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Natural Polymers

US Industry Study with Forecasts for **2016 & 2021**

Study #2963 | November 2012 | \$4900 | 321 pages

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Growth will stem from ongoing trends favoring natural ingredients like cellulose ethers and vegetable gums in food and beverages, and for guar gums used in oilfield drilling and stimulation fluids.

US demand to rise 6.9% annually through 2016

US demand for natural polymers is forecast to expand at a strong 6.9 percent annual pace to \$4.6 billion in 2016, reaching 1.7 billion pounds. Growth will stem from continued trends favoring natural ingredients in the large food and beverage industry. In particular, this will support demand for cellulose ethers, as well as natural gums. A favorable outlook for oilfield drilling will bode well for guar gum and other natural polymers that are used as additives in drilling and stimulation (fracturing) fluids. However, growth will continue to be impacted by the climatic and political uncertainties associated with natural products, especially those such as guar gum and gum arabic, which are derived from plants that are grown only in certain parts of the world. For these products, the US depends on foreign sources to satisfy domestic requirements, and therefore imports will continue to account for a substantial share of overall demand.

Methyl cellulose to lead cellulose ethers segment

Cellulose ethers represent the single largest natural polymer type, accounting for over one-third of the market. Methyl cellulose will continue to lead the category, although demand for microcrystalline cellulose (MCC), carboxymethyl cellulose (CMC), and hydroxyethyl cellulose (HEC) will also be

US Natural Polymer Demand by Type, 2016 (\$4.6 billion)



significant. Methyl cellulose is widely used in construction materials such as grouts, mortar, plaster, and stucco, and will therefore benefit from a notable rebound in construction activity following the declines associated with the housing crisis and economic downturn that held down demand between 2006 and 2011. The improving construction outlook will also fuel rapid growth for HEC, which is utilized primarily in water-based paint.

Exudate and vegetable gums to grow the fastest

Exudate and vegetable gums are projected to enjoy the most rapid gains through 2016, with guar gum accounting for the vast majority of growth. This will

nevertheless represent a deceleration from the stellar gains achieved between 2001 and 2011, when demand for guar gum skyrocketed due to the rising use of hydraulic fracturing and horizontal drilling in the US oil and gas industry. Increased demand, combined with the limited availability of this material -- which is derived from a plant grown mainly in India and Pakistan -- resulted in strong upward pricing pressure in recent years. This, in turn, caused users to seek out substitutes for guar gum. However, there are currently few alternatives available that are capable of providing comparable performance at a low cost. While efforts to develop such materials are ongoing, demand for guar gum will continue to expand strongly going forward.

Sample Text, Table & Chart

PRODUCTS

Polylactic Acid

Demand for polylactic acid is expected to climb at an annual pace to \$1.5 billion by 2016, up from \$1 billion in 2011. The average advance in demand is expected to be 10% per year, with product performance improvements and greater processing efficiency. Moreover, capex is expected to expand the available capacity, leading to a reduction in prices. This, in turn, should support greater market acceptance.

However, certain drawbacks will prevent demand from growing at a faster clip. For instance, the material's limited ability versus other bioplastics will restrain advances, as PLA degrades in high-temperature industrial compost environments. In addition, difficulty in recycling the resin and the risk of contaminating recycling streams also serve to limit the positive environmental profile of PLA to some extent.

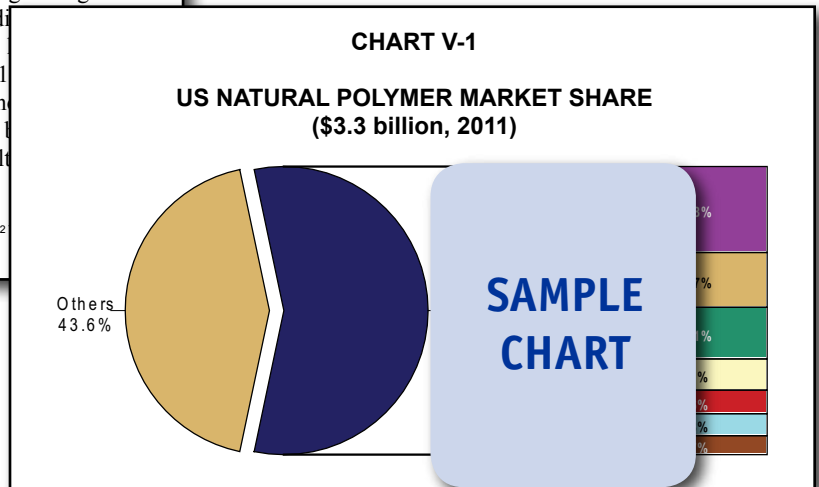
Polylactic acid is a linear aliphatic polyester produced by the polymerization of lactic acid, which is made by the fermentation of sugars obtained from renewable resources such as maize and sugar crops. This material possesses a low moisture vapor transmission rate, high clarity, and good strength. PLA is inherently clear, but can be processed to be opaque. The thermoplastic material can be formed into flexible or rigid products or spun into fibers. It is suitable for processing through a number of techniques such as injection molding, blow molding, and thermoforming. The main drawback to PLA is its thermal stability, which prevents usage at temperatures higher than 150°C (300°F). PLA also has poor impact resistance and does not offer sufficient barrier protection to manufacture bottles for carbonated soft drinks. The resin is compostable, although not in high-temperature composting processes.

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TABLE IV-3
METHYL CELLULOSE DEMAND
(million dollars)

Item	2001	2006	2011	2016	2021
Nondurable Goods Shpts (bil 2005\$)	200	200	200	200	200
lb MC/mil \$ nondurables					
Methyl Cellulose Demand (mil lb)					
\$/lb					
Methyl Cellulose Demand					
Construction					
Food & Beverages					
Medical					
Oilfield					
Cosmetics & Toiletries					
Other					
% methyl cellulose					
Cellulose Ether Demand					



Sample Profile, Table & Forecast

TABLE III-10
OILFIELD DEMAND FOR NATURAL POLYMERS BY PRODUCT
 (million dollars)

Item	2001	2006	2011	2016	2021
Total Active Drilling Rigs (number)	1,000	1,000	1,000	1,000	1,000
000 lb polymer/rig					
Natural Polymer Demand (mil lb)					
\$/lb					
Natural Polymer Demand					
Guar Gum					
Xanthan Gum					
Cellulose Ethers					
Other					
% oilfield					
Total Natural Polymer Demand	1,000	1,000	1,000	1,000	1,000

**SAMPLE
PROFILE**

COMPANY PROFILES

Economy Polymers & Chemicals
 435 East Anderson Road
 Houston, TX 77047
 713-723-8416
 http://www.ec

Annual Sales:
 Employment:

Key Products: xanthan gum
 based rheolog

Economy Polymers & Chemicals manufactures guar gum, guar derivatives, and related products for use in the industrial, oilfield, personal care, and food markets. The Company is privately held.

The Company is active in the US natural polymer industry mainly through the production of guar gum and guar derivatives. For industrial applications, Economy Polymers & Chemicals makes EP and ECOPOL guar gum and guar derivatives suitable for use in construction, paper chemical, paint and pigment, carpet, mining, and other applications. Specific products include ECOPOL-CO19 guar, which is marketed for use in slurry wall trenching and other construction end uses.

For the oilfield market, Economy Polymers & Chemicals manufactures carboxymethyl hydroxypropyl guar (CMHPG), hydroxypropyl guar, carboxymethyl guar, and unmodified guar under the ECOPOL brand name. For example, ECOPOL 18Y2 is a CMHPG that is designed to be effective at high temperatures when used in well stimulation applications. Additionally, the Company's products for the oilfield market include ECOPOL-XANLMS, a liquid xanthan gum based rheology modifier. The Company serves the personal care market mainly

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"Demand for natural polymers in oil and gas exploration and production is forecast to climb 13 percent per year to \$920 million in 2016, reaching 370 million pounds. Advances will be fueled by the rising utilization of hydraulic fracturing in the US oil and gas industry. Demand will continue to benefit from sustained growth for both drilling fluids and stimulation chemicals and from the fact that natural polymers are generally cost-effective and environmentally friendly."
 --Section III, pg. 62-3

OTHER STUDIES

World Oilfield Chemicals

World demand for oilfield chemicals is expected to increase 8.9 percent annually to \$28 billion in 2016. The US will remain the largest market based on its many mature wells and rapid growth in horizontal drilling and hydraulic fracturing. Brazil will be the fastest growing market. Drilling fluids and completion and workover fluids will lead gains. This study analyzes the \$18 billion world oilfield chemical industry, with forecasts for 2016 and 2021 by product, world region and for 44 countries. The study also evaluates company market share and profiles industry participants.

#2973December 2012 \$6200

Recycled Plastics

US demand for post-consumer recycled plastic will rise 6.5 percent yearly to 3.5 billion pounds in 2016. Bottles will remain the leading source while other types gain market share. LDPE/LLDPE will be the fastest growing recycled resins. Packaging will continue as the top market, driven by food and beverage bottles and thermoformed containers. This study analyzes the 2.5 billion pound US recycled plastics industry, with forecasts for 2016 and 2021 by source, resin, and market. The study also evaluates company market share and profiles industry players.

#2961 November 2012 \$5100

Fluoropolymers

US demand for fluoropolymers is forecast to increase 5.3 percent annually to \$2.4 billion in 2016. Polytetrafluoroethylene (PTFE) will remain the largest and most valuable segment, while polyvinyl fluoride (PVF) and polyvinylidene fluoride (PVDF) will grow the fastest. The construction and electrical/electronics markets will be the fastest growing outlets. This study analyzes the \$1.9 billion US fluoropolymer industry, with forecasts for 2016 and 2021 by product, application and market. The study also evaluates company market share and profiles industry players.

#2938 August 2012 \$4900

World Emulsion Polymers

Global demand for emulsion polymers is forecast to rise 5.1 percent per year to 13.3 million metric tons (dry basis) in 2016. In developing nations such as China and India, demand will benefit from strong economic growth and increased penetration of waterborne technology in the coatings and adhesives industry. This study analyzes the \$26.1 billion world emulsion polymer industry, with forecasts for 2016 and 2021 by market, polymer, world region and for 15 major countries. The study also evaluates company market share and profiles industry participants.

#2929 August 2012 \$5900

Bioplastics

US demand for biodegradable and non-biodegradable bio-based resins is forecast to climb at a 20 percent annual pace through 2016 to 550 million pounds. Polylactic acid will remain the largest bioplastic segment, while bio-based polyethylene and degradable polyesters will grow the fastest at double-digit rates. Nonpackaging markets will outpace packaging uses. This study analyzes the 220 million pound US bioplastic industry, with forecasts for 2016 and 2021 by resin, product and market. The study also evaluates company market share and profiles industry players.

#2908June 2012 \$4900

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