>TWAs</td>
<td>200 ppm TWA</td>
<td>Not established</td>
<td>200 ppm TWA; 260 mg/m3 TWA</td>
<td>200 ppm TWA; 260 mg/m3 TWA</td>
</tr>
<tr>
<td></td>
<td>STELs</td>
<td>250 ppm STEL</td>
<td>Not established</td>
<td>250 ppm STEL; 325 mg/m3 STEL</td>
<td>Not established</td>
</tr>
<tr>
<td><strong>Ethynylbenzene (100-42-5)</strong></td>
<td>Ceilings</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>200 ppm Ceiling</td>
</tr>
<tr>
<td></td>
<td>TWAs</td>
<td>20 ppm TWA</td>
<td>Not established</td>
<td>50 ppm TWA; 215 mg/m3 TWA</td>
<td>100 ppm TWA</td>
</tr>
<tr>
<td></td>
<td>STELs</td>
<td>40 ppm STEL</td>
<td>Not established</td>
<td>100 ppm STEL; 425 mg/m3 STEL</td>
<td>Not established</td>
</tr>
<tr>
<td><strong>Toluene (108-88-3)</strong></td>
<td>Ceilings</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>300 ppm Ceiling</td>
</tr>
<tr>
<td></td>
<td>TWAs</td>
<td>20 ppm TWA</td>
<td>Not established</td>
<td>100 ppm TWA; 375 mg/m3 TWA</td>
<td>200 ppm TWA</td>
</tr>
<tr>
<td></td>
<td>STELs</td>
<td>Not established</td>
<td>Not established</td>
<td>150 ppm STEL; 560 mg/m3 STEL</td>
<td>Not established</td>
</tr>
<tr>
<td><strong>4,7-Methanoindene, 3a,4,7,7a-tetrahydro- (77-73-6)</strong></td>
<td>TWAs</td>
<td>5 ppm TWA</td>
<td>Not established</td>
<td>5 ppm TWA; 30 mg/m3 TWA</td>
<td>Not established</td>
</tr>
<tr>
<td><strong>Benzene (71-43-2)</strong></td>
<td>Designated Substances</td>
<td>Not established</td>
<td>Present</td>
<td>Not established</td>
<td>Not established</td>
</tr>
<tr>
<td></td>
<td>Ceilings</td>
<td>Not established</td>
<td>Not established</td>
<td>Not established</td>
<td>25 ppm Ceiling</td>
</tr>
<tr>
<td></td>
<td>STELs</td>
<td>2.5 ppm STEL</td>
<td>Not established</td>
<td>1 ppm STEL</td>
<td>5 ppm STEL (see 29 CFR 1910.1028)</td>
</tr>
<tr>
<td></td>
<td>TWAs</td>
<td>0.5 ppm TWA</td>
<td>Not established</td>
<td>0.1 ppm TWA</td>
<td>10 ppm TWA (applies to industry segments exempt from the benzene standard at 29 CFR 1910.1028); 1 ppm TWA</td>
</tr>
</tbody>
</table>

Exposure controls

**Engineering Measures/Controls**

- Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits.
If exposure limits have not been established, maintain airborne levels to an acceptable level. Use only appropriately classified electrical equipment.

**Personal Protective Equipment**

**Respiratory**
- In case of insufficient ventilation, wear suitable respiratory equipment. Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or symptoms are experienced.

**Eye/Face**
- Wear safety goggles.

**Skin/Body**
- Wear appropriate gloves.

**Environmental Exposure Controls**
- Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

**Key to abbreviations**
- ACGIH = American Conference of Governmental Industrial Hygiene
- NIOSH = National Institute of Occupational Safety and Health
- OSHA = Occupational Safety and Health Administration
- STEL = Short Term Exposure Limits are based on 15 minute exposures
- TWA = Time Weighted Averages are based on 8h/day, 40h/week exposures

### Section 9 - Physical and Chemical Properties

#### Information on Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Material Description</th>
<th>Appearance/Description</th>
<th>General Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical Form</strong></td>
<td>Liquid</td>
<td>Boiling Point 114 °F(45.6 °C)</td>
</tr>
<tr>
<td><strong>Color</strong></td>
<td>Amber</td>
<td>Decomposition Temperature NDA</td>
</tr>
<tr>
<td><strong>Odor Threshold</strong></td>
<td>NDA</td>
<td>Specific Gravity/Relative Density 0.82 to 0.86 Water=1</td>
</tr>
<tr>
<td><strong>Viscosity</strong></td>
<td>NDA</td>
<td>Melting Point NDA</td>
</tr>
<tr>
<td><strong>Vapor Pressure</strong></td>
<td>75 mmHg (torr) @ 68 °F(20 °C)</td>
<td>pH NDA</td>
</tr>
<tr>
<td><strong>Evaporation Rate</strong></td>
<td>2.8 Ether = 1</td>
<td>Water Solubility 0.7 % @ 72 °F(22 °C)</td>
</tr>
<tr>
<td><strong>Volatiles (Vol.)</strong></td>
<td>99 % @ 360 °F(182 °C)</td>
<td></td>
</tr>
</tbody>
</table>

#### Flammability

| **Flash Point**                      | 80 °F(26.7 °C)         | UEL 11 % |
| **LEL**                              | 2.2 %                  | Autoignition 1076 °F(580 °C) |
| **Flammability (solid, gas)**        | NDA                    |          |

#### Environmental

| Octanol/Water Partition coefficient  | NDA                    |

### Section 10: Stability and Reactivity

#### Reactivity
- No dangerous reaction known under conditions of normal use.

#### Chemical stability
- Stable under normal temperatures and pressures.
**Possibility of hazardous reactions**

- Hazardous polymerization will not occur.

**Conditions to avoid**

- Heat, sparks, open flame.

**Incompatible materials**

- Reacts with chlorine, ozone, perchloryl fluoride, liquid oxygen and other strong oxidizing agents such as hydrogen peroxide, permanganates and perchlorates. Depending upon the amount and specific materials involved, contact can result in intense heat, boiling, flame development, explosion or toxic gas generation. Spontaneous combustion may occur in contact with sodium peroxide or potassium peroxide.

**Hazardous decomposition products**

- Carbon monoxide, carbon dioxide and small amounts of aromatic and aliphatic hydrocarbons.

### Section 11 - Toxicological Information

#### Information on toxicological effects

<table>
<thead>
<tr>
<th>Component Name</th>
<th>CAS</th>
<th>Acute Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butane (&lt; 5%)</td>
<td>106-97-8</td>
<td>Inhalation-Rat LC50 • 658 g/m³ 4 Hour(s)</td>
</tr>
<tr>
<td>Benzene (38% TO 50%)</td>
<td>71-43-2</td>
<td><strong>Acute Toxicity:</strong> Ingestion/Oral-Rat LD50 • 1800 mg/kg; Inhalation-Rat LC50 • 10000 ppm 7 Hour(s); Inhalation-Human TCo • 1500 mg/m³ 4 Hour(s); Sense Organs and Special Senses:Eye,Lacrimation; Sense Organs and Special Senses:Eye Conjunctive irritation; Behavioral:Ataxia; Behavioral:Abuse; Brain and Coverings:Recordings from specific areas of CNS: Behavioral:Antipsychotic; Blood:Changes in bone marrow not included above; Inhalation-Man TCo • 50 ppm; Kidney, Ureter, and Bladder:Other changes in urine composition; Skin-Rabbit LD50 • 14100 µL/kg; Irritation: Eye-Rabbit • 2 mg 24 Hour(s) • Severe irritation; Skin-Rabbit • 15 mg 24 Hour(s)-Open • Mild irritation; Multi-dose Toxicity: Inhalation-Mouse TCo • 250 ppm 4 Day(s)-Continuous; Behavioral:Convulsions or effect on seizure threshold; Behavioral:Abuse; Inhalation-Mouse TCo • 50 ppm 12 Week(s)-Intermittent; Brain and Coverings:Other degenerative changes; Inhalation-Rat TCo • 10 ppm 6 Hour(s) 13 Week(s)-Intermittent; Brain and Coverings:Other degenerative changes; Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels:Multiple enzyme effects; Mutagen: Micronucleus test • Ingestion/Oral-Mouse • 200 mg/kg; Sister chromatid exchange • Inhalation-Human • 252 µg/L 19 Year(s); Cytogenetic analysis • Inhalation-Rat • 5400 µg/m³ 16 Week(s)-Intermittent; Reproductive: Inhalation-Mouse TCo • 500 mg/m³ 24 Hour(s)-6-13D preg); Reproductive Effects:Effects on Embryo or Fetus:Fetotoxicity (except death, e.g., stunted fetus); Inhalation-Mouse TCo • 200 ppm 7 Hour(s)-7-16D preg); Reproductive Effects:Specific Developmental Abnormalities:Urogenital system</td>
</tr>
<tr>
<td>Toluene (8% TO 12%)</td>
<td>108-88-3</td>
<td><strong>Acute Toxicity:</strong> Ingestion/Oral-Rat LD50 • 636 mg/kg; Inhalation-Rat LC50 • 49 g/m³ 4 Hour(s); Inhalation-Human TCo • 1500 mg/m³ 8 Hour(s); Sense Organs and Special Senses:Eye,Lacrimation; Sense Organs and Special Senses:Eye Conjunctive irritation; Behavioral:Ataxia; Behavioral:Abuse; Brain and Coverings:Recordings from specific areas of CNS: Behavioral:Antipsychotic; Blood:Changes in bone marrow not included above; Inhalation-Man TCo • 50 ppm; Kidney, Ureter, and Bladder:Other changes in urine composition; Skin-Rabbit LD50 • 14100 µL/kg; Irritation: Eye-Rabbit • 2 mg 24 Hour(s) • Severe irritation; Skin-Rabbit • 20 mg 24 Hour(s) • Moderate irritation; Multi-dose Toxicity: Inhalation-Mouse TCo • 250 ppm 4 Day(s)-Continuous; Behavioral:Convulsions or effect on seizure threshold; Behavioral:Abuse; Inhalation-Mouse TCo • 50 ppm 12 Week(s)-Intermittent; Brain and Coverings:Other degenerative changes; Inhalation-Rat TCo • 10 ppm 6 Hour(s) 13 Week(s)-Intermittent; Brain and Coverings:Other degenerative changes; Biochemical:Enzyme inhibition, induction, or change in blood or tissue levels:Multiple enzyme effects; Mutagen: Micronucleus test • Ingestion/Oral-Mouse • 200 mg/kg; Sister chromatid exchange • Inhalation-Human • 252 µg/L 19 Year(s); Cytogenetic analysis • Inhalation-Rat • 5400 µg/m³ 16 Week(s)-Intermittent; Reproductive: Inhalation-Mouse TCo • 500 mg/m³ 24 Hour(s)-6-13D preg); Reproductive Effects:Effects on Embryo or Fetus:Fetotoxicity (except death, e.g., stunted fetus); Inhalation-Mouse TCo • 200 ppm 7 Hour(s)-7-16D preg); Reproductive Effects:Specific Developmental Abnormalities:Urogenital system</td>
</tr>
</tbody>
</table>
| Ethylbenzene (< 5%)             | 100-42-5 | **Acute Toxicity:** Ingestion/Oral-Rat LD50 • 2650 mg/kg; Behavioral:Somnolence (general depressed activity); Liver:Other changes; Inhalation-Rat LC50 • 11800 mg/m³ 4 Hour(s); Irritation: Eye-Rabbit • 100 mg • Severe irritation; Skin-Rabbit • 100 % • Moderate irritation; Multi-dose Toxicity: Inhalation-Rat TCo • 300 ppm 6 Hour(s) 2 Week(s)-Intermittent; Lungs, Thorax, or Respiration:Structural or functional change in trachea or bronchi; Lungs, Thorax, or Respiration:Other changes; Liver:Other changes; Mutagen: DNA adduct • Inhalation-Human • 107.4 µg/L 4 Year(s)-Intermittent; Sister chromatid exchange • Inhalation-Human • 1204 mg/m³ 5 Year(s)-Intermittent; Sister chromatid exchange • Inhalation-Mouse • 125 ppm 4 Day(s)-Intermittent; Micronucleus test • Inhalation-Mouse • 1500 mg/m³ 7 Day(s)-Intermittent; DNA adduct • Inhalation-Mouse • 600 µg/L 10 Day(s)-Intermittent; Reproductive: Inhalation-Rat TCo • 1500 µg/m³ 24 Hour(s)-1-22D preg); Reproductive Effects:Effects on Embryo or Fetus:Fetotoxicity (except death, e.g., stunted fetus); Reproductive Effects:Effects on
<table>
<thead>
<tr>
<th>Compound</th>
<th>Acute Toxicity</th>
<th>Multi-dose Toxicity</th>
<th>Reproductive Toxicity</th>
<th>Tumorigenic / Carcinogenic</th>
</tr>
</thead>
<tbody>
<tr>
<td>4,7-Methanoindene, 3a,4,7a-tetrahydro- (&lt; 15%)</td>
<td>77-73-6</td>
<td></td>
<td></td>
<td>Embryo or Fetus: Fetal death; Tumorigenic / Carcinogenic by RTECS criteria: Skin Appendages: Other; Tumors: Blood; Cachexia; Leukemia</td>
</tr>
<tr>
<td>1,3-Butadiene (&lt; 2%)</td>
<td>106-99-0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-Pentene (&lt; 2%)</td>
<td>109-67-1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,3-Cyclopentadiene (0% TO 8%)</td>
<td>542-92-7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyclopentene (&lt; 5%)</td>
<td>142-29-0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1,3-Pentadiene (&lt; 2%)</td>
<td>504-60-9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Isoprene (&lt; 5%)</td>
<td>78-79-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Naphthalene (&lt; 2%)</td>
<td>91-20-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethylbenzene (&lt; 1%)</td>
<td>100-41-4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Irritation:** Skin-Rabbit • 15 mg 24 Hour(s)-Open • Mild irritation;  
**Reproductive:** Inhalation-Rat TCLo • 1000 ppm (6H/6-20D preg); Reproductive Effects: Specific Developmental Abnormalities: Other developmental abnormalities; Reproductive Effects: Specific Developmental Abnormalities: Musculoskeletal system;  
**Tumorigen / Carcinogen:** Inhalation-Rat TCLo • 750 ppm 1 Week(s)-Intermittent; Tumorigenic: Equivocal tumorigenic agent by RTECS criteria; Kidney, Ureter, and Bladder: Kidney tumors; Tumorigenic: Increased incidence of tumors in susceptible strains

<table>
<thead>
<tr>
<th>GHS Properties</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity</td>
<td>OSHA HCS 2012•Acute Toxicity - Dermal 4 - ATEmix (dermal) = 1565 mg/kg; Acute Toxicity - Inhalation 4 - ATEmix (inh) = 3035 ppmV; Acute Toxicity - Oral 4 - ATEmix (oral) = 547 mg/kg</td>
</tr>
<tr>
<td>Aspiration Hazard</td>
<td>OSHA HCS 2012•Aspiration 1</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>OSHA HCS 2012•Carcinogenicity 1A</td>
</tr>
<tr>
<td>Germ Cell Mutagenicity</td>
<td>OSHA HCS 2012•Germ Cell Mutagenicity 1B</td>
</tr>
<tr>
<td>Skin corrosion/Irritation</td>
<td>OSHA HCS 2012•Skin Irritation 2</td>
</tr>
<tr>
<td>Skin sensitization</td>
<td>OSHA HCS 2012•NDA</td>
</tr>
<tr>
<td>STOT-RE</td>
<td>OSHA HCS 2012•Specific Target Organ Toxicity Repeated Exposure 1</td>
</tr>
<tr>
<td>STOT-SE</td>
<td>OSHA HCS 2012•Specific Target Organ Toxicity Single Exposure 3: Narcotic Effects; Specific Target Organ Toxicity Single Exposure 3: Respiratory Tract Irritation</td>
</tr>
<tr>
<td>Toxicity for Reproduction</td>
<td>OSHA HCS 2012•Toxic to Reproduction 2</td>
</tr>
<tr>
<td>Respiratory sensitization</td>
<td>OSHA HCS 2012•NDA</td>
</tr>
<tr>
<td>Serious eye damage/Irritation</td>
<td>OSHA HCS 2012•Eye Irritation 2</td>
</tr>
</tbody>
</table>

**Potential Health Effects**  
**Inhalation**

**Acute (Immediate)**  
- Harmful if inhaled. May cause respiratory irritation. May affect the central nervous system. Symptoms may include dizziness, drowsiness, lethargy, coma and death.

**Chronic (Delayed)**  
- NDA

**Skin**

**Acute (Immediate)**  
- Harmful in contact with skin. Causes skin irritation.

**Chronic (Delayed)**  
- NDA

**Eye**

**Acute (Immediate)**  
- Causes serious eye irritation.

**Chronic (Delayed)**  
- NDA

**Ingestion**

**Acute (Immediate)**  
- Harmful if swallowed. Material may be aspirated into lungs during ingestion and/or subsequent vomiting. Aspiration of this material will cause severe lung injury, chemical pneumonitis, pulmonary edema or death.

**Chronic (Delayed)**  
- NDA

**Other**

**Chronic (Delayed)**  
- Chronic exposure to benzene results primarily in hematotoxicity, including aplastic anemia, pancytopenia, or any combination of anemia, leukopenia, and thrombocytopenia. Toluene causes CNS narcosis; mild, transient irritation of the upper respiratory tract; hiliarity; nausea; nasal discharge; drowsiness; ataxia; dizziness; cerebellar ataxia; cognitive dysfunction; metallic taste; loss of appetite; weakness; and palpitations. High concentrations are associated with CNS encephalopathy, headache, depression, and lassitude. Naphthalene may cause damage to the eyes through prolonged or repeated exposure.
Mutagenic Effects
• Repeated and prolonged exposure may cause mutagenic effects.

Carcinogenic Effects
• Repeated and prolonged exposure may cause cancer.

<table>
<thead>
<tr>
<th>Carcinogenic Effects</th>
<th>CAS</th>
<th>OSHA</th>
<th>IARC</th>
<th>NTP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>Not Listed</td>
<td>Group 2B-Possible Carcinogen</td>
<td>Not Listed</td>
</tr>
<tr>
<td>1,3-Butadiene</td>
<td>106-99-0</td>
<td>Specifically Regulated Carcinogen</td>
<td>Group 1-Carcinogenic</td>
<td>Known Human Carcinogen</td>
</tr>
<tr>
<td>Naphthalene</td>
<td>91-20-3</td>
<td>Not Listed</td>
<td>Group 2B-Possible Carcinogen</td>
<td>Reasonably Anticipated to be Human Carcinogen</td>
</tr>
<tr>
<td>Benzene</td>
<td>71-43-2</td>
<td>Specifically Regulated Carcinogen</td>
<td>Group 1-Carcinogenic</td>
<td>Known Human Carcinogen</td>
</tr>
<tr>
<td>Ethenylbenzene</td>
<td>100-42-5</td>
<td>Not Listed</td>
<td>Group 2B-Possible Carcinogen</td>
<td>Reasonably Anticipated to be Human Carcinogen</td>
</tr>
<tr>
<td>Isoprene</td>
<td>78-79-5</td>
<td>Not Listed</td>
<td>Group 2B-Possible Carcinogen</td>
<td>Reasonably Anticipated to be Human Carcinogen</td>
</tr>
</tbody>
</table>

Reproductive Effects
• Multiple physical deformities, with signs similar to fetal alcohol syndrome, microencephaly, CNS dysfunction, and variable growth deficiencies, have occurred in infants born to mothers who abused toluene during pregnancy.

Key to abbreviations
LD = Lethal Dose
LC = Lethal Concentration
TC = Toxic Concentration
TD = Toxic Dose

Section 12 - Ecological Information

Toxicity
• NDA

Persistence and degradability
• NDA

Bioaccumulative potential
• NDA

Mobility in Soil
• NDA

Other adverse effects
• NDA

Section 13 - Disposal Considerations

Waste treatment methods
Product waste
• Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste
• Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.
Section 14 - Transport Information

<table>
<thead>
<tr>
<th>UN number</th>
<th>14.2 UN proper shipping name</th>
<th>14.3 Transport hazard class(es)</th>
<th>14.4 Packing group</th>
<th>14.5 Environmental hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT UN1993</td>
<td>Flammable liquids, n.o.s. (contains 46% Benzene, 11% Toluene)</td>
<td>3</td>
<td>III</td>
<td>NDA</td>
</tr>
<tr>
<td>TDG UN1993</td>
<td>FLAMMABLE LIQUID, N.O.S. (contains 46% Benzene, 11% Toluene)</td>
<td>3</td>
<td>III</td>
<td>NDA</td>
</tr>
<tr>
<td>IMO/IMDG UN1993</td>
<td>FLAMMABLE LIQUID, N.O.S. (contains 46% Benzene, 11% Toluene)</td>
<td>3</td>
<td>III</td>
<td>NDA</td>
</tr>
<tr>
<td>IATA/ICAO UN1993</td>
<td>Flammable liquid, n.o.s. (contains 46% Benzene, 11% Toluene)</td>
<td>3</td>
<td>III</td>
<td>NDA</td>
</tr>
</tbody>
</table>

Special precautions for user
• None specified

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
• NDA

Section 15 - Regulatory Information

Safety, health and environmental regulations/legislation specific for the substance or mixture

SARA Hazard Classifications
• Acute, Chronic, Fire

Inventories
• These products comply with the following inventories:
  - Canada DSL/NDSL
  - USA TSCA

CERCLA
• In the event of a spill, the end user should verify whether reporting is required under local, state, and/or federal regulations.

WHIMS Classification
• The following components have classifications
  - 1,3-Butadiene (CAS 106-99-0) is classified as A, B1, D2A, F
  - Naphthalene (CAS 91-20-3) is classified as B4, D2A
  - Ethylbenzene (CAS 100-41-4) is classified as B2, D2A, D2B
  - Methanol (CAS 67-56-1) is classified as B2, D1B, D2A, D2B (including 28%)
  - Ethynylbenzene (CAS 100-42-5) is classified as B2, D2A
  - Toluene (CAS 108-88-3) is classified as B2, D2A, D2B
  - Benzene (CAS 71-43-2) is classified as B2, D2A, D2B
  - Cyclopentene (CAS 142-29-0) is classified as B2, D2B
  - 4,7-Methanoindene, 3a,4,7,7a-tetrahydro- (CAS 77-73-6) is classified as D1B, D2B
  - 1,3-Cyclopentadiene (CAS 542-92-7) is classified as F

Section 16 - Other Information

Last Revision Date 15/May/2015
Preparation Date 01/April/2015
Disclaimer/Statement of Liability
It is your responsibility to determine that our product is safe, lawful, and technically suitable for your intended uses. This safety data sheet cannot cover all possible situations which the user may experience during processing. Each aspect of the user’s operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this safety data sheet should be provided to employees and/or customers. Westlake Chemical OpCo LP must rely on the user to use this information to develop appropriate work practice guidelines and employee instructional programs specific to the user’s operation.

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The information in this sheet is valid for cited regulations published as of the date this document was prepared, as shown herein. Updates may be prepared as the regulations are amended or pending revised information about the product. It is the customer’s responsibility to seek updated regulatory information on any specific product.

NDA = No data available