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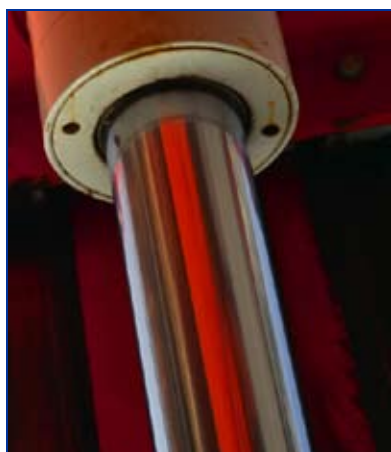
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Synthetic Lubricants & Functional Fluids

US Industry Study with Forecasts for **2013 & 2018**

Study #2582 | March 2010 | \$4700 | 258 pages

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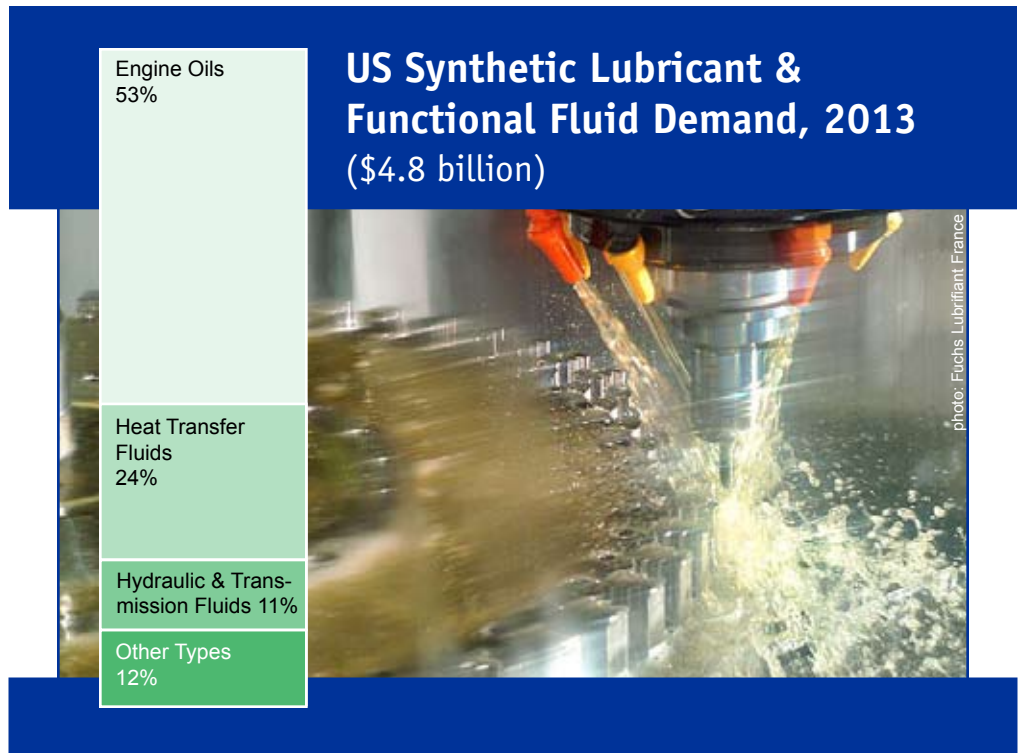
Engine oils and hydraulic and transmission fluids will experience the fastest gains as synthetic functional fluids finally begin to penetrate the conservative medium and heavy duty truck market.

US demand to expand 3.2% annually through 2013

US demand for synthetic lubricants and functional fluids will expand more than three percent per year through 2013 to \$4.8 billion, with growth rising at an even faster pace in volume terms. Engine oils and hydraulic and transmission fluids will experience the fastest gains as synthetics finally begin to penetrate the conservative medium- and heavy-duty truck market, and as increasing new vehicle lubricant performance requirements and growing consumer acceptance further expand synthetics' share of the light vehicle market. While engine oils and hydraulic and transmission fluids will achieve relatively strong growth going forward, other types of synthetic lubricants and fluids are expected to realize a slow decline in demand through 2013, largely as a result of falling prices.

Medium-, heavy-duty trucks to be fastest growing market

The largest market for synthetic lubricants and functional fluids is light vehicles. This reflects not only consumer uptake of engine oils and transmission fluids, but also the universally synthetic nature of antifreeze, brake and deicing (windshield wiper) fluids. Synthetic fluid demand in light vehicles will continue to grow due both to increasing lubricant performance requirements, and growing consumer acceptance of synthetics as a valuable part of their preventative maintenance programs. Despite gains by synthetics in engine oils and transmis-



sion fluids, long term industry trends toward extended engine coolant flush intervals, and the use of fill-for-life radiator and coolant systems, will result in a continuing decline in antifreeze volume demand.

The fastest growing market for synthetic fluids will be the medium- and heavy-duty truck market. Increasingly stringent engine specifications, as well as a move by many engine manufacturers to specify low viscosity engine oils for their 2010 emissions-compliant engines, will finally lead many fleet operators to evaluate and use synthetic engine oils and hydraulic and transmission fluids. Synthetics will benefit from their better performance under load in low viscosity

formulations, as well as from the reduced maintenance and downtime costs that result from synthetics' extended drain intervals.

Group III base oils among fastest growing chemicals

Reflecting their heavy use in engine oils and hydraulic and transmission fluids, Group III base oils and polyalphaolefins will be the fastest growing synthetic chemicals, with esters also achieving positive value growth through 2013. Declining average prices will hurt value demand for silicones and aromatics going forward, though demand will remain steady on a volume basis.

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PRODUCTS

Hydraulic Fluids

Demand for synthetic hydraulic fluids is forecast to expand at a rate of 3.5 percent per year through 2013. The maturity in the overall hydraulic fluid market will see healthy growth due to safety concerns, as well as increasing demands such as extended drain intervals, protection against wear. In addition, the use of biodegradable hydraulic fluid and vegetable oils.

Hydraulic fluids are employed in industrial, automotive and marine applications, among others. The health of a hydraulic system is highly dependent on the performance capabilities of the hydraulic fluid. These products must function as a power transfer and control agent, a heat transfer fluid, a sealer and a lubricant, while providing an array of performance properties such as thermal and oxidation stability, antiwear, corrosion control, fire resistance, friction modification, low toxicity and long life.

Synthetics are a small, yet growing percentage of total hydraulic fluids demand due to their enhanced performance properties and environmentally friendly profile. A broad range of synthetic basestocks can be used to produce hydraulic fluids, including PAOs, esters, aromatics, silicones, synthetic hydrocarbons, perfluorocarbons and polyphenyl ethers. Typically, synthetic products are used in applications or under extreme conditions which justify their higher cost compared to mineral oil-based formulations. In less taxing applications, petroleum-based products are expected to remain dominant.

**SAMPLE
 TEXT**

TABLE III-3

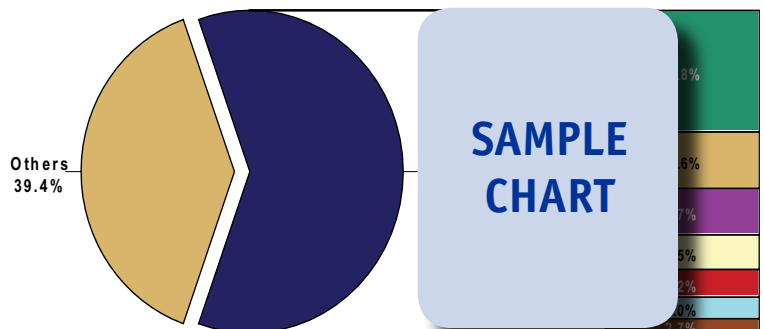
**SYNTHETIC GASOLINE ENGINE OIL DEMAND
 BY CHEMICAL & MARKET
 (million gallons)**

Item	1998	2003	2008	2013	2018
Gross Domestic Product (bil 2000\$)	9,500	12,500	15,500	18,500	22,000
gal fluid/mil \$ GDP	0.0001	0.0001	0.0001	0.0001	0.0001
Gasoline Engine Oil	7	7	7	7	7
% synthetic	4	4	4	4	4
Synthetic Gasoline Engine Oil	5	5	5	5	5
By Chemical:					
Polyalphaolefins	5	5	5	5	5
Group III Fluids	5	5	5	5	5
Other	5	5	5	5	5
By Market:					
Light Vehicles	4	4	4	4	4
Other	1	1	1	1	1
\$/gallon	6	6	6	6	6
Synthetic Gasoline Engine Oil (mil \$)	275	385	470	570	680

**SAMPLE
 TABLE**

CHART VI-1

**SYNTHETIC LUBRICANT & FUNCTIONAL FLUID MARKET SHARE
 (\$4.1 billion, 2008)**



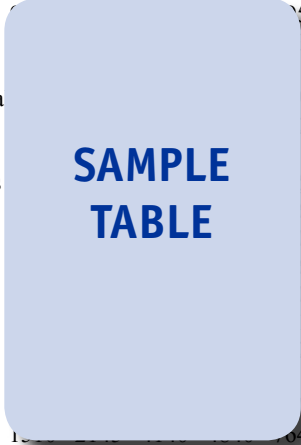
**SAMPLE
 CHART**

Sample Profile, Table & Forecast

TABLE V-3

**VEHICLE & EQUIPMENT MARKET FOR
SYNTHETIC LUBRICANTS & FUNCTIONAL FLUIDS
(million dollars)**

Item	1998	2003	2008	2013	2018
Gross Domestic Product (bil 2000\$)	10,500	13,000	15,500	18,000	20,500
gal fluid/mil \$ GDP	0.000000	0.000000	0.000000	0.000000	0.000000
Vehicle/Equip Synthetic Fluids (mil gal \$/gallon)	0.000000	0.000000	0.000000	0.000000	0.000000
Vehicle & Equipment Synthetic Fluids	0.000000	0.000000	0.000000	0.000000	0.000000
Light Vehicles	0.000000	0.000000	0.000000	0.000000	0.000000
Aircraft/Aerospace	0.000000	0.000000	0.000000	0.000000	0.000000
Medium & Heavy Duty Vehicles	0.000000	0.000000	0.000000	0.000000	0.000000
Industrial Machinery	0.000000	0.000000	0.000000	0.000000	0.000000
Off-Highway Vehicles	0.000000	0.000000	0.000000	0.000000	0.000000
Other	0.000000	0.000000	0.000000	0.000000	0.000000
% vehicle & equipment	0.000000	0.000000	0.000000	0.000000	0.000000
Synthetic Functional Fluid Demand	0.000000	0.000000	0.000000	0.000000	0.000000



COMPANY PROFILES

Milacron LLC

4165 Half Acre Road
 Batavia, OH 45103
 513-536-2000
<http://www.milacron.com>

Annual Sales:
 Employment:

Key Products: ... fluids, and
 synthetic stam...



Milacron is a leading global manufacturer and supplier of plastics processing equipment and supplies, and industrial fluids. The Company operates through four businesses: Milacron Injection & Extrusion, Uniloy Blowmolding & Structural Foam, DME Mold Technologies, and CIMCOOL Industrial Fluids. In August 2009, a group of investors led by Avenue Capital Group and DDJ Capital Management LLC purchased Milacron Incorporated, thereby marking its emergence from Chapter 11 bankruptcy. Following the purchase, the Company's name was changed to Milacron LLC.

Milacron is active in the US synthetic lubricant and functional fluid industry through the CIMCOOL Industrial Fluids business (Cincinnati, Ohio), which produces and sells advanced fluids for industrial applications, including metalforming, machining, grinding, stamping and cleaning. Among the business' offerings are synthetic and other fluids and lubricants, coolants, forming fluids, process cleaners and corrosion inhibitors that can be used in the shaping of metal products.

Among CIMCOOL's synthetic fluid offerings are CIMTECH 100 synthetic metalworking fluids, which are designed to be low foaming

"Demand for synthetic lubricants and functional fluids in vehicle and equipment applications is forecast to advance 4.4 percent per year through 2013 to \$4.0 billion, with volume reaching more than 440 million gallons. Engine oils and hydraulic and transmission fluids are expected to provide the best opportunities for growth, as synthetics can extend drain intervals as well as provide fire resistance and enhance equipment protection. The fastest gains in both engine oils and hydraulics and transmission fluids will occur in ..."
 --Section V, pg. 118

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OTHER STUDIES

World Biofuels

Global biofuel demand will grow 10.3% annually through 2014. Bioethanol will see the greatest gains, driven by the large North American market as well as the faster growing markets in the Asia/Pacific region and Europe. The smaller biodiesel market will be the more rapidly growing segment. This study analyzes the 74.1 million metric ton global biofuel industry, with forecasts for 2014 and 2019 by product, world region and for 28 countries. It also evaluates company market share and profiles industry participants.

#2668 September 2010 \$5900

Well Stimulation Materials

US demand for oil and gas well stimulation materials is projected to increase 14% annually through 2014. Gains will be buoyed by renewed efforts to reduce dependence on foreign energy sources. The largest segment, proppants, will also be one of the fastest growing, along with gases and other materials. This study analyzes the \$3.8 billion US well stimulation material industry, with forecasts for 2014 and 2019 by product and US regional market. It also evaluates company market share and profiles industry players.

#2636 May 2010 \$4900

Refinery Chemicals

US refinery chemical demand will rise 5% annually through 2014, driven by the use of new, higher-value products that offer enhanced performance. Merchant hydrogen will remain the largest product type and grow the fastest. Petroleum treatment and conversion will remain the largest and fastest growing applications. This study analyzes the \$5.5 billion US refinery chemical industry, with forecasts for 2014 and 2019 by application and product. It also evaluates company market share and profiles industry players.

#2629 April 2010 \$4700

Oilfield Chemicals

US oilfield chemical demand will grow 4.4% annually through 2013. The market will decline in the short term then rebound by the end of the forecast period, based mainly on swings in oil and gas prices. Stimulation chemicals and EOR products will be the fastest growing segments. Acids and polymers used in stimulation fluids will see growth. This study analyzes the US oilfield chemical industry, with forecasts for 2013 and 2018 by product and raw material. It also evaluates company market share and profiles industry players.

#2546 September 2009 \$4800

Soy Chemicals

US soy chemical demand will grow 7.8% annually through 2013, driven by the continued penetration of biodiesel, and by the adoption of alternatives to traditional, petrochemical-based materials in manufacturing. Soy oil derivatives such as methyl soyate, polyols, soy-based foamed plastics, waxes and fatty acids hold particularly good prospects. This study analyzes the \$1.9 billion US soy chemical industry, with forecasts for 2013 and 2018 by product and market. It also evaluates market share and profiles industry players.

#2538 September 2009 \$4700

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