INDUSTRY MARKET RESEARCH FOR BUSINESS LEADERS, STRATEGISTS, DECISION MAKERS

Advanced Flat Glass

US Industry Study with Forecasts for **2014 & 2019**

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US Industry Study with Forecasts for ***2014 & 2019***

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MARKET ENVIRONMENT

FLAT GLASS INDUSTRY OVERVIEW

PRODUCTS

MARKETS

INDUSTRY STRUCTURE

Gains will be driven by a rebound in residential construction and motor vehicle production, and by increasing market penetration for low-emissivity glass, heads-up display windshields, electrochromic mirrors and smart glass products.

US demand to increase 9.1% yearly through 2014

US demand for advanced flat glass products is projected to increase 9.1 percent annually from a weak 2009 base to 745 million square feet in 2014, valued at $7.0 billion. This growth represents a significant improvement over the 2004-2009 period, when advanced flat glass consumption suffered from the combination of a weak economy, crisis in financial markets, the bursting of the housing bubble and a sharp downturn in motor vehicle production. As a result, demand for advanced flat glass in 2009 was at its lowest level in more than a decade. Going forward, a rebound in residential construction and motor vehicle production from low 2009 levels will spark strong growth in demand for advanced flat glass products. Consumption will also benefit from increasing market penetration for a number of advanced flat glass products, including low-emissivity glass, heads-up display and other advanced windshields, electrochromic mirrors and smart glass products.

Safety, security glass to remain dominant segment

Safety and security glass accounted for nearly three-fifths of demand in value terms in 2009, reflecting the widespread use of these products in motor vehicles (laminated windshields and tempered window glass) and in nonresidential construction (laminated security glass and tempered fire-rated glass). Demand

US Advanced Flat Glass Demand
($7 billion, 2014)

for safety and security glass is projected to increase 11.9 percent annually to $4.2 billion in 2014. Growth in demand will be paced by safety glass used in vehicular markets and laminated hurricane glass, although the latter will remain a regional product.

Solar control products to grow the fastest

Consumption of solar control products is forecast to increase more than twelve percent annually from a weak 2009 base to $2.1 billion in 2014. Low-emissivity glass has emerged as the most widely used product in manufactured window units, particularly the double-pane units that now dominate residential window applications. The recovery in new residential construction through 2014 will boost demand for low-e windows, coupled with continued market penetration at the expense of plain annealed glass. Rapid growth will occur in smart glass segments, albeit from a small base. Electrochromic mirrors comprise the largest smart glass product category and will post outsized growth due to a strong recovery in vehicle production and growing market penetration. Other smart glass products, such as electrochromic windows, suspended particle device windows and liquid crystal display windows, will make some market inroads, although demand will remain relatively small through 2014.

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Sample Text, Table & Chart

MARKETS

SAMPLE TEXT

Improvement & Repair -- Demand for advanced flat products in residential improvement and repair markets is pr rise million in 2014. As is the c new and is accounted for by sol glas in insulated window units. sign r this product, with literally com le-, and even triple-paned re win ailable in a variety of constr altho common. Increasingly, rep windows for the residential aftermarket are utilizing low-e ar advanced glass products, replacing common annealed sheet g

The replacement of broken windows in traditional fram single-pane windows) can be carried out on a do-it-yourself generally does not utilize advanced flat glass products. Replacing damaged insulated glass units, on the other hand, is more problematic, and for the most part is beyond the skill levels of the average homeowner. Generally, such window units are under warranty at least for the first few years after installation, and would thus consume (at least in some cases) advanced flat glass products. However, the bulk of demand in improvement and repair applications comes from the wholesale replacement of old single-pane window units with double-pane replacement units. There are thousands of companies in the US that manufacture or install replacement windows, utilizing flat glass manufactured by others.

Over the long term, higher value-added products, includ glass and self-cleaning glass, will finally begin to make a sig impact in the replacement market. Increasing consumer acc of these advanced products will provide the basis for deman In addition, greater availability will also aid consumption, as replacement window manufacturers incorporate these materi insulated glass units.

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TABLE V-3

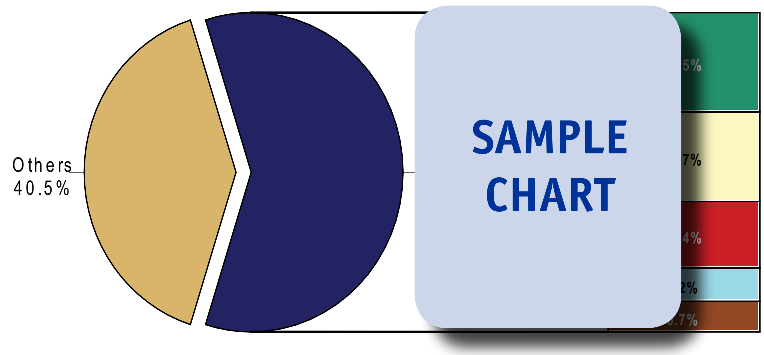
MOTOR VEHICLE MARKETS FOR ADVANCED FLAT GLASS
(million dollars)

SAMPLE TABLE

Item	1999	2004	2009	2014	2019
Motor Vehicle Production (000)	13[illegible]	[illegible]	[illegible]	[illegible]	[illegible]00
$ advanced flat glass/vehicle	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]3
Motor Vehicle Flat Glass Demand	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]0
% advanced	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]9
Motor Vehicle Advanced Glass Deman[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]0
By Sector:					
Original Equipment	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]0
Aftermarket	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]0
By Product:					
Security & Safety Glass	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]0
Solar Control Glass	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]5
Other Advanced Glass	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]5
% motor vehicle	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]7
Vehicular Advanced Flat Glass Demand	[illegible]	[illegible]	[illegible]	[illegible]	4840

CHART VI-1

ADVANCED FLAT GLASS MARKET SHARE BY COMPANY
($4.0 billion, 2009)



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Sample Profile, Table & Forecast

TABLE IV-20

ELECTROCHROMIC MIRRORS DEMAND
(million dollars)

Item	1999	2004	2009	2014	2019
Motor Vehicle Production (000)	12				00
sq ft mirrors/vehicle					71
Electrochromic Mirrors Demand (mil s					.0
$/sq ft	1				00
Electrochromic Mirrors Demand					40
Motor Vehicles					30
Other Vehicular					10
% electrochromic mirrors					.3
Smart Glass Demand					965

SAMPLE TABLE

COMPANY PROFILES

O'Keeffe's Incorporated
325 Newhall Street
San Francisco, CA 94124
415-822-4222
http://wv

Annual S
Employr

Key Prod

O'K ... f skylights, roof hatches, s... ral components. The Company also makes fire-rated glass and assemblies through the Safety and Fire-Rated Technology International (SAFTI) FIRST division. O'Keeffe's has a production center in San Francisco, California.

SAMPLE PROFILE

The Company participates in the US advanced flat glass market via the SAFTI FIRST division (San Francisco, California). The division is engaged in the manufacture of SUPERLITE and PYRAN fire-rated glass. SUPERLITE fire-rated glass consists of monolayer gel coats that are engineered to prevent shattering caused by exposure to high heat. This glass is suitable for use in doors, wall panels and windows in airports, commercial and municipal high-rise buildings, correctional facilities, hospitals, laboratories, schools and residential buildings. SUPERLITE fire-rated glass is available in blast-, hurricane- and bullet-resistant grades.

The SAFTI FIRST division's SUPERLITE fire-rated glass range includes II-XL, I-XL, I, X-90, and I-W varieties. SUPERLITE II-XL glass is engineered to block radiant heat transfer and to reduce noise.

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"Consumption of electrochromic mirror advanced flat glass products is forecast to expand almost 19 percent annually from a weak 2009 base to $505 million in 2014, equivalent to 7.2 million square feet. Recovery in new motor vehicle production from the extremely weak levels of 2009 will spark renewed demand for electrochromic mirrors, coupled with increasing market penetration."

--Section IV, pg. 135-6

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Other Studies

World Flat Glass

Global flat glass demand will rise six percent yearly through 2014. Gains will be spurred by ongoing robust growth in the Asia/Pacific region, and by recovery in the building construction and motor vehicle industries of North America and Western Europe. Fabricated flat glass will benefit from rapid growth in more expensive products. This study analyzes the 6.1 billion square meter world flat glass industry. It presents forecasts for 2014 and 2019 by market, world region and for 21 major countries. It also evaluates market share and profiles industry players.

#2715 ....January 2011 .... $6200

Windows & Doors

US window and door demand will rise 6.6% yearly through 2014. Plastic products will grow the fastest, driven by fiberglass entry doors and vinyl windows. Metal windows and doors will remain the top segment, supported by population growth in the South and West and by efforts in coastal regions to prevent storm damage. This study analyzes the $22.7 billion US window and door industry with forecasts for 2014 and 2019 by material, market and region. It also evaluates company market share and profiles industry players.

#2699 .... November 2010 .... $5100

World Windows & Doors

Global window and door demand will grow 4.3% yearly through 2013. China will claim over half of gains based on rapid growth in nonresidential building construction, and will surpass the US as the largest market. India and Indonesia will also grow at above average rates. Plastic windows and doors will grow the fastest. This study analyzes the $136 billion world window and door industry, with forecasts for 2013 and 2018 by product, market, world region and for 22 countries. It also details market share and profiles industry players

#2513 ....June 2009 .... $6100

Automotive Aftermarket in North America

The aftermarket for light vehicle components in North America will increase 2.9% annually through 2014. Mechanical products will remain the largest category while electronics grow the fastest. The dominant professional service provider segment will outpace the DIY market. This study analyzes the $66 billion automotive aftermarket in North America, with forecasts for 2014 and 2019 by country (US, Canada, Mexico) and product. It also evaluates company market share and profiles industry participants.

#2606 .... March 2010................... $4800

Flat Glass in China

Demand for flat glass in China is forecast to increase 7.9% annually through 2013. Float glass will grow rapidly at the expense of lower quality sheet glass. High value fabricated glass (e.g., safety glass, insulating glass) will increasingly be used by consumers in place of lower value unfabricated glass. This study analyzes the 1.9 billion square meter flat glass industry in China, with forecasts for 2013 and 2018 by type, market and region. It also evaluates company market share and profiles industry participants.

#2584 ....January 2010 .... $5200

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