



Clear float glass

Pilkington **OptiView™** Protect

Anti-reflective glass
Pilkington **OptiView™**
Pilkington **OptiView™** Protect



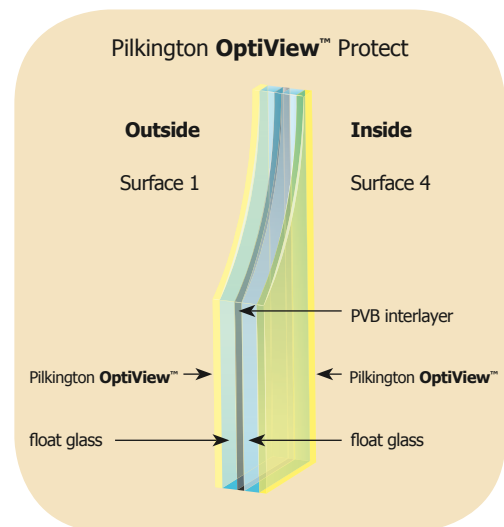
Pilkington **OptiView™** and Pilkington **OptiView™** Protect anti-reflective glass

Pilkington **OptiView™** is an anti-reflective, on-line coated product with a neutral colour. It can be used in a monolithic or laminated application.

Pilkington **OptiView™** is a monolithic glass, with the anti-reflective coating on one surface, which reduces light reflectance and allows more light to pass through, when compared with clear float glass. The product can be used in a monolithic application.

Pilkington **OptiView™** Protect is a laminated glass with anti-reflective coatings on surfaces #1 and #4 (both outer surfaces of the laminated glass), which reduces interior and exterior light reflectance to under 2%. As a consequence, views from both inside and outside are clear, unobscured and virtually reflection-free.

Pilkington **OptiView™** Protect offers all the traditional benefits of laminated glass, such as improved safety, enhanced security, durability and acoustic properties. It also offers design flexibility, easy installation and low visual distortion. Furthermore, it provides protection from UV radiation (UVA and UVB) by blocking nearly 99% of UV transmittance, helping to reduce fading of the contents and interiors of a building.



Available thickness

- 3, 4, 5, 6 and 8 mm monolithic glass
- 6.8, 11.5, 12.8 and 16.8 mm laminated glass

Available stock size

- 3300 × 2440 mm

Shanghai Museum, China



Applications

With its large size capability and ability to be processed like ordinary glass, Pilkington **OptiView™** Protect is ideal for a wide range of traditional and new anti-reflective applications in which clarity of view is of paramount importance.

- Display cases
- Retail shop fronts
- Showrooms
- Glass atriums
- Sports stadiums
- Cabinets
- Pictures
- Refrigerators
- Vehicles
- Zoos

In addition to its performance properties and processing flexibility, Pilkington **OptiView™** achieves a more neutral colour than other anti-reflective glasses, providing architects with greater freedom to innovate than before.

Benefits

Safety

Pilkington **OptiView™** Protect is a laminated safety glass that performs under impact. Ordinary glass shatters into large pieces when impacted, while the laminated panes of Pilkington **OptiView™** Protect resist penetration and are shatter-resistant. Even though the glass may break, the glass fragments will remain firmly bonded to the interlayer, minimizing the risk of injury.

Security

Pilkington **OptiView™** Protect can help protect against break-ins and theft. Standard glass can be easily broken, allowing burglars easy access. The interlayer provides a safeguard against intrusion by remaining intact even when glass is broken.



Copini Opticiens, Sneek,
The Netherlands

For enhanced security, Pilkington **OptiView™** Protect can be designed to withstand a range of different impacts.

Audio performance

Pilkington **OptiView™** Protect provides an excellent barrier to noise. The laminated panes provide insulation against audio disturbances by dampening the sound.

J. Foster Jewelers, Ohio, USA





Beijing Museum, China

UV Control

Its anti-reflective properties allow it to absorb UV wavelengths and reduce damage and fading caused by UV radiation.

Note. Fading of materials is a complex phenomenon and can be influenced by factors other than UV radiation.

Durability

Pilkington **OptiView™** and Pilkington **OptiView™** Protect products are durable and easy to clean.



Flagstar Bank, Michigan, USA



Beijing Museum, China

Design flexibility

Pilkington **OptiView™** can be curved, toughened and heat-strengthened. A ceramic fit can also be applied as well as being suitable to paint for spandrel applications.

Pilkington **OptiView™** Protect can be incorporated into the laminated glass to create a truly personalised application and is easy to clean and maintain.

Easy installation

Pilkington **OptiView™** and Pilkington **OptiView™** Protect products are easy to install. Most laminated combinations can be simply cut to size and fabricated.

Pilkington **OptiView™** Features

- Light transmittance greater than 90%;
- High clarity;
- Highly durable, on-line pyrolytic coating;
- Large size capability.

Pilkington **OptiView™** Protect Features

- Exterior and interior light reflection reduced to less than 2%;
- UV transmittance reduced by over 99%;
- Superior safety, security and acoustic performance.

Zoo, Köln, Germany





President's House, Philadelphia,
Pennsylvania, USA



Pilkington **OptiView™** – performance data

Thickness	Light transmittance	Light reflectance (external)	Light reflectance (internal)	Direct solar transmittance	Solar reflectance	Solar absorptance	g value	UV transmittance
Monolithic performance data*								
3 mm Pilkington OptiView™	0.91	0.06	0.06	0.82	0.06	0.12	0.85	0.63
4 mm Pilkington OptiView™	0.91	0.06	0.06	0.80	0.06	0.14	0.83	0.60
5 mm Pilkington OptiView™	0.90	0.05	0.05	0.79	0.06	0.15	0.82	0.57
6 mm Pilkington OptiView™	0.90	0.05	0.05	0.77	0.05	0.18	0.81	0.55
8 mm Pilkington OptiView™	0.89	0.05	0.05	0.74	0.05	0.21	0.79	0.51
Laminated performance data**								
6.8 mm Pilkington OptiView™ Protect	0.91	0.02	0.02	0.69	0.03	0.28	0.74	0.00
11.5 mm Pilkington OptiView™ Protect	0.88	0.02	0.02	0.64	0.03	0.33	0.70	0.00
12.8 mm Pilkington OptiView™ Protect	0.89	0.02	0.02	0.61	0.03	0.36	0.68	0.00
16.8 mm Pilkington OptiView™ Protect	0.85	0.02	0.02	0.58	0.03	0.39	0.65	0.00

Determined in accordance with EN 410 and EN 673.

* Coating on surface 1.

** Coating on surfaces 1 and 4.



President's House, Philadelphia, Pennsylvania, USA

This publication provides only a general description of the products. Further, more detailed, information may be obtained from your local supplier of Pilkington products. It is the responsibility of the user to ensure that the use of these products is appropriate for any particular application and that such use complies with all relevant legislation, standards, codes of practice and other requirements. To the fullest extent permitted by applicable laws, Nippon Sheet Glass Co. Ltd. and its subsidiary companies disclaim all liability for any error in or omission from this publication and for all consequences of relying on it. Pilkington and "OptiView" are trademarks owned by Nippon Sheet Glass Co. Ltd, or a subsidiary thereof.



CE marking confirms that a product complies with its relevant harmonised European Norm.
The CE marking label for each product, including declared values, can be found at www.pilkington.com/CE



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Trifab™ VG (VersaGlaze™)

Trifab™ VG 450, 451 & 451T (Thermal) Framing Systems &
Trifab™ 451UT (Ultra Thermal) Framing System

Design + Performance Versatility with
Unmatched Fabrication Flexibility



Preston Pointe, Louisville, KY

Architect: Potter & Associates Architects PLLC, Louisville, KY

Glazing Contractor: Kentucky Mirror & Plate Glass Company, Louisville, KY

Trifab™ VersaGlaze™ is built on the proven and successful Trifab™ platform – with all the versatility its name implies. There are enough framing system choices, fabrication methods, design options and performance levels to please the most discerning building owner, architect and installer. The Trifab™ VersaGlaze™ family's newest addition, Trifab™ 451UT (Ultra Thermal) framing system, is designed for the most demanding thermal performance and employs a "dual" Isolock™ Thermal Break.

Aesthetics

Trifab™ VersaGlaze™ framing systems offer designers a choice of front-, center-, back- or multi-plane glass applications. Structural silicone glazing (SSG) and Weatherseal glazing options further expand the designers' choices, allowing for a greater range of design possibilities for specific project requirements and architectural styles. All systems have a 4-1/2" frame depth – Trifab™ VersaGlaze™ 450 has 1-3/4" sightlines, while Trifab™ VersaGlaze™ 451/451T and Trifab™ 451UT have 2" sightlines.

With seamless incorporation of Kawneer entrances or windows, including GLASSvent™ visually frameless ventilators, Trifab™ VersaGlaze™ can be used on almost any project. These framing systems can also be packaged with Kawneer curtain walls and overhead glazing, thereby providing a full range of proven, and tested, quality products for the owner, architect and installer from a single source supplier.

Economy

Trifab™ VersaGlaze™ 450/451/451T framing systems offer four fabrication choices to suit your project (Trifab™ 451UT available as screw spline fabrication only):

- **Screw Spline** – for economical continuous runs utilizing two piece vertical members that provide the option to pre-assemble units with controlled shop labor costs and smaller field crews for handling and installation.
- **Shear Block** – for punched openings or continuous runs using tubular moldings with shear block clips that provide tight joints for transporting large pre-assembled multi-lite units.
- **Stick** – for fast, easy field fabrication. Field measurements and material cuts can be done when metal is on the job.
- **Type B** – Same fabrication benefits as shear block except head and sill run through.

All systems can be flush glazed from either the inside or outside. The Weatherseal option provides an alternative to SSG vertical mullions for Trifab™ VersaGlaze™ 450/451/451T. This ABS/ASA rigid polymer



Brighton Landing, Cambridge, MA
Architects: ADD Inc., Cambridge, MA
Glazing Contractors: Ipswich Bay Glass Company, Inc., Rowley, MA

extrusion allows complete inside glazing and creates a flush glass appearance on the building exterior without the added labor of scaffolding or swing stages. Additionally, High-Performance (HP) Flashing options are engineered to eliminate perimeter sill fasteners and associated blind seals.

For the Finishing Touch

Architectural Class I anodized aluminum finishes are available in clear and Permanodic™ color choices.

Painted finishes, including fluoropolymer, that meet AAMA 2605 are offered in many standard choices and an unlimited number of specially designed colors.

Solvent-free powder coatings add the green element with high performance, durability and scratch resistance that meet the standards of AAMA 2604.

Performance

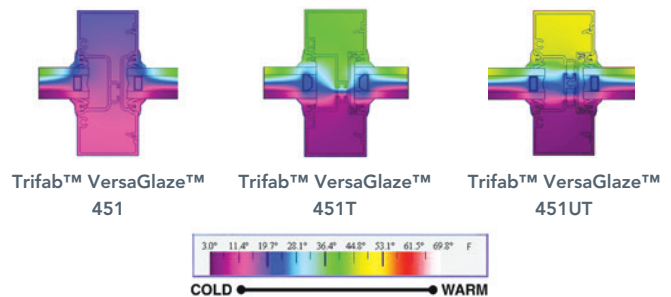
Kawneer's Isolock™ Thermal Break process creates a composite section, prevents dry shrinkage and is available on Trifab™ VersaGlaze™ 451T. For even greater thermal performance, a "dual" Isolock™ Thermal Break is used on Trifab™ 451UT.



Trifab™ 451UT uses a "dual" Isolock™ Thermal Break (right) and features a new HP (High Performance) sill design, which incorporates a screw-applied end dam (left), ensuring positive engagement and tight joints between the sill flashing and end dam.

U-factor, CRF values and STC ratings for Trifab™ VersaGlaze™ vary depending upon the glass plane application. Project specific U-factors can be determined for each individual project. (See the Kawneer Architectural Manual or Kawneer.com for additional information).

Thermal simulations showing temperature variations from exterior/cold side to interior/warm side.

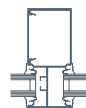


PERFORMANCE TEST STANDARDS

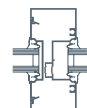
Air Infiltration	ASTM E 283
Water	AAMA 501, ASTM E 331
Structural	ASTM E 330
Thermal	AAMA 1503
Thermal Break	AAMA 505, AAMA TIR-A8
Acoustical	AAMA 1801, ASTM E 1425

Trifab™ VersaGlaze™ 450/451/451T glazing options

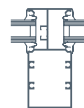
(note: Trifab™ 451UT available as center set glass plane only).



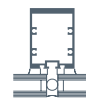
Front



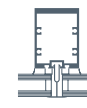
Center



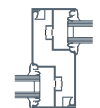
Back



SSG



Weatherseal



Multi-Plane

Kawneer Company, Inc.
Technology Park / Atlanta
555 Guthridge Court
Norcross, GA 30092

kawneer.com
770 . 449 . 5555



M-85 Series

Commercial Single-Hung (side load), Horizontal Slider & Fixed
2¹¹/₁₆" Frame Depth



Quality Windows & Doors for All Seasons

Performance and efficiency
in a cost-effective choice for
new construction and renovation



Ten at Clarendon in Arlington, VA
M-85 Series Horizontal Slider & Fixed Windows

Product Performance Details (AAMA/WDMA/CSA 101/I.S.2/A440-♦)

Type	AAMA Class at Gateway Size ♥♥	Structural/ Water/Air Test Size (W x H)	Air Infiltration (cfm/sq ft)	Water Resistance (psf)	Deflection (psf)	Structural ^ (psf)
Single-Hung	CW30	56"W x 91"H	0.01 @ 1.6 psf	4.60	30	45
	optional: CW50	52"W x 81"H		7.52	50	75
Horizontal Slider Single Vent (XO)	LC25	72"W x 60"H	0.18 @ 1.6 psf	3.76	25	37.5
	optional: CW30			4.60	30	45
Horizontal Slider with subsill Single Vent (XO)	CW35	72"W x 60"H	0.12 @ 1.6 psf	5.43	35	52.5
	optional: C50			7.52	50	75
Fixed <i>Hurricane-Impact Also Available!</i>	CW30	60"W x 72"H	<.01 @ 1.57 psf	4.60	30	45
	optional: C50		<.01 @ 1.6 psf	7.52	50	75
	optional: C65		<.01 @ 1.57 psf	9.82	65	97.5

♦ The '05 fenestration standard utilized five performance classes - R, LC, C, HC and AW. NAFS-08 and -11 utilize four such classes - R, LC, CW and AW.

♥ Many window ratings can be increased by downsizing the window and determining maximum performance either through testing or calculation. Contact your local Wojan Sales Representative or our office for additional details.

^ This is an intentional overload aspect to window performance testing and should not be used in lieu of the window DP (Design Pressure) when evaluating a product for a specific project or use.

Fixed over Louver configuration offers the same product designations and performance values (window only) as M-85 Fixed based on the M-85 Fixed AAMA101 Report.



Made in the U.S.A.



Proud Member

Cross-Sections and Additional Features

Integral nailing fins or finless configuration offers easy, flexible installation

Pour and debridge polyurethane thermal barrier in frame and sash

Single-Hung: Block & tackle balances and side take-outs that offer positive, safe operation and greater reliability

Glazed inserts with marine-type wrap-around glazing system for easy field replacement of glass compared to direct-set glazing

3/4" Sealed Insulated Glass on Operating Units
1" on Fixed

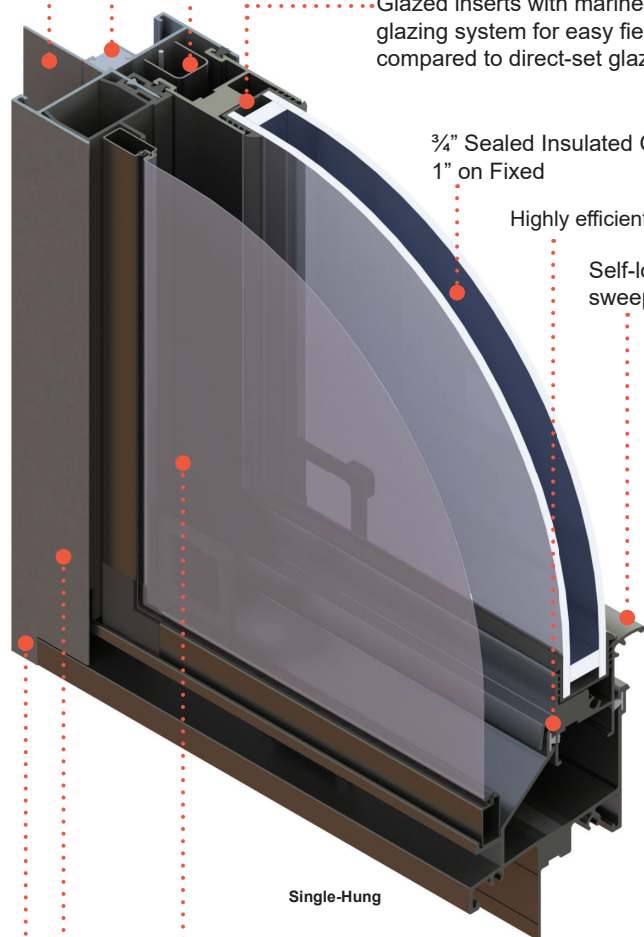
Highly efficient fin seal weather-stripping

Self-locking feature is standard, sweep lock available as an option

- Commercial-grade aluminum extrusions offer strength with a solid, attractive appearance
- Custom installation accessories including receptors and subsills, face flange, nail fins, panning, snap trim and mullions
- Aluminum screen frame with fiberglass cloth standard - optional aluminum cloth
- Ergonomically designed lift and pull rails on operable sash
- Standard finishes include white or bronze (AAMA 2603); and clear or dark bronze anodized (AAMA 611). White or bronze 2-coat Kynar® (AAMA 2605) available with minimum order

Other non-standard colors with minimum order

(Kynar® is a registered trademark of Arkema Inc.)
(Azo-Brader™ is a trademark of Azon USA Inc.)

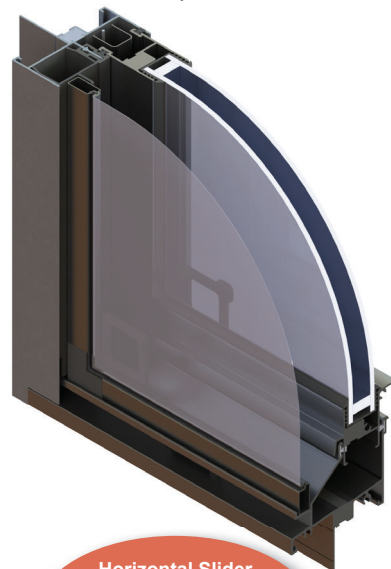


Single-Hung

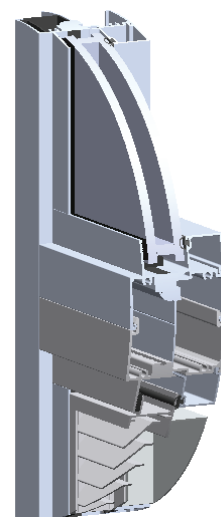
Spring-loaded screens install and remove easily

2 3/4" Frame with durable, low-maintenance electrostatically-applied baked-on finishes

Coped (non-mitered) corners resist flexing and racking to ensure structural integrity, reduce air infiltration and stop damaging water leakage



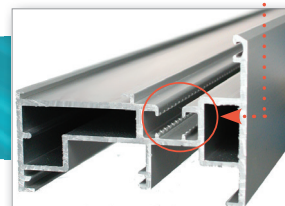
Horizontal Slider
(shown with high performance sill):
Ball-bearing easy-glide rollers provide smooth, quiet operation



Fixed over Louver
configuration is factory stacked with an integral nailing fin in one master frame

Azo-Brader™ Technology:

Abrasion "hooks" displace metal along the lugs to improve adhesion in the thermal barrier pocket.



Our products feature a pour and debridge polyurethane thermal break for better performance, utilizing Azo-Brader™ technology with a 10-year pass-through warranty against failure of the polymer.

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