1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: Commercial Heptane, Low Aromatic
MSDS Code: 473350
Synonyms:
- Comm Heptane, Low Aromatic
- Heptane (B) Low Aromatic
- N-Heptane, Borger Low Aromatic

Intended Use: Solvent
Responsible Party: ConocoPhillips Specialty Solvents
PO Box 358
Borger, Texas 79008-0358
Customer Service: 800-696-4240
http://solvents.conocophillips.com
Technical Information: 800-696-4240
MSDS Information: Internet: http://w3.conocophillips.com/NetMSDS/
Emergency Telephone Numbers: Chemtrec: 800-424-9300 (24 Hours)
California Poison Control System: 800-356-3219

2. HAZARDS IDENTIFICATION

**Appearance:** Colorless
**Physical Form:** Liquid
**Odor:** Mild

**Potential Health Effects**

**Eye:** Contact may cause mild eye irritation including stinging, watering, and redness.

**Skin:** Skin irritant. Contact may cause redness, itching, a burning sensation, and skin damage. Prolonged or repeated contact can defat the skin, causing drying and cracking of the skin, and possibly dermatitis (inflammation). No harmful effects from skin absorption are expected.

**Inhalation (Breathing):** Low to moderate degree of toxicity by inhalation.

**Ingestion (Swallowing):** No harmful effects expected from ingestion. ASPIRATION HAZARD - This material can enter lungs during swallowing or vomiting and cause lung inflammation and damage.

**Signs and Symptoms:** Effects of overexposure may include irritation of the respiratory tract, irritation of the digestive tract, coughing, nausea, vomiting, diarrhea and signs of nervous system depression (e.g., headache, drowsiness, dizziness, loss of coordination, disorientation and fatigue).
Other Comments: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage (sometimes referred to as Solvent or Painters’ Syndrome). Intentional misuse by deliberately concentrating and inhaling this material may be harmful or fatal.

Pre-Existing Medical Conditions: Conditions aggravated by exposure may include skin disorders and respiratory (asthma-like) disorders. Exposure to high concentrations of this material may increase the sensitivity of the heart to certain drugs. Persons with pre-existing heart disorders may be more susceptible to this effect (see Section 4 - Note to Physicians).

See Section 11 for additional Toxicity Information.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>Concentration (wt %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heptane, Branched, Cyclic and Linear</td>
<td>426260-76-6</td>
<td>100</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>142-82-5</td>
<td>1-4</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eye: If irritation or redness develops from exposure, flush eyes with clean water. If symptoms persist, seek medical attention.

Skin: Remove contaminated shoes and clothing, and flush affected area(s) with large amounts of water. If skin surface is damaged, apply a clean dressing and seek medical attention. If skin surface is not damaged, cleanse affected area(s) thoroughly by washing with mild soap and water or a waterless hand cleaner. If irritation or redness develops, seek medical attention.

Inhalation (Breathing): If respiratory symptoms or other symptoms of exposure develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek immediate medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.

Ingestion (Swallowing): Aspiration hazard: Do not induce vomiting or give anything by mouth because this material can enter the lungs and cause severe lung damage. If victim is drowsy or unconscious and vomiting, place on the left side with the head down. If possible, do not leave victim unattended and observe closely for adequacy of breathing. Seek medical attention.

Notes to Physician: Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbon solvents (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

5. FIRE-FIGHTING MEASURES

NFPA 704 Hazard Class

Health: 1 Flammability: 3 Instability: 0 (0-Minimal, 1-Slight, 2-Moderate, 3-Serious, 4-Severe)

Unusual Fire & Explosion Hazards: Extremely flammable. This material can be ignited by heat, sparks, flames, or other sources of ignition (e.g., static electricity, pilot lights, mechanical/electrical equipment, and electronic devices such as cell phones, computers, calculators, and pagers which have not been certified as intrinsically safe). Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. If container is not properly cooled, it can rupture in the heat of a fire. Vapors are heavier than air and can accumulate in low areas.

Extinguishing Media: Dry chemical, carbon dioxide, or foam is recommended. Water spray is recommended to cool or protect exposed materials or structures. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces. Water may be ineffective for extinguishment, unless used under favorable conditions by experienced fire fighters.
Fire Fighting Instructions: For fires beyond the incipient stage, emergency responders in the immediate hazard area should wear bunker gear. When the potential chemical hazard is unknown, in enclosed or confined spaces, or when explicitly required by DOT, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8).

Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done with minimal risk. Move undamaged containers from immediate hazard area if it can be done with minimal risk. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done with minimal risk. Avoid spreading burning liquid with water used for cooling purposes.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Extremely flammable. Keep all sources of ignition and hot metal surfaces away from spill/release. The use of explosion-proof electrical equipment is recommended. Stay upwind and away from spill/release. Notify persons down wind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8).

Environmental Precautions: Spills into or upon navigable waters, the contiguous zone, or adjoining shorelines that cause a sheen or discoloration on the surface of the water, may require notification of the National Response Center (phone number 800-424-8802). Stop spill/release if it can be done with minimal risk. Prevent spilled material from entering sewers, storm drains, other unauthorized drainage systems, and natural waterways. Use foam on spills to minimize vapors (see Section 5).

Methods for Containment and Clean-Up: Notify fire authorities and appropriate federal, state, and local agencies. Immediate cleanup of any spill is recommended. Dike far ahead of spill for later recovery or disposal. Spilled material may be absorbed into an appropriate absorbent material.

7. HANDLING AND STORAGE

Precautions for safe handling: Wash thoroughly after handling. Use good personal hygiene practices and wear appropriate personal protective equipment.

Open container slowly to relieve any pressure. Bond and ground all equipment when transferring from one vessel to another. Can accumulate static charge by flow or agitation. Can be ignited by static discharge. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-704 and/or API RP 2003 for specific bonding/grounding requirements. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146. Do not wear contaminated clothing or shoes. Keep contaminated clothing away from sources of ignition such as sparks or open flames. Use good personal hygiene practices.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death. "Empty" drums should be completely drained, properly bunged, and promptly shipped to the supplier or a drum reconditioner. All containers should be disposed of in an environmentally safe manner and in accordance with governmental regulations. Before working on or in tanks which contain or have contained this material, refer to OSHA regulations, ANSI Z49.1, and other references pertaining to cleaning, repairing, welding, or other contemplated operations.

Conditions for safe storage: Use and store this material in cool, dry, well-ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Post area "No Smoking or Open Flame." Store only in approved containers. Keep container(s) tightly closed. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>Other:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heptane, Branched, Cyclic and Linear</td>
<td>TWA: 400 ppm, STEL: 500 ppm (As n-Heptane)</td>
<td>TWA: 500 ppm (As n-Heptane)</td>
<td>---</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>TWA: 400 ppm, STEL: 500 ppm</td>
<td>TWA: 2000 mg/m³, TWA: 500 ppm</td>
<td>---</td>
</tr>
</tbody>
</table>
Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

Engineering controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Personal Protective Equipment (PPE):

**Eye/Face:** The use of eye protection that meets or exceeds ANSI Z.87.1 is recommended to protect against potential eye contact, irritation, or injury. Depending on conditions of use, a face shield may be necessary.

**Skin:** The use of gloves impervious to the specific material handled is advised to prevent skin contact. Users should check with manufacturers to confirm the performance of their products. Suggested protective materials: Nitrile

**Respiratory:** A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator’s use. Where there is potential for airborne exposure above the exposure limit a NIOSH certified air purifying respirator equipped with organic vapor cartridges/canisters may be used. Air purifying respirators provide limited protection and cannot be used in atmospheres that exceed the maximum use concentration (MUC) as directed by regulation or the manufacturer’s instructions, in oxygen deficient (less than 19.5 percent oxygen) situations, or other conditions that are immediately dangerous to life and health (IDLH).

**Other Protective Equipment:** Eye wash and quick-drench shower facilities should be available in the work area. Thoroughly clean shoes and wash contaminated clothing before reuse.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

9. PHYSICAL AND CHEMICAL PROPERTIES

**Note:** Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm). Data represent typical values and are not intended to be specifications.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Colorless</td>
</tr>
<tr>
<td>Physical Form</td>
<td>Liquid</td>
</tr>
<tr>
<td>Odor</td>
<td>Mild</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No data</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>2.3 psia (Reid VP) @ 100°F</td>
</tr>
<tr>
<td>Vapor Density (air=1)</td>
<td>3.50</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>195°F / 91°C</td>
</tr>
<tr>
<td>Melting/Freezing Point</td>
<td>No data</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Negligible</td>
</tr>
<tr>
<td>Partition Coefficient (n-octanol/water) (Kow)</td>
<td>No data</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.693 @ 60°F (15.6°C)</td>
</tr>
<tr>
<td>Bulk Density</td>
<td>5.771 lbs/gal</td>
</tr>
<tr>
<td>Viscosity</td>
<td>0.83 cST @ 100°F (38°C)</td>
</tr>
<tr>
<td>Percent Volatile</td>
<td>100%</td>
</tr>
<tr>
<td>Evaporation Rate (nBuAc=1)</td>
<td>&gt;1</td>
</tr>
<tr>
<td>Flash Point</td>
<td>15°F / -9°C</td>
</tr>
<tr>
<td>Test Method</td>
<td>Tag Closed Cup (TCC), ASTM D56</td>
</tr>
<tr>
<td>LEL (vol % in air)</td>
<td>1.2</td>
</tr>
<tr>
<td>UEL (vol % in air)</td>
<td>6.7</td>
</tr>
<tr>
<td>Autoignition Temperature</td>
<td>No data</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

**Stability:** Stable under normal ambient and anticipated conditions of storage and handling. Extremely flammable liquid and vapor. Vapor can cause flash fire.

**Conditions to Avoid:** Avoid high temperatures and all sources of ignition. Prevent vapor accumulation.
Materials to Avoid (Incompatible Materials): Avoid contact with acids and oxidizers such as chlorine and other halogens, chromates, perchlorates, peroxides and oxygen.

Hazardous Decomposition Products: Combustion can yield carbon dioxide and carbon monoxide.

Hazardous Polymerization: Will not occur.

11. TOXICOLOGICAL INFORMATION

Acute Data:

<table>
<thead>
<tr>
<th>Component</th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Inhalation LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heptane, Branched, Cyclic and Linear</td>
<td>&gt;5g/kg (similar material)</td>
<td>&gt; 2 g/kg (similar material)</td>
<td>65-103 g/m³ / 4hr, rat (similar material)</td>
</tr>
<tr>
<td>n-Heptane</td>
<td>17.0 g/kg (Rat)</td>
<td>3400 mg/kg, rabbit</td>
<td>65-103 g/m³ (4-hr., Rat)</td>
</tr>
</tbody>
</table>

12. ECOLOGICAL INFORMATION

Not evaluated.

13. DISPOSAL CONSIDERATIONS

The generator of a waste is always responsible for making proper hazardous waste determinations and needs to consider state and local requirements in addition to federal regulations.

This material, if discarded as produced, would not be a federally regulated RCRA "listed" hazardous waste. However, it would likely be identified as a federally regulated RCRA hazardous waste for the following characteristic(s) shown below. See Sections 7 and 8 for information on handling, storage and personal protection and Section 9 for physical/chemical properties. It is possible that the material as produced contains constituents which are not required to be listed in the MSDS but could affect the hazardous waste determination. Additionally, use which results in chemical or physical change of this material could subject it to regulation as a hazardous waste.

Container contents should be completely used and containers should be emptied prior to discard. Container residues and rinseates could be considered to be hazardous wastes.

- EPA Waste Number(s)
  - D001 - Ignitability characteristic

14. TRANSPORTATION INFORMATION

U.S. Department of Transportation (DOT)

Shipping Description: Heptanes, 3, UN1206, II
Non-Bulk Package Marking: Heptanes, UN1206
Non-Bulk Package Labeling: Flammable liquid
Bulk Package/Placard Marking: Flammable / 1206
Packaging - References: 49 CFR 173.150; 173.202; 173.242
(Exceptions; Non-bulk; Bulk)
Hazardous Substance: None
Emergency Response Guide: 128
Note: Shipping description may be modified by placing the UN or NA number as the first element. This order becomes mandatory on January 1, 2013.

International Maritime Dangerous Goods (IMDG)

Shipping Description: UN1206, Heptanes, 3, II, (-9° C)
Non-Bulk Package Marking: Heptanes, UN 1206
Labels: Flammable liquid
Placards/Marking (Bulk): Flammable / 1206
Packaging - Non-Bulk: P001
EMS: F-E, S-D

International Civil Aviation Org. / International Air Transport Assoc. (ICAO/IATA)
14. TRANSPORTATION INFORMATION

UN/ID #: UN1206
Proper Shipping Name: Heptanes
Hazard Class/Division: 3
Subsidiary risk: None
Packing Group: II
Non-Bulk Package Marking: Heptanes, UN1206
Labels: Flammable liquid
ERG Code: 3H

<table>
<thead>
<tr>
<th>LTD. QTY</th>
<th>Passenger Aircraft</th>
<th>Cargo Aircraft Only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Packaging Instruction #:</td>
<td>Y305</td>
<td>305</td>
</tr>
<tr>
<td>Max. Net Qty. Per Package:</td>
<td>1 L</td>
<td>5 L</td>
</tr>
</tbody>
</table>

15. REGULATORY INFORMATION

CERCLA/SARA - Section 302 Extremely Hazardous Substances and TPQs (in pounds):
This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

CERCLA/SARA - Section 311/312 (Title III Hazard Categories):
- Acute Health: Yes
- Chronic Health: No
- Fire Hazard: Yes
- Pressure Hazard: No
- Reactive Hazard: No

CERCLA/SARA - Section 313 and 40 CFR 372:
This material does not contain any chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372.

EPA (CERCLA) Reportable Quantity (in pounds):
EPA's Petroleum Exclusion applies to this material - (CERCLA 101(14)).

California Proposition 65:
This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

Canadian Regulations:
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

- WHMIS Hazard Class
  - B2 - Flammable Liquids
  - D2B - Toxic Material

National Chemical Inventories:
All components are either listed on the US TSCA Inventory, or are not regulated under TSCA.
All components are listed on the Canadian DSL.

U.S. Export Control Classification Number: EAR99

16. OTHER INFORMATION

Issue Date: 20-Aug-2007
Status: Final
Previous Issue Date: 24-Mar-2006
Revised Sections or Basis for Revision: Format change
MSDS Code: 473350
MSDS Legend:
ACGIH = American Conference of Governmental Industrial Hygienists; CAS = Chemical Abstracts Service Registry; CEILING = Ceiling Limit (15 minutes); CERCLA = The Comprehensive Environmental Response, Compensation, and Liability Act; EPA = Environmental Protection Agency; IARC = International Agency for Research on Cancer; LEL = Lower Explosive Limit; NE = Not Established; NFPA = National Fire Protection Association; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration; PEL = Permissible Exposure Limit (OSHA); SARA = Superfund Amendments and Reauthorization Act; STEL = Short Term Exposure Limit (15 minutes); TLV = Threshold Limit Value (ACGIH); TWA = Time Weighted Average (8 hours); UEL = Upper Explosive Limit; WHMIS = Worker Hazardous Materials Information System (Canada)

Disclaimer of Expressed and implied Warranties:
The information presented in this Material Safety Data Sheet is based on data believed to be accurate as of the date this Material Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.