

[CLICK TO VIEW](#)

[Table of Contents 2](#)

[List of Tables & Charts 3](#)

[Study Overview 4](#)

[Sample Text, Table  
& Chart 5](#)

[Sample Profile, Table &  
Forecast 6](#)

[Order Form 7](#)

[About Freedonia, Custom  
Research, Related Studies,  
Corporate Use License 8](#)

# Synthetic Lubricants & Functional Fluids

---

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

---

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

---

[www.freedoniagroup.com](http://www.freedoniagroup.com)



**The Freedonia Group**

767 Beta Drive

Cleveland, OH • 44143-2326 • USA

Toll Free US Tel: 800.927.5900 or +1 440.684.9600

Fax: +1 440.646.0484

E-mail: [info@freedoniagroup.com](mailto:info@freedoniagroup.com)

## Table of Contents

### EXECUTIVE SUMMARY

### MARKET ENVIRONMENT

General .....	4
Macroeconomic Outlook .....	5
Demographic Trends .....	9
Consumer Spending Trends .....	12
Manufacturing Trends .....	14
Competitive Products.....	17
Environmental & Regulatory Issues ...	19
Recycling & Re-Refining .....	21
Engine Oil Specifications .....	22
Pricing Trends .....	24
Foreign Trade/International Activity .	27

### PRODUCTS

General .....	30
Engine Oils .....	32
Gasoline Engine Oils .....	36
Diesel Engine Oils.....	40
Oils for Other Engines .....	44
Heat Transfer Fluids.....	47
Low Temperature.....	50
High Temperature.....	54
Hydraulic & Transmission Fluids.....	58
Transmission Fluids.....	60
Product Characteristics .....	60
Demand .....	62
Hydraulic Fluids .....	62
Metalworking Fluids.....	64
Product Characteristics.....	65
Demand .....	66
Metal Removal Fluids .....	69
Metal Forming Fluids.....	71
Other Metalworking Fluids.....	73
Dielectric Fluids.....	75
Other .....	78
Compressor Lubricants .....	80
Turbine Lubricants.....	81
Gear Lubricants.....	82
All Other.....	84

### MATERIALS

General .....	87
---------------	----

Glycols .....	89
Polyalphaolefins.....	92
Group III Base Oils.....	95
Esters.....	98
Silicone Fluids .....	101
Aromatics .....	104
Other .....	107

### MARKETS

General .....	112
Vehicles & Equipment .....	114
Motor Vehicle & Industrial	
Equipment Outlook.....	115
Synthetic Lubricant & Functional	
Fluid Demand .....	118
Light Vehicles .....	120
Aircraft/Aerospace.....	122
Medium & Heavy Duty	
Vehicles & Buses .....	124
Industrial Machinery .....	127
Off-Highway Vehicles .....	130
Construction Equipment.....	132
Mining Equipment.....	133
Agricultural Equipment .....	133
Other.....	134
Metal Fabrication .....	137
Metal Fabrication Industry Outlook	137
Synthetic Lubricant &	
Functional Fluid Demand .....	138
Energy/Power Generation .....	140
Energy/Power Generation	
Industry Outlook.....	141
Synthetic Lubricant &	
Functional Fluid Demand .....	144
Process Industries .....	146
Process Manufacturing	
Industry Outlook.....	147
Synthetic Lubricant &	
Functional Fluid Demand .....	149
HVAC/Refrigeration Systems.....	153
HVAC/Refrigeration	
Industry Outlook.....	153
Synthetic Lubricant &	
Functional Fluid Demand .....	154
Other .....	156

### INDUSTRY STRUCTURE

General .....	159
Market Share .....	163
Competitive Strategies.....	167
Research & Development .....	167
Chemical Management Services.....	169
Merger & Acquisition Activity.....	170
Manufacturing .....	172
Marketing .....	174
Synthetic Engine Oil .....	174
Brand Name Recognition .....	176
Sports Sponsorship .....	177
Antifreeze .....	178
Other Synthetic Fluids	
Marketing Strategies.....	179
Distribution .....	180

### COMPANY PROFILES

AMSOIL Incorporated.....	184
Ashland Incorporated .....	187
BASF SE.....	190
BP plc.....	192
Chemtura Corporation .....	196
Chevron Corporation .....	199
Chevron Phillips Chemical.....	202
CLC Lubricants.....	203
Cognis Deutschland.....	205
ConocoPhillips.....	207
Dow Chemical.....	211
Dow Corning .....	214
DuPont (EI) de Nemours.....	215
Exxon Mobil .....	217
FUCHS Petrolub.....	221
Honeywell International.....	224
Houghton International .....	225
Lubrizol Corporation .....	226
Milacron LLC .....	229
Petroleos de Venezuela .....	231
Quaker Chemical .....	234
Royal Dutch Shell.....	236
Royal Purple.....	240
Total SA.....	243
Warren Oil.....	247
Additional Companies	
Mentioned in the Study.....	249

## List of Tables/Charts

### EXECUTIVE SUMMARY

1 Summary Table..... 3

### MARKET ENVIRONMENT

1 Macroeconomic Indicators..... 9  
 2 Population & Households..... 12  
 3 Personal Consumption Expenditures..... 14  
 4 Manufacturers' Shipments ..... 17  
 5 Synthetic Functional Fluid Pricing Trends ..... 26  
 Cht Synthetic Lubricant & Functional Fluid Pricing Volatility by Product..... 27  
 6 Synthetic Functional Fluid Foreign Trade ..... 29

### PRODUCTS

1 Synthetic Lubricant & Functional Fluid Demand by Product ..... 31  
 Cht Synthetic Lubricant & Functional Fluid Demand by Product, 2008 32  
 2 Synthetic Engine Oil Demand by Engine Type..... 36  
 3 Synthetic Gasoline Engine Oil Demand by Chemical & Market . 40  
 4 Synthetic Diesel Engine Oil Demand by Chemical & Market . 44  
 5 Other Synthetic Engine Oil Demand by Chemical & Market . 47  
 6 Synthetic Heat Transfer Fluid Demand..... 50  
 7 Synthetic Low Temperature Heat Transfer Fluid Demand by Chemical & Market..... 54  
 8 Synthetic High Temperature Heat Transfer Fluid Demand..... 57  
 9 Synthetic Hydraulic & Transmission Fluid Demand by Product, Chemical & Market ..... 59  
 10 Synthetic Metalworking Fluid Demand..... 69  
 11 Synthetic Metal Removal Fluid Demand..... 71

12 Synthetic Metal Forming Fluid Demand..... 73  
 13 Other Synthetic Metalworking Fluids Demand..... 75  
 14 Synthetic Dielectric Fluid Demand 78  
 15 Other Synthetic Lubricants & Functional Fluids Demand ..... 79

### MATERIALS

1 Synthetic Lubricant & Functional Fluid Demand by Material..... 88  
 Cht Synthetic Lubricant & Functional Fluid Demand by Material, 2008 89  
 2 Glycol-Based Synthetic Lubricant & Functional Fluid Demand..... 92  
 3 Polyalphaolefin-Based Synthetic Lubricant & Functional Fluid Demand..... 95  
 4 Group III Base Oil-Based Synthetic Lubricant & Functional Fluid Demand..... 98  
 5 Ester-Based Synthetic Lubricant & Functional Fluid Demand..... 101  
 6 Silicone-Based Synthetic Lubricant & Functional Fluid Demand..... 104  
 7 Aromatics-Based Synthetic Lubricant & Functional Fluid Demand..... 107  
 8 Other Synthetic Lubricants, Fluids, Additives & Blending Components Demand..... 111

### MARKETS

1 Synthetic Lubricant & Functional Fluid Demand by Market..... 113  
 Cht Synthetic Lubricant & Functional Fluid Demand by Market, 2008 114  
 2 Vehicle & Equipment Indicators . 118  
 3 Vehicle & Equipment Market for Synthetic Lubricants & Functional Fluids ..... 119  
 Cht Vehicle & Equipment Market for Synthetic Lubricants & Functional Fluids, 2008 ..... 120  
 4 Light Vehicle Market for Synthetic Lubricants & Functional Fluids 122

5 Aircraft/Aerospace Market for Synthetic Lubricants & Functional Fluids ..... 124  
 6 Medium & Heavy Duty Vehicle Market for Synthetic Lubricants & Functional Fluids ..... 127  
 7 Industrial Machinery Market for Synthetic Lubricants & Functional Fluids ..... 130  
 8 Off-Highway Vehicle Market for Synthetic Lubricants & Functional Fluids ..... 132  
 9 Other Vehicle & Equipment Markets for Synthetic Lubricants & Functional Fluids ..... 136  
 10 Metal Fabrication Industry Shipments..... 138  
 11 Metal Fabrication Market for Synthetic Lubricants & Functional Fluids ..... 140  
 12 Energy/Power Generation Indicators ..... 144  
 13 Energy/Power Generation Market for Synthetic Lubricants & Functional Fluids ..... 146  
 14 Process Manufacturers' Shipments 149  
 15 Process Industries Market for Synthetic Lubricants & Functional Fluids ..... 152  
 16 HVAC/Refrigeration Industry Outlook ..... 154  
 17 HVAC/Refrigeration Market for Synthetic Lubricants & Functional Fluids ..... 156  
 18 Synthetic Functional Fluids Demand in Other Markets ..... 158

### INDUSTRY STRUCTURE

1 Synthetic Lubricant & Functional Fluid Sales by Company, 2008 . 161  
 Cht Synthetic Lubricant & Functional Fluid Market Share, 2008..... 163  
 2 Research & Development Spending Patterns: Selected Synthetic Fluids Companies ..... 169  
 3 Selected Acquisitions & Divestitures ..... 171

[Click here to purchase online](#)

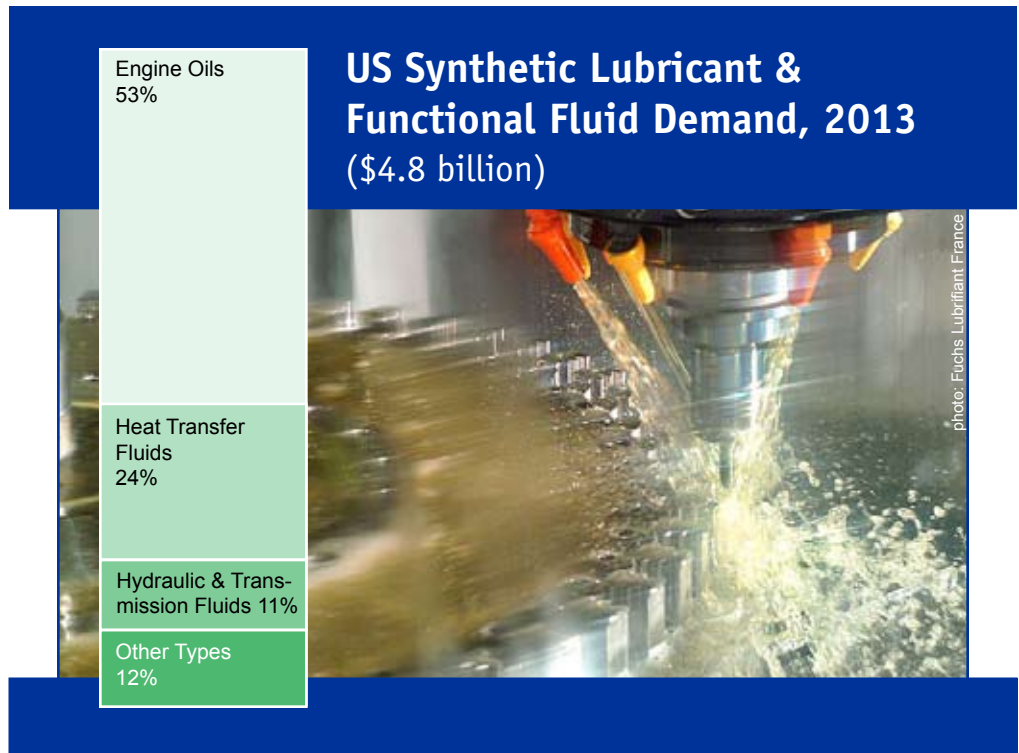
*Engine oils and hydraulic and transmission fluids will experience the fastest gains as synthetic functional fluids finally begin to penetrate the conservative medium and heavy duty truck market.*

## 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.

Copyright 2010 The Freedonia Group, Inc.

[Click here to purchase online](#)

**Sample Text,  
 Table & Chart**

**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 regulations such as extended drain interval protection against wear. In addition, the use of synthetic hydraulic fluids is important in some applications, such as the growing use of biodegradable hydraulic fluids and vegetable oils.

**SAMPLE  
 TEXT**

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.

**TABLE III-3**

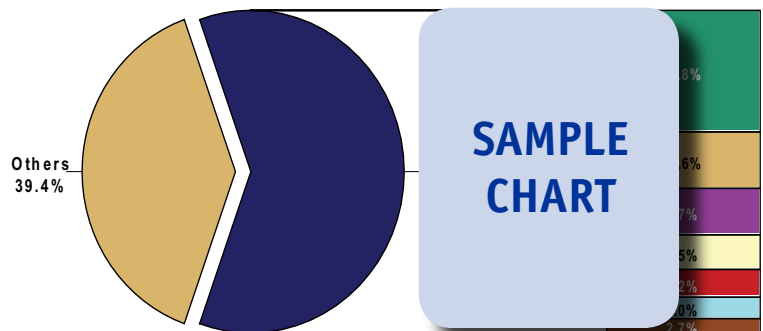
**SYNTHETIC GASOLINE ENGINE OIL DEMAND  
 BY CHEMICAL & MARKET  
 (million gallons)**

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	0.0002	0.0003	0.0004	0.0005
Gasoline Engine Oil % synthetic	7	14	21	28	35
Synthetic Gasoline Engine Oil By Chemical:					
Polyalphaolefins	5	10	15	20	25
Group III Fluids	5	10	15	20	25
Other	5	10	15	20	25
By Market:					
Light Vehicles	4	8	12	16	20
Other	1	2	3	4	5
\$/gallon	6	6	6	6	6
Synthetic Gasoline Engine Oil (mil \$)	273	383	476	570	630

**SAMPLE  
 TABLE**

**CHART VI-1**

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



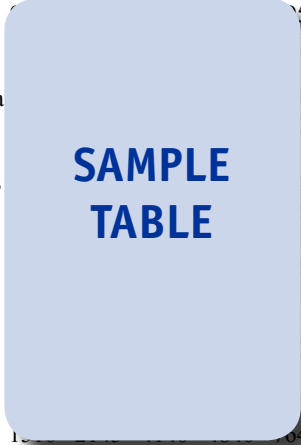
**SAMPLE  
 CHART**

## 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\$)					
gal fluid/mil \$ GDP					
Vehicle/Equip Synthetic Fluids (mil gal \$/gallon)					
Vehicle & Equipment Synthetic Fluids					
Light Vehicles					
Aircraft/Aerospace					
Medium & Heavy Duty Vehicles					
Industrial Machinery					
Off-Highway Vehicles					
Other					
% vehicle & equipment					
Synthetic Functional Fluid Demand					



### 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

ONLINE: www.freedoniagroup.com

MAIL: Print out and complete the order form and send to The Freedonia Group (see address at the bottom of this form)

PHONE: Call toll free, 800.927.5900 (US) or + 1 440.684.9600

FAX: + 1 440.646.0484 (US)

EMAIL: info@freedoniagroup.com

Free Handling & Shipping

There is NO charge for handling or UPS shipping in the US. Expect delivery in 3 to 5 business days. Outside the US, Freedonia provides free airmail service. Express delivery is available at cost.

Orders Outside of the US

Checks must be made payable in US funds, drawn against a US bank and mailed directly to The Freedonia Group. For wire transfers please contact our customer service department at info@freedoniagroup.com. Credit cards accepted.

Credit Card Orders

For convenience, Freedonia accepts American Express, MasterCard or Visa. Credit card purchases must include account number, expiration date and authorized signature.

Save 15%

If you order three (3) different titles at the same time, you can receive a 15% discount. If your order is accompanied by a check or wire transfer, you may take a 5% cash discount (discounts do not apply to Corporate Use Licenses).

Corporate Use License

Now every decision maker in your organization can act on the key intelligence found in all Freedonia studies. For an additional \$2600, companies receive unlimited use of an electronic version (PDF) of the study. Place it on your intranet, e-mail it to coworkers around the world, or print it as many times as you like,

Click here to learn more about the Corporate Use License

ORDER FORM

F-WEB.2582

Synthetic Lubricants & Functional Fluids..... \$4700

Corporate Use License (add to study price) \* + \$2600
Additional Print Copies @ \$600 each \*
Total (including selected option) \$

Enclosed is my check (5% discount) drawn on a US bank and payable to The Freedonia Group, Inc., in US funds (Ohio residents add 7.75% sales tax)

Bill my company American Express MasterCard Visa

Credit Card # Expiration Date MM YY

Signature

Name

Title

Company

Division

Street (No PO Box please)

City/State/Zip

Country

Phone Fax

Email

\* Please check appropriate option and sign below to order an electronic version of the study.

Corporate Use License Agreement

The above captioned study may be stored on the company's intranet or shared directory, available to company employees. Copies of the study may be made, but the undersigned represents that distribution of the study will be limited to employees of the company.

Signature

Individual Use License Agreement

The undersigned hereby represents that the above captioned study will be used by only individual(s) who are employees of the company and that the study will not be loaded on a network for multiple users. In the event that usage of the study changes, the Company will promptly notify Freedonia of such change and will pay to Freedonia the appropriate fee based on Freedonia's standard fee schedule then in effect. Note: Entire company corporate use license, add \$2600; one additional user, add \$600; two additional users, add \$1200; three additional users, add \$1800.

Signature

**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

**About The Freedonia Group**

The Freedonia Group, Inc., is a leading international industry market research company that provides its clients with information and analysis needed to make informed strategic decisions for their businesses. Studies help clients identify business opportunities, develop strategies, make investment decisions and evaluate opportunities and threats. Freedonia research is designed to deliver unbiased views and reliable outlooks to assist clients in making the right decisions. Freedonia capitalizes on the resources of its proprietary in-house research team of experienced economists, professional analysts, industry researchers and editorial groups. Freedonia covers a diverse group of industries throughout the United States, the emerging China market, and other world markets. Industries analyzed by Freedonia include:

- Chemicals • Plastics • Life Sciences • Packaging • Building Materials • Security & Electronics • Industrial Components & Equipment • Automotive & Transportation Equipment • Household Goods • Energy/Power Equipment

[Click here to learn more about Freedonia](#)

**Freedonia Custom Research**

Freedonia Custom Research delivers the same high quality, thorough and unbiased assessment of an industry or market as an industry study. Since the research initiative is based upon a company's specific needs, companies harness Freedonia's research capabilities and resources to answer unique questions. When you leverage the results of a Freedonia Custom Research engagement, you are able to obtain important answers to specific questions and issues associated with: mergers and acquisitions, new product launches/development, geographic expansion, entry into new markets, strategic business planning, and investment and funding decisions.

Freedonia Custom Research is ideal for companies seeking to make a strategic difference in the status quo and focus on future business growth. Working side by side with clients, Freedonia's team is able to define a research project that is custom-tailored to answer specific questions and provide the basis from which a company can make informed business decisions.

[Click here to learn more about Custom Research](#)



[Click here for complete title list](#)

[Click here to visit freedoniagroup.com](http://www.freedoniagroup.com)