Lubricants

US Industry Study with Forecasts for 2018 & 2023

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Growth will result from an improving economic climate and an acceleration in manufacturing, supported by relatively low natural gas prices and strength in key lubricant consuming industries.

US demand to rebound modestly through 2018

US demand for lubricants is forecast to expand less than one percent annually to 2.5 billion gallons in 2018, valued at $27.5 billion. Although demand growth will be modest, this will represent a reversal of an outright drop in demand between 2008 and 2013. Growth will result from an improving economic climate and an acceleration in manufacturing activity, supported by relatively low natural gas prices and strength in key lubricant consuming industries. However, stronger gains will be held back by losses in the light vehicle market, where the long term trend of falling lubricant demand will continue. Improved efficiency and less frequent oil replacement will be a common trend not just in light vehicles but throughout lubricant markets, serving to prevent faster growth. Longer oil change intervals will result from the greater use of higher quality, better performing products, such as synthetics. However, growth will remain healthy in value terms as average prices benefit from this shift toward premium products.

Light vehicle lubricants to remain largest segment

Light vehicle lubricants will continue to hold a unique position in the market as both the largest segment and the one most visible to consumers. Improvements in vehicle technology and lubricant formulations will continue to be rapid, driven by an industrywide focus on improving fuel efficiency in cars and trucks. As the US light vehicle fleet gradually shifts toward cars calling for very high quality, low viscosity oils, these types of products will continue to gain favor. Manufacturer and industry specifications such as the upcoming ILSAC GF-6 and General Motors’ current DEXOS standards will be influential in promoting these trends, as will marketing efforts on the behalf of lubricant companies seeking to promote their premium lubricant products. Over the longer term, rising use of electric vehicles has the potential to substantially impact demand, as these vehicles do not require engine lubricants.

Better growth opportunities exist in other markets

Better growth opportunities will exist in a number of other important markets. The US construction industry, which makes use of engine oils and other lubricants in construction equipment, is expected to continue a strong recovery from the 2007-2009 recession and be among the fastest growing lubricant markets. The oil and gas industry will continue to provide rising demand for lubricants in oilfield and pipeline applications. Furthermore, energy intensive industries such as the production of metals, motor vehicles, machinery and electricity generation will all benefit from natural gas prices remaining low by historical standards.
Demand for transmission and hydraulic fluids is forecast to increase to 460 million gallons in 2018, rebounding from substantial losses between 2003 and 2013. Growth will favor fluids used in industrial applications, resulting from a combination of forces. Improvements in the US manufacturing outlook driven by relatively low natural gas prices will be a key factor. Growth in the production of motor vehicles and other durable goods, in particular, will further support demand. However, the development of longer-lasting lubricants will restrict growth, as the trend toward extended drain intervals and lube-for-life products persists.

Transmission and hydraulic fluids include a number of lubricant products with substantially different formulations and intended end uses, however, products included here have in common that they are used for hydraulic power transmission, often among other functions. Engine oils and manual transmission fluids, the primary purpose of which is to protect and lubricate, are covered separately from these products.

Automotive-type transmission and hydraulic fluids are comprised mainly of automatic transmission fluids, tractor hydraulic/transmission fluids, and miscellaneous products such as power steering and shock absorber fluids. In addition to acting as a hydraulic power transfer medium, these products must protect surfaces from wear, minimize pumping and churning losses, resist foaming and emulsification with water, and prevent rust and corrosion. They are also formulated to resist thinning at high temperatures and thickening at low temperatures. Commercial and industrial hydraulic fluids include conventional hydraulic fluids as well as more specialized products, such as synthetic fire-resistant fluids. These lubricants serve similar roles as automotive hydraulic fluids, but are often used in larger hydraulic systems and face somewhat different demands on their specific performance characteristics.

### TABLE V-5

<table>
<thead>
<tr>
<th>Item</th>
<th>2003</th>
<th>2008</th>
<th>2013</th>
<th>2018</th>
<th>2023</th>
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<td>Gross Domestic Product (bil 2009$)</td>
<td>13270</td>
<td>14834</td>
<td>15750</td>
<td>18050</td>
<td>20350</td>
</tr>
<tr>
<td>gal lubricant/mil $ GDP</td>
<td>35.4</td>
<td>33.0</td>
<td>30.8</td>
<td>29.1</td>
<td>27.5</td>
</tr>
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</table>

**Commercial & Industrial Lubricants**

**By Market:**
- Agriculture
- Petroleum/Natural Gas Production
- Power Generation
- Construction Equipment
- Other Commercial & Industrial

**By Product:**
- Engine Oils
- Transmission & Hydraulic Fluids
- General Industrial Oils
- Process Oils
- Other Lubricants

<table>
<thead>
<tr>
<th>% commercial &amp; industrial Lubricant Demand</th>
<th>2003</th>
<th>2008</th>
<th>2013</th>
<th>2018</th>
<th>2023</th>
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<td></td>
<td>17.1</td>
<td>20.0</td>
<td>20.2</td>
<td>21.3</td>
<td>22.2</td>
</tr>
</tbody>
</table>

**Gross Domestic Product (bil 2009$)**

- Agriculture: 123
- Petroleum/Natural Gas Production: 90
- Power Generation: 86
- Construction Equipment: 100
- Other Commercial & Industrial: 71

**By Product:**
- Engine Oils: 160
- Transmission & Hydraulic Fluids: 141
- General Industrial Oils: 68
- Process Oils: 72
- Other Lubricants: 29

**% commercial & industrial Lubricant Demand**

- Agriculture: 17.1
- Petroleum/Natural Gas Production: 5.2%
- Power Generation: 5.7%
- Construction Equipment: 6.6%
- Other Commercial & Industrial: 7.0%
- Engine Oils: 13.6%
- Transmission & Hydraulic Fluids: 14.5%
- General Industrial Oils: 4.8%
- Process Oils: 5.2%
- Other Lubricants: 5.7%

**US FINISHED LUBRICANT MARKET SHARE**

- Other: 47.8%
COMPANY PROFILES

HollyFrontier Corporation
2828 North Harwood, Suite 1300
Dallas, TX  75201
214-871-3555
http://hollyfrontier.com

Revenues:  $20.2 billion (2013)
Employment:  2,660 (2013)
Key Products:  basestocks, agricultural oils, and process oils

HollyFrontier is a leading US petroleum refiner, with operations throughout the Mid-Continent, Southwestern, and Rocky Mountain US. The Company manufactures and markets asphalt, gasoline, diesel, jet fuel, heavy products, and specialty lubricant products. HollyFrontier operates through three segments: Refining, Holly Energy Partners, and Corporate and Other.

The Company competes in the US lubricant industry via the Refining segment, which had revenues of $20.1 billion in 2013, including eliminations. The segment encompasses HollyFrontier’s petroleum refinery in Tulsa, Oklahoma. This refinery is engaged in the production of lubricants, gasoline, diesel fuel, and jet fuel. In 2013, the Company sold 410,730 barrels per day of refined petroleum products, of which lubricants accounted for two percent, or about 8,215 barrels per day.

The Tulsa refinery manufactures lubricants for commercial and specialty markets. Products include paraffinic basestocks that are marketed to blender compounders that use them in the manufacture of various finished lubricant and grease products. Other lubricants made at the refinery include SUN AG, SUNSPRAY, and ULTRA FINE agricultural oils, which are primarily formulated as supplemental carriers for herbicides; and SUNPAR, SUNDEX, and CIRCOSOL process oils.
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