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Fluoropolymers

US Industry Study with Forecasts for **2011 & 2016**

Study #2206 | June 2007 | \$4400 | 206 pages

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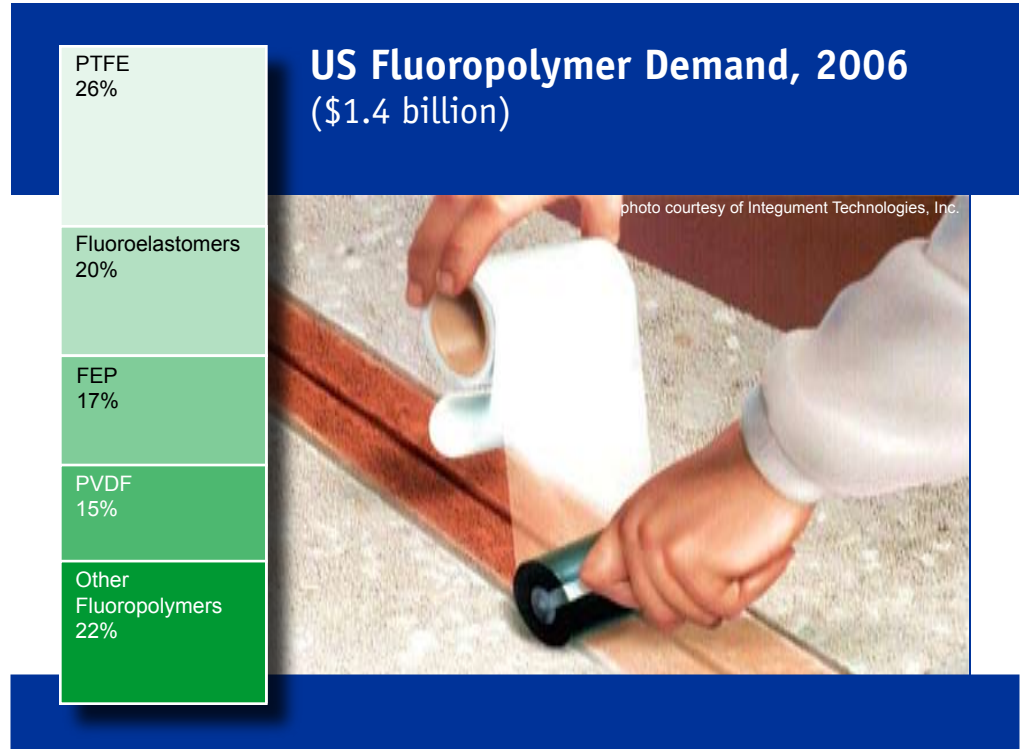
Fastest growth among major types is expected for polyvinylidene fluoride (PVDF) resins, as strong nonresidential construction will boost demand for PVDF-based architectural coatings.

US fluoropolymer demand to rise 5.7% annually through 2011

US demand for fluoropolymers (including fluoroelastomers) will rise 5.7 percent per year through 2011 to \$1.9 billion, an acceleration from the 2001-2006 period. As emerging design trends increasingly require superior performance characteristics, fluoropolymers will continue to replace other materials in demanding applications that justify their generally higher costs. Gains will also be driven by improved market trends in key fluoropolymer applications such as wire and cable, motor vehicles and architectural coatings.

PVDF resins to lead gains among major types

Among major fluoropolymer types, fastest growth is expected for polyvinylidene fluoride (PVDF) resins, as strong nonresidential construction will boost demand for PVDF-based architectural coatings. Gains in demand for fluorinated ethylene propylene (FEP) will be driven by an improved market for wire and cable, where FEP is used as a jacketing and insulation material. Demand for fluoroelastomers will benefit from an improved motor vehicle output and a resurgent aerospace market. However, gains for PTFE, the largest volume fluoropolymer in 2006, will expand at a slower pace, limited by market maturity in outlets such as nonstick coatings and industrial parts.



Smaller-volume resins to achieve most rapid growth

The most rapid gains for fluoropolymers will be found in smaller-volume resins, which include a number of high value products used in fast-growing applications. For example, a strong semiconductor market will bolster demand for perfluoroalkoxy (PFA) polymers, which are used in microelectronics processing equipment. Double-digit growth in solar energy products will fuel gains for polyvinyl fluoride (PVF) films used in the production of photovoltaic modules. Also, demand for perfluorosulfonic acid polymers (such as DuPont's NAFION) will be driven by a rapid rise in fuel cell shipments.

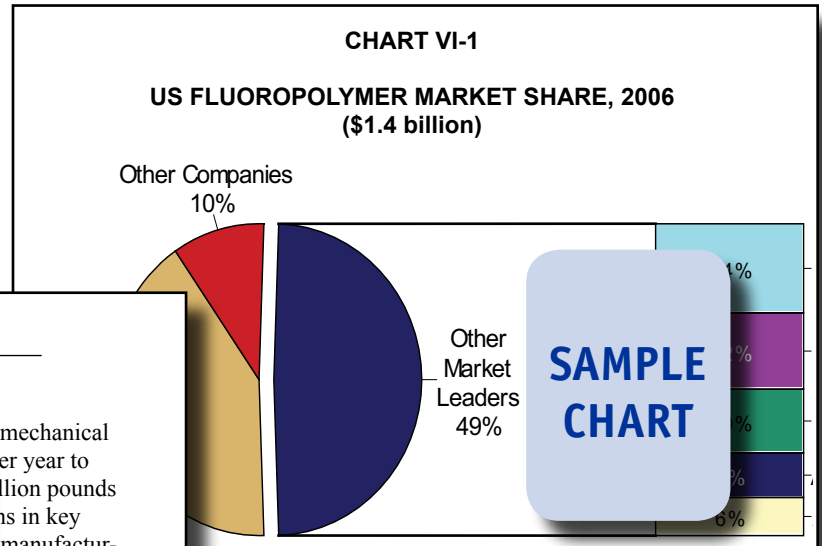
Electrical/electronics to be fastest growing market

Electrical and electronic products will be the largest and fastest growing market for fluoropolymers through 2011, accounting for 37 percent of total demand by value. Gains will be driven by a robust turnaround in the wire and cable market, continued increases in semiconductor shipments and double-digit growth in fuel cell spending. Transportation applications will benefit from increasing motor vehicle production, although cost-cutting measures by automotive producers will restrain demand for costly fluoropolymer resins. Industrial equipment markets for fluoropolymers will advance at the slowest pace, due in part to weakness in the chemical processing industry.

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Sample Text, Table & Chart



APPLICATIONS

Mechanical Parts & Components

Demand for fluoropolymers used in the production of mechanical parts and components is projected to increase by 10% per year to \$650 million in 2011, with an additional \$100 million pounds in the same year. Gains will be driven by new applications in key markets, including industrial machinery, automotive manufacturing. Growth will also be spurred by the development of new applications as well as the production of new blends. Although fluoropolymers offer many desirable characteristics, including heat and chemical resistance, nonstick properties, good conductivity and chemical inertness, they are more expensive than many other polymers. As such, fluoropolymers are generally used only in those applications where these strengths outweigh cost considerations.

Fluoropolymers are used in the production of a wide variety of mechanical parts, including O-rings, plastic gears, gaskets and seals and tubing, battery components, biomedical products and many others. The largest outlets for these components are in the industrial, electronics, medical and construction markets. For the purposes of this study, this section includes parts and components that are made from fluoropolymers, but not those that are coated with them. For example, gaskets made from PTFE are included, but steel gaskets coated with PTFE are included in the coatings market.

Fluoroelastomers account for just over half of the fluoropolymer used in the production of mechanical parts and components, with PTFE being the materials of choice for manufacturing long lasting, low-pressure hoses, seals and O-rings for the large transportation market. PTFE is also widely used to manufacture mechanical parts, with granular PTFE being most commonly used in this application. Specific PTFE applications include gaskets, packings, mechanical seals, shaft bearing and rings. PVDF is commonly used in components such as pipes and valves.

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TABLE III-7
DISPERSION PTFE DEMAND BY APPLICATION & MARKET*
 (million dollars)

Item	1996	2001	2006	2011	2016
PTFE Demand (mil lb)	42	53	60	74	90
% dispersion	21.2	20.6	20.2	19.6	18.9
Dispersion PTFE Demand (mil lb)	8.9	11.0	12.1	14.5	17.0
\$/lb	5.5	5.5	5.5	5.5	5.5
Dispersion PTFE Demand	0	0	0	0	0
By Application:					
Coatings & Liners	0	0	0	0	0
Other Applications	0	0	0	0	0
By Market:					
Cookware	5	5	5	5	5
Industrial Equipment	1	1	1	1	1
Other Markets	4	4	4	4	4

* resin content only

Sample Profile, Table & Forecast

COMPANY PROFILES

Westlake Plastics Company

West Lenni Road
 Lenni, PA 19052
 610-459-1000
<http://www.westlakeplastics.com>

Annual Sales: \$1.1 billion (2005)
 Employees: 1,700

Key Products: Rods, sheets, and films

Westlake Plastics Company is a high-performance thermoplastic resin manufacturer serving the medical, automotive, and processing markets. The private company has three business groups: Chemical Resistance, Engineering, Film, High Performance, Medical, Compression Molded, Static Control and FM4910. Westlake Plastics conducts operations at two US facilities in Lenni, Pennsylvania and Placentia, California.

The Company is active in the US fluoropolymer market via the Chemical Resistance, Compression Molded, and Film business groups. Through these groups, Westlake Plastics makes a broad range of products, including rods, sheets and films made from HALAR (Solvay SA -- Belgium) ethylene chlorotrifluoroethylene (ECTFE) and KYNAR (Arkema SA -- France) polyvinylidene (PVDF) resins.

Westlake Plastics produces a number of fluoropolymer-based products that are engineered specifically to provide resistance to chemicals and corrosion. For example, fluoropolymer-based products made from HALAR ECTFE are designed with enhanced chemical and mechanical characteristics, impact strength, and extremely low permeability to

**SAMPLE
PROFILE**

TABLE V-3

ELECTRICAL & ELECTRONICS MARKET FOR FLUOROPOLYMERS (million dollars)

Item	1996	2001	2006	2011	2016
Electrical/Electronic Prdt Shpts (bil \$)	470	500	550	600	650
lb fluoropolymer/mil \$ shpts	8.0	7.5	7.0	6.5	6.0
E & E Fluoropolymers (mil lb)	3,760	3,750	3,850	3,900	3,900
\$/lb	21.3	20.0	19.0	18.0	17.0
Electrical & Electronic Fluoropolymers	80.0	85.0	90.0	95.0	100.0
By Segment:					
Wire & Cable	29.7	30.0	30.5	31.0	31.5
Semiconductors	32.0	32.5	33.0	33.5	34.0
Batteries & Fuel Cells	18.3	22.5	26.5	30.5	34.5
By Type:					
FEP	9.6	10.0	10.5	11.0	11.5
PTFE	54.0	55.0	56.0	57.0	58.0
PVDF	13.0	13.5	14.0	14.5	15.0
Other Fluoropolymers	52.0	56.5	60.5	64.5	68.5
% electrical & electronic Fluoropolymer Demand	21.1	22.5	23.8	25.0	26.1
	862	1,158	1,412	1,800	2,390

**SAMPLE
TABLE**

“Wire & Cable -- Demand for fluoropolymers in the wire and cable market is projected to increase 5.5 percent per year to \$389 million in 2011, with market volume totaling 37.5 million pounds in the same year. As the US wire and cable industry recovers from declines posted during the 2001-2006 period, fluoropolymer consumption will increase, aided in particular by the strong demand for ...”

--Section V, pg. 102

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OTHER STUDIES

World Fluorochemicals

Global fluorochemicals demand will grow 3.1% yearly through 2011. Value gains will be aided by the positive outlook for higher value products such as HFCs and fluoropolymers. Most volume growth will occur in developing nations such as China, where fluoro-carbon use is less regulated. This study analyzes the \$13.3 billion world fluorochemical industry, with forecasts for 2011 and 2016 by product, market, world region and for 15 countries. It also evaluates company market share and profiles major producers.
 #2228 07/2007..... \$5500

Metalocene & Single-Site Polymers

US metallocene and single-site polymer demand will grow 17.7% annually through 2011. mLLDPE will remain dominant while mHDPE and polypropylene will lead gains. Film and sheet will stay the most common application, but will be outpaced by injection and blow molding uses. This study analyzes the \$2.4 billion US metallocene and single-site polymer industry, with forecasts for 2011 and 2016 by polymer, application and market. It also evaluates company market share and profiles leading competitors.
 #2218 07/2007..... \$4400

Reinforced Plastics

US reinforced plastics demand will reach 4.2 billion pounds in 2011, driven by broadened applications and enhanced competitiveness with steel and aluminum. Thermoset resins will remain dominant while thermoplastics will grow faster. Glass fibers will stay the top reinforcement material while nanomaterials will lead gains. This study analyzes the \$6.7 billion US reinforced plastics industry to 2011 and 2016 by resin, market and reinforcement. It also evaluates company market share and profiles major players.
 #2195 04/2007..... \$4400

Specialty Films

US specialty film demand will grow 4.8% annually through 2010. Gains will be driven by higher value materials, the rapid adoption of modified atmosphere packaging and improved film coating and metallization. Barrier films will remain dominant while biodegradable and water soluble films will grow the fastest from a small base. The study analyzes the \$5.8 billion US specialty film industry to 2010 and 2015 by product, function and market. It also evaluates company market share and profiles leading competitors.
 #2158 02/2007..... \$4400

Natural Polymers

US natural polymer demand will grow 5.9% annually through 2010 based on increased food production and opportunities in packaging and medical uses. Starch and fermentation products will grow the fastest and surpass cellulose ethers as the dominant type by 2015. The food and beverage market will remain dominant while medical uses will lead gains. The study analyzes the \$2.7 billion US natural polymer industry to 2010 and 2015 by product and market. It also details market share and profiles major players.
 #2156 01/2007..... \$4300

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