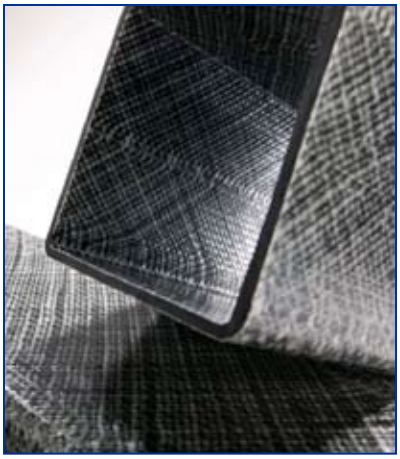

Fiber-Reinforced Plastic Composites

US Industry Study with Forecasts for **2017 & 2022**

Study #3092 | October 2013 | $5100 | 317 pages

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Table of Contents

EXECUTIVE SUMMARY

MARKET ENVIRONMENT

FIBERS

PRODUCTS

MARKETS

INDUSTRY STRUCTURE

COMPANY PROFILES

Fiber-Reinforced Plastic Composites

US Industry Study with Forecasts for ***2017 & 2022***

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List of Tables/Charts

EXECUTIVE SUMMARY

MARKET ENVIRONMENT

FIBERS

PRODUCTS

MARKETS

INDUSTRY STRUCTURE

Fiber-Reinforced Plastic Composites

US Industry Study with Forecasts for ***2017 & 2022***

Fiber-reinforced plastic composites will continue to supplant conventional materials such as aluminum and steel due to their light weight, stiffness, corrosion resistance and design flexibility.

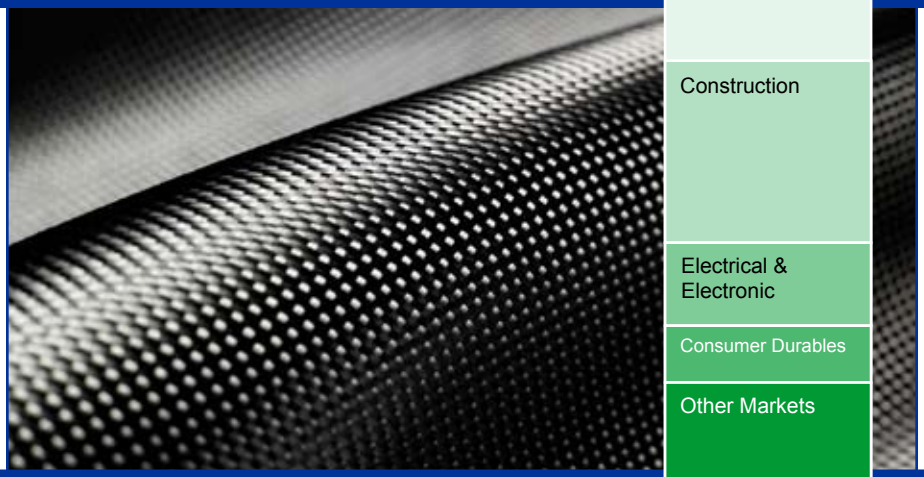
US demand to rise 4.7% annually through 2017

US demand for fiber-reinforced plastic (FRP) composites is forecast to climb 4.7 percent annually to 4.3 billion pounds in 2017, valued at nearly $23 billion. Demand will rebound from the moderate declines experienced over the course of the recession-impacted 2007-2012 period, when opportunities were restricted by a steep drop in construction activity, reduced motor vehicle output, and the collapse of the recreational boating market. These markets are anticipated to see renewed growth as economic conditions improve. In addition, FRP composites will continue to supplant conventional materials such as aluminum and steel due to a number of performance advantages, including light weight, stiffness, and corrosion resistance, as well as greater design flexibility and improved parts consolidation capabilities. However, advances will be threatened by saturated applications in many areas and the higher cost of FRPs compared to metal in long production runs.

Motor vehicle, construction markets to offer best growth opportunities

Motor vehicles and construction represent the leading outlets for FRP composites and will provide the best opportunities for growth through 2017, spurred by an improving outlook for vehicle output and a strong rebound in building construction activity. Together, these two markets will account for more than three-quarters of new demand for FRP composites through 2017. Ongoing efforts among automakers to enhance fuel efficiency will continue to drive composites demand as vehicle weight reduction -- which represents a key strategy utilized by OEMs to boost fuel economy -- is often accomplished through the use of lightweight composite materials. Advances in the construction sector will be propelled by rapid spending increases in the residential sector, which will generate demand for a variety of products, including fiberglass bathroom components and entry doors.

US Fiber-Reinforced Plastic Composites Demand, 2017
(4.3 billion pounds)



Prospects will also be bright in the small volume aerospace sector, driven by the expanding utilization of carbon fiber composites in the production of commercial airliners such as Boeing's 787 DREAMLINER, which has more than 50 percent composite content. Rising consumer spending levels will bode well for composites used in the production of marine and consumer durables products. However, opportunities in the sizable electrical and electronics sector will be more limited, restricted by an anticipated decline in wind turbine installations from elevated 2012 levels, and by the dominance of offshore producers of computers, printers, and other electrical and electronic equipment.

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Sample Text, Table & Chart

FIBERS

Glass Fibers

Demand for glass fibers used in reinforced plastics is fo
expand 4.6 percent per annu 2017.
growth will be supported by nufac
activity. Glass fibers will co good
cal properties, chemical resi y, an
price and performance level mor
than steel and aluminum in ehicl
production is more complica wer. N
less, glass fiber-reinforced plastics are price competitive with
aluminum in small volume applications, where complex shap
prohibitively expensive to form from metal, and where light
high levels of corrosion resistance are mandated.

SAMPLE TEXT

Glass fibers' attributes include increased stiffness, heat resistance, electrical insulation, and dimensional stability. Minor drawbacks include brittleness and a low tensile modulus of elasticity. Several types of glass fibers are used in composites. Electrical grade glass, also known as E-glass, is the leading type of glass fiber used in reinforced plastics due to its low cost and good water resistance. E-glass is suitable for a wide range of general purpose and electrical applications. Drawbacks include only fair alkali resistance and poor acid resistance. Chemical grade glass (C-glass) exhibits better resistance than E-glass in terms of water, alkali, and acid resistance, while S-glass -- the highest performance grade of glass fiber -- features high mechanical and tensile strength ar
quently used for advanced composites.

In glass fiber production, molten glass is extruded throu
holes at the base of the furnace to produce very thin glass fila
These filaments are coated (sized) with chemicals to provide
resistance or enhance compatibility with matrix resins in con
The filaments are then gathered into strands and bundles of s

TABLE V-2

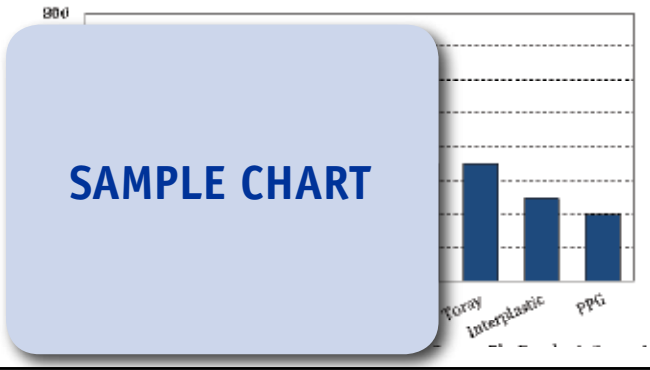
MOTOR VEHICLE MARKET FOR FIBER-REINFORCED PLASTIC COMPOSITES BY RESIN
(million pounds)

Item	2002	2007	2012	2017	2022
Motor Vehicle Production (000 units)	12				
lbs FRP composites/vehicle					
Motor Vehicle FRP Composites Demand					
Thermoset Composites:					
Polyester					
Other Thermosets					
Thermoplastic Composites:					
Nylon					
Polypropylene					
Polyester					
Styrenics					
Other Thermoplastics					
% motor vehicles	2				
FRP Composites Demand	3				

SAMPLE TABLE

CHART VI-2

US FIBER-REINFORCED PLASTIC COMPOSITES MARKET LEADERS, 2012
(million dollars)



SAMPLE CHART

Fiber-Reinforced Plastic Composites

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Sample Profile, Table & Forecast

TABLE IV-6

THERMOPLASTIC COMPOSITES DEMAND BY RESIN
(million pounds)

Item	2002	2007	2012	2017	2022
FRP Composites Demand	3				0
% thermoplastics					
Thermoplastic Composites Demand	1				2
Nylon					5
Polyester					0
Polypropylene					0
Styrenics					0
Polycarbonate					5
Other Thermoplastics					0
$/lb					5
Thermoplastic Composites Demand (mil					0

SAMPLE TABLE

COMPANY PROFILES

AGY Holding Corporation
2556 Wagener Road
Aiken, SC 29801
803-648-
http://ww

Sales: $
Americas the SEC)
Employn

Key Proc products, and
continuou

SAMPLE PROFILE

AGY Holding is a developer, producer and distributor of fiberglass reinforcements and yarns for electronic, telecommunication, automotive, industrial, recreational and military applications. AGY is majority owned by Kohlberg & Company LLC, a private equity firm with offices in New York and California. The Company operates through two segments: AGY US and AGY Asia.

The Company participates in the US fiber-reinforced plastic composites market via the AGY US segment, which posted sales of $146 million in 2012. The segment comprises AGY's operations in the US, including the production and sale of glass fibers, rovings, yarn, and chopped strands. Specifically, AGY makes E-glass yarns, S-1 GLASS and S-2 GLASS advanced glass products, and continuous filament mat (CFM). Of the AGY US segment's total sales in 2012, the aerospace market accounted for 29 percent, the industrial market for 28 percent, the electronics market for 18 percent, the continuous filament mat market for 11 percent, the construction market for eight percent, and the defense market for six percent.

STUDY COVERAGE

This Freedonia US study, ***Fiber-Reinforced Plastic Composites***, offers historical data (2002, 2007, 2012) plus forecasts for 2017 and 2022 for FRP composites demand by fiber, product and market. The study also examines key market environment factors, evaluates company market share and profiles 38 competitors in the US FRP composites industry.

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Other Studies

Silicones

US demand for silicones is forecast to climb 4.7 percent annually to $4.3 billion in 2018, with volume rising 3.2 percent per year to 900 million pounds. Silicone elastomers will grow the fastest, overtaking fluids as the leading product type. The construction and medical markets will be the fastest growing segments, while the industrial market will remain dominant. This study analyzes the $3.4 billion US silicones industry, with forecasts for 2018 and 2023 by product, market and application. It also evaluates company market share and profiles industry players.

#3138 ..... March 2014 ..... $5100

Plastic Foams

US demand for plastic foams is forecast to rise 4.1 percent annually to 8.6 billion pounds in 2017, valued at $24.7 billion. Packaging will remain the leading outlet while construction and household products grow the fastest. Polyurethane will remain the most commonly used plastic foam and will enjoy the best growth opportunities, led by flexible polyurethane foam. This study analyzes the 7.1 billion pound US plastic foam industry, with forecasts for 2017 and 2022 by market and resin. The study also evaluates company market share and profiles industry players.

#3114 ..... December 2013 ..... $5100

World Bioplastics

Global demand for biobased and biodegradable plastics will rise 19 percent per year to 960,000 metric tons in 2017. Starch-based resins and polylactic acid (PLA) will remain the leading products, while the most rapid gains in demand are expected for biobased commodity resins such as polyethylene and polypropylene. This study analyzes the 408,000 metric ton world bioplastic industry, with forecasts for 2017 and 2022 by product, market, world region, and for 17 countries. The study also evaluates company market share and profiles industry players.

#3089 ..... November 2013 ..... $6300

High-Temperature Plastics

US demand for high-temperature plastics will rise 5.8 percent per year to $3.1 billion in 2017. Advances in the key fluoropolymers segment will trail the average growth rate, but these resins will continue to offer the best opportunities for growth. Polyketones, polyphenylene sulfide, and sulfone polymers will achieve the fastest gains from smaller bases. This study analyzes the $2.4 billion US high-temperature plastics industry, with forecasts for 2017 and 2022 by resin and market. The study also evaluates company market share and profiles industry players.

#3053 ..... June 2013 ..... $5100

Custom Thermoplastic Compounding

US demand for custom compounded thermoplastics is forecast to rise 5.0 percent annually to 11.4 billion pounds in 2017, valued at $14.3 billion (resin content only). Construction will offer the best market prospects, as the industry recovers from recession. PVC represents the largest and fastest growing compounded thermoplastic. This study analyzes the 8.9 billion pound US custom compounded thermoplastic industry, with forecasts for 2017 and 2022 by resin and market. The study also evaluates company market share and profiles industry players.

#2991 ..... February 2013 ..... $5100

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