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Advanced Flat Glass

US Industry Study with Forecasts for **2012 & 2017**

Study #2342 | June 2008 | \$4500 | 256 pages

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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

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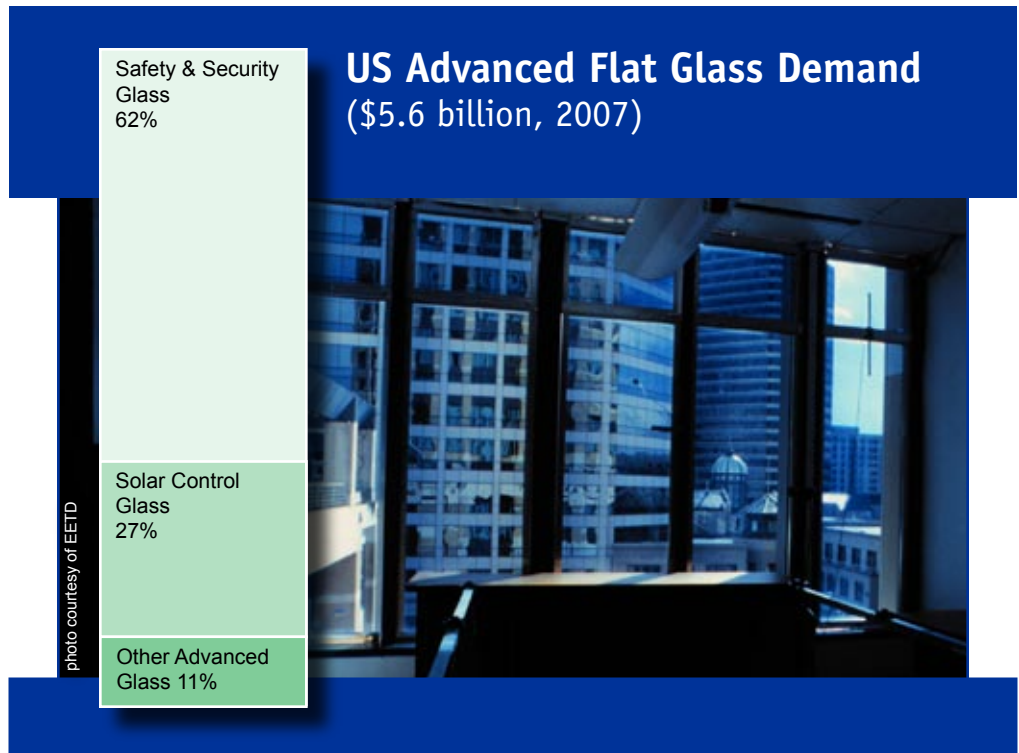
Rapid growth in emerging technologies (e.g., smart glass, self-cleaning glass) and strong gains in laminated glass used in hurricane, bullet and burglary resistance will help drive growth.

US demand to grow 5% annually through 2012

Demand for advanced flat glass is projected to increase 5.0 percent annually to \$7.2 billion in 2012. Gains will derive from a variety of factors, including the recovery of residential building construction activity from a weak 2007 base, ongoing rapid growth in a variety of emerging technologies (such as smart glass and self-cleaning glass) and strong gains in laminated glass used as hurricane glass, ballistic glass and burglary resistant glass. Solid advances for certain niche products in the large motor vehicle market will also aid growth. This will derive from increasing light motor vehicle production, replacement of tempered safety glass with laminated glass, and greater penetration by heads-up windshields, electrochromic mirrors and solar control glass.

Solar control glass to offer best growth opportunities

Security and safety glass products, including both tempered and laminated flat glass, represent the largest group of advanced flat glass materials, accounting for 62 percent of total demand in 2007. While certain of these products are relatively mature (such as tempered safety glass for motor vehicles), there remain a number of opportunities for advanced flat glass, particularly for laminated flat glass used as hurricane glass, burglary glass, ballistic glass and motor vehicle safety glass.



Solar control flat glass, the second largest group of advanced flat glass products, will continue to post above average growth through 2012. In particular, demand for smart glass is expected to finally have a significant impact outside of the electrochromic mirrors and liquid crystal display privacy glass, which have been available for some years. The much-awaited commercial roll-out of suspended particle device (SPD) smart glass technologies is now expected to occur, sparking well above average growth for the category through 2012. Other types of solar control glass, such as low-emissivity glass and reflective glass, will post slower but nonetheless strong growth.

Other advanced flat glass products that offer growth opportunities include heads-up display (HUD) windows and self-cleaning glass. The former, developed for military aircraft pilots, are now being increasingly integrated into commercial aircraft, and have begun to show up in motor vehicles as well. While largely restricted to luxury vehicles at the moment, over time the technology will be expanded into a broader segment of the new motor vehicle fleet. HUD windshields will benefit from the growing integration of motor vehicle electronics systems. Self-cleaning glass, which has been treated to improve its water-shedding and dirt resistance capabilities, will advance strongly from a low 2007 base.

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Sample Text, Table & Chart

PRODUCTS

Safety Glass

Demand for safety glass is projected to expand 2.6 percent to \$3.0 billion in 2012. Over the next five years, demand is expected to grow at the greatest growth, as these markets are expected to expand in motor vehicle markets. Nonresidential construction will be an important part of the overall market, but demand will be lower cost. Safety glass will continue to be an important part of the overall safety and security product category, as this is a market which is dependent upon the automotive market. With new vehicle production expected to finally increase through 2012, following a decade of demand for both tempered and laminated safety glass will be

Essentially, safety glass (as defined here) encompasses glass used in transportation equipment which is designed to improve safety. The glass may have been modified via tempering or lamination, and can be used in any of a wide range of vehicles, including cars and trucks of all sizes, aircraft, boats, trains and snowmobiles.

Producers of laminated safety glass include AFG Industries (Asahi Glass), Apogee Enterprises, Guardian Industries, Pilkington, PPG Industries, Safelite and Visteon. Producers of tempered safety glass include AFG Industries, Pilkington and PPG Industries.

In 2005, InvisGuard LLC introduced INVISAGUARD laminated glass products for use in vehicle side windows for the purpose of preventing vehicle thefts and break-ins. InvisGuard uses laminated safety glass from PPG Industries for its product, which is marketed for after-market installation on high-end SUVs, such as the Cadillac Escalade; Chevrolet Tahoe, Silverado and Suburban; and the GMC Yukon. SUV owners frequently add a wide range of high-end options to their vehicles, which are expensive anyway, and thus prime targets for thieves.

**SAMPLE
TEXT**

TABLE IV-8

FIRE-RATED GLASS DEMAND (million dollars)

Item	1997	2002	2007	2012	2017
Nonres Bldg Construction Expend (bil \$)	84	104	124	144	164
\$ fire-rated/mil \$ construction	0.04	0.05	0.06	0.07	0.08
Fire-Rated Glass Demand	3.4	5.2	7.4	10.1	13.8
By Type:					
Wire Reinforced Fire Glass	0.0	0.0	0.0	0.0	0.0
Laminated Fire Glass	3.4	5.2	7.4	10.1	13.8
By Market:					
Residential	0.0	0.0	0.0	0.0	0.0
Nonresidential	3.4	5.2	7.4	10.1	13.8
Office & Commercial	0.0	0.0	0.0	0.0	0.0
Institutional	0.0	0.0	0.0	0.0	0.0
Industrial & Other	3.4	5.2	7.4	10.1	13.8
% fire-rated	0.04	0.05	0.06	0.07	0.08
Security & Safety Glass Demand	0.5	0.7	1.0	1.4	1.9

**SAMPLE
TABLE**

CHART VI-1

FLAT GLASS MARKET SHARE BY COMPANY, 2007 (\$5.6 billion)



**SAMPLE
CHART**

Sample Profile, Table & Forecast

TABLE V-2
MOTOR VEHICLE MARKETS FOR ADVANCED FLAT GLASS
 (million dollars)

Item	1997	2002	2007	2012	2017
Motor Vehicle Production (000)	17				150
\$ flat glass/vehicle					12
Motor Vehicle Flat Glass Demand					00
% advanced					6
Motor Vehicle Advanced Glass Demand					30
By Sector:					
Original Equipment					55
Aftermarket					75
By Product:					
Solar Control Glass					85
Security & Safety Glass					35
Other Advanced Glass					10
% motor vehicle					7
Advanced Flat Glass Demand	3				000

**SAMPLE
PROFILE**

COMPANY PROFILES

PGT Incorporated

1070 Technology Drive
 North Venice, FL 34275
 941-480-
 http://wv

Sales: \$
 Employe

Key Pro

PGT is a U.S. manufacturer and supplier of residential impact-resistant windows and doors. The Company is 52-percent owned by JLL Partners Incorporated, a private investment firm. PGT operates through two product groups: WINGUARD Windows and Doors, and Other Window and Door Products.

The Company participates in the US advanced flat glass industry through both product groups. The WINGUARD Windows and Doors group, which had 2007 sales of \$190 million, encompasses products made with impact-resistant WINGUARD glass. WINGUARD impact-resistant glass is made using two panes of glass bonded together with an interlayer of clear polyvinyl butyral. This glass is engineered to withstand impacts from flying debris and hurricane-force winds. In addition, WINGUARD impact-resistant glass is designed to reduce noise and filter out 99percent of ultraviolet rays. WINGUARD glass is suitable for use with residential windows and doors, architectural systems and other products.

PGT's Other Window and Door Products group, which generated sales of \$89 million in 2007, includes insulated glass for use with

“Consumption of advanced flat glass products in original equipment automotive markets will expand 3.1 percent annually to \$3.0 billion in 2012. Gains will be driven by the increasing use of laminated glass in side windows, sunroofs and rear windows, and by continued market penetration of electrochromic mirrors. Further out, areas of rapid growth will include heads-up display screens and ultimately, ...”

--Section V, pg. 146

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OTHER STUDIES

Windows & Doors in China

Demand for windows and doors (fenestration) in China will grow 11% annually through 2011. Gains will be driven by healthy growth in building construction, increased demand for larger living spaces, and further privatization of home ownership. Plastic fenestration will continue to supplant metal and wood types. This study analyzes the ¥115.6 billion Chinese fenestration industry, with forecasts for 2011 and 2016 by product, market and region. It also evaluates company market share and profiles major players.
 #2258 11/2007..... \$4900

Flat Glass in China

Demand for flat glass in China will rise 8.6% yearly through 2011 based on strong gains in building construction and manufacturing. Float glass will continue supplanting drawn and rolled glass. Fabricated flat glass will benefit from higher-end window and furniture glass and healthy motor vehicle and electronic display production. This study analyzes the ¥58.5 billion Chinese flat glass industry, with forecasts (2011, 2016) by product, market and region. It also details market share and profile major players.
 #2223 11/2007..... \$4900

World Windows & Doors

Global window and door demand will rise 5% yearly through 2011. China, India, Mexico and Russia will see some of the largest sales increases. Wood and metal products will stay dominant while plastic types will grow the fastest. The nonresidential building market will outpace the larger residential sector. This study analyzes the \$117.5 billion world window and door industry, with forecasts for 2011 and 2016 by product, market, world region and for 30 countries. It also details market share and profiles major players.
 #2235 09/2007..... \$5800

Industrial Crystals

US industrial crystal demand will grow 5.8% yearly through 2011, led by uses in nonlinear optical materials and compound semiconductor substrates. Communications and security/defense will see the largest market gains. Transition metal-based crystals and semiconducting types will be the fastest growing materials. This study analyzes the \$845 million US industrial crystal industry, with forecasts for 2011 and 2016 by material, application and market. It also evaluates market share and profiles leading players.
 #2166 05/2007..... \$4500

Windows & Doors

US window and door demand will grow 3.3% annually through 2010. The residential market will remain dominant, with the home improvement and repair segment leading gains. The nonresidential building market will grow the fastest. Plastic windows and doors will continue supplanting wood and metal products. This study analyzes the \$3.1 billion US window and door industry for 2010 and 2015 by material, market and region. It also evaluates company market share and profiles leading competitors.
 #2144 01/2007..... \$4500

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