





# Changing our surroundings, improving our world

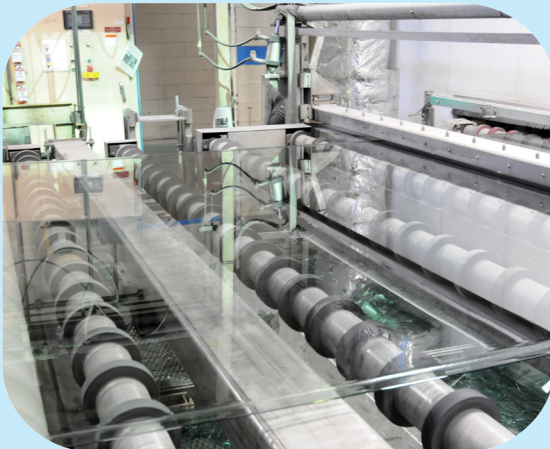
## Company Overview

As a leading global glass manufacturer, the NSG Group provides the broadest range of glass products available in the world today. Continuous product innovation ensures the development of the most appropriate products for North America and the global marketplace.

Glass plays a significant role in reducing energy consumption and greenhouse gas emissions. Glass is the only transparent building material that helps control the flow of heat, UV rays, and glare while letting light into a building, increasing the overall comfort and productivity of its occupants. The NSG Group is committed to being at the forefront of these developments.

The Pilkington brand is synonymous with Flat Glass manufacturing excellence and innovation, with a reputation for leading many important technological advances in the glass industry, including the Float process, now the world standard for high quality glass production.

The selection of glass products has become more complex since Pilkington invented the float glass process in 1952. The properties of glass have become increasingly multifaceted with the ability to perform a wide variety of functions. The key to these developments has been glass's unique attributes of transmitting daylight and mediating the environment to provide a better place in which to live and work.



### Float Glass Manufacturing

Sir Alastair Pilkington's invention of the float glass process established the world standard for the production of high quality glass. Float Glass is manufactured by melting sand, soda ash, dolomite and limestone, along with other minor batch material, produce a continuous 12-foot wide glass ribbon. The molten glass flows from the furnace and "floats" over a bed of molten tin. It is then carefully cooled to anneal the glass – a process that minimizes the internal stresses enabling it to be cut.

The Pilkington float glass process is renowned for flatness and optical clarity. Our glass products are available in clear, tinted, high performance tinted, coated, low iron and rolled glass.

### Coated Glass

On-line pyrolytic coatings are produced by depositing microscopically thin layers of metallic oxides by the chemical vapor deposition (CVD) process during float glass manufacturing. This process produces extremely durable coated products that can easily be handled, transported and processed. These products typically combine low emissivity, solar control, low reflection and self-cleaning properties. Pilkington North America is the industry leader in pyrolytic coating technology.



## Coating Technology

### The Pilkington Pyrolytic Advantage

Whether you select one of our solar control low-e glasses (Pilkington **Eclipse Advantage™**, Pilkington **Solar-E™**, Pilkington **Solar-E™ Plus**), or our thermal control low-e glass (Pilkington **Energy Advantage™**), you'll have the benefits of our patented pyrolytic technology and the very practical advantages that it brings to every project.

Pilkington North America's brand of low-e glass products are produced by a patented pyrolytic process that exposes hot glass to chemical vapors during the actual float glass production, where they bond to the glass at the molecular level.

Having a hard "pyrolytic" surface fired on at over 640°C (1200°F) make these pyrolytic products durable, bendable and post-temperable. In addition, because the pyrolytic surface doesn't degrade like a sputtered coating, it can be warehoused locally for availability, reducing project lead times across the country and around the world.

## NSG Sustainability

### NSG Sustainability Initiative

The NSG Group has been proud to be a technological leader in glass manufacturing for many years. Whether it's improving the float glass manufacturing process which produces more than 95 percent of glass worldwide, advancing coating technologies, or our wide range of Solar and Thermal Control glass products, the NSG Group is proud to lead in areas of environmental concern, sustainability, and green building initiatives.

By applying a science-based approach, we can set the best pathway possible to make **change™**.

We are actively working to switch to renewable energy and decrease CO<sub>2</sub> emissions in our manufacturing processes. We're committed to reducing our Scope 1, Scope 2 (Greenhouse Gas CO<sub>2</sub>e), and Scope 3 emissions by 30% by 2030\*.

We want to achieve carbon neutrality by 2050. These targets along with developing more innovative and sustainable products form the basis of our climate change strategy.

For more information on NSG Group approach to sustainability, visit [www.nsg.com/en/sustainability](http://www.nsg.com/en/sustainability).



1.4 MW Solar Array  
Pilkington North America Rossford Plant  
Rossford, Ohio  
NSG **TEC™** Glass





## Energy Management

Energy management is a key decision in determining the performance and appearance of the building envelope. This section outlines the various attributes and performances of glass.

### Visible Light Transmittance

The percentage of visible light transmitted through the glass. The higher the number, the greater the amount of light that passes through the glass, regardless of its color.

### SHGC (solar heat gain coefficient)

A combination of the directly transmitted solar and radiant energy and the proportion of the absorbed solar energy that enters into the building's interior. The lower the number the greater the solar control. w

### U-factor (U-value)

This is the measurement of air-to-air thermal conductance or insulation between indoors and outdoors through the glass. The lower the number the better the insulation or thermal control.

### Performance Values Comparison

To assist in comparing products, we have developed tables of performance values: visible light, solar control and insulation (tables can be found in the back of this product guide).

### What is Low Emissivity?

Emissivity measures how strongly a product emits or radiates absorbed heat. The lower the number, the more efficiently the object reduces radiative heat gain or heat loss, which means a lower U-factor and better insulation.



## Product Range and Information



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## Thermal Insulation



Three Alliance Center  
Atlanta, GA  
Pilkington **Optifloat™** Clear

### Pilkington **Optifloat™** Clear glass

Pilkington **Optifloat™** sets the standard for quality and vision. It is the name we give our base products that are manufactured using the float glass process that was invented by Pilkington and has revolutionized the manufacturing of glass.

Pilkington **Optifloat™** Clear glass offers excellent optical properties, transmitting up to 90 percent of the sun's visible spectrum to reduce artificial lighting needs.

Pilkington **Optifloat™** heavy clear glass, is available from 8 mm (5/16") to 19 mm (3/4") thick for a wide variety of commercial glazing possibilities. It offers easier cutting, superior strength, greater spans, reduced deflection, high daylight transmittance and enhanced noise suppression. Ideal for large, frameless expanses of glass in lobby and entrance area applications.

#### Features and Benefits

- High daylight transmittance
- High clarity
- Low distortion
- Wide range of thicknesses



Solpark, Kleszczów  
Poland  
Pilkington **Optifloat™** Clear



## Pilkington **Energy Advantage™**

### Thermal Control low-e glass

Pilkington **Energy Advantage™** is the low-e glass of choice for residential and commercial applications in a heating dominated climate.

Pilkington **Energy Advantage™** is one of the clearest and the most durable low-e technologies available today. With a scratch resistant surface, superior thermal performance, and high solar heat gain, it is an energy saving solution.

Pilkington **Energy Advantage™** is the leading passive solar glazing product in the market. The pyrolytic low-e coating provides thermal insulation by reducing heat loss. Most sputter coated low-e products reflect solar infrared heat, lowering the solar heat gain and minimizing the benefits of passive solar heat.

The Pilkington **Energy Advantage™** pyrolytic coating saves energy by allowing solar energy to pass through the glazing and enter into the home or building, while reducing heat loss. To further improve thermal control, add a second low-e coating to the #4 surface of an insulating glass unit.

#### Available Tints

- Clear
- Low-iron

#### Available Thickness

- 3 mm (1/8")
- 4 mm (5/32")
- 5 mm (3/16")
- 6 mm (1/4")
- 8 mm (5/16")
- 10 mm (3/8")
- 12 mm (1/2")

#### Features and Benefits

- Durable pyrolytic coating
- Enhanced clarity
- Energy efficient
- Passive solar heat gain
- Easy to temper, bend and laminate

Museum of the Earth  
Ithaca, USA  
Pilkington **Activ™** Clear  
Pilkington **Energy Advantage™**

Photography: © Paul Warchol



## Pilkington **Spacia™** Vacuum Insulated Glazing

Pilkington **Spacia™** offers the thermal performance of conventional double glazing in the same thickness as a single glass pane. It balances historical preservation with modern comfort and environmental requirements.

### How it works

Pilkington **Spacia™** is different than conventional double glazing. The air between the two panes of glass is extracted, creating a vacuum. It offers the same thermal performance as conventional double glazing in one quarter of the thickness and two thirds the weight.

A vacuum, even a small one, is much more effective at minimizing conduction and convection heat losses, so the gap between the two panes can be reduced to just 0.2 mm, giving an overall thickness of just over 6 mm (1/4"). Heat flow through radiation is limited through one of the glass panes having a low-emissivity coating, similar to that used in modern conventional double glazing.

Pilkington **Spacia™** is a double glazed unit with a low-e coating for improved thermal control.

Pilkington **Spacia™** Cool is a double glazed unit with a solar control low-e coating to reduce solar heat gain. This also provides an improved u-factor.

Pilkington **Super Spacia™** offers the same sputter collar control low-e as Pilkington **Spacia™** Cool in a slightly thicker profile and provides the lowest U-factor of all Pilkington **Spacia™** products. The thicker profile allows for a wider pillar array which results in less conductive heat loss.

Pilkington **Spacia™** Shizuka is double glazed unit with a laminated lite of clear glass for added safety performance and improved sound reduction. This unit provides thermal insulation and almost 100% UV absorption.

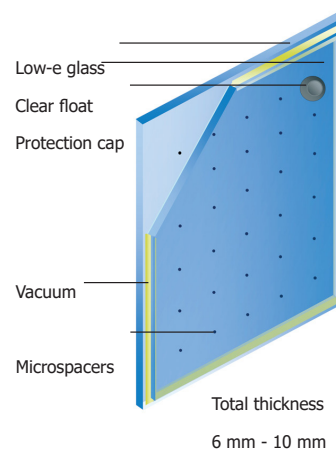
### Applications

- Ideal for use in historic buildings
- Sliding windows
- Secondary glazing
- As one pane of a triple glazed "super-window"

### Features and Benefits

- High thermal performance in a traditional monolithic profile
- Easily retrofitted into existing single glazed frames
- Improved acoustic performance over single glazing
- Custom sizes available

### Pilkington **Spacia™** vacuum glazing unit construction







## Pilkington Optifloat™ Tints and High Performance Tints

Pilkington **Optifloat™** tinted glass is aesthetically pleasing and performance driven, with significantly reduced solar heat and UV light transmittance as compared to uncoated clear glass products.

High Performance Tints provide significant improvements in solar performance compared to normal tinted glass. The colors are richer while views from the interior are maintained with low exterior reflectance. They can be processed and fabricated similarly to normal float glass to provide an economical choice for reducing air-conditioning loads and costs.

### Available Tints

- Green
- Blue-Green
- Bronze
- Grey
- Pilkington **EverGreen™\***  
An uncoated tinted float glass with high daylight transmittance and solar control, offers 20 percent better solar performance than other green tints, with reduced glare and UV transmission.

- Pilkington **Arctic Blue™\***  
A unique blue tinted float glass, engineered for good daylight transmittance and solar control.
- Pilkington **SuperGrey™\***  
Provides the best solar control of any uncoated float glass. The deep grey color also provides daytime privacy from the outside. This glass significantly reduces glare, making it appropriate for use in skylight.

\* Denotes a High Performance Tinted Glass

### Features and Benefits

- Range of color choices
- Low external and internal reflectance
- Reduces need for air conditioning
- Easy to temper, bend and laminate
- Can be used in monolithic form or incorporated in insulating glass units
- Available in a wide range of sizes from 3 mm (1/8") to 12 mm (1/2") thicknesses (depending on the tint)



## Pilkington **Solar-E™** Solar Control low-e glass

Pilkington **Solar-E™** is a low-e glass that offers the perfect solution for meeting cooling load requirements while also maintaining natural daylight transmittance in warm climate regions.

The Pilkington **Solar-E™** coating, preferably situated on surface #2, works through absorption of solar radiation, and thereby reducing solar heat gain into your room.

### Available Tints

- Clear
- EverGreen

### Available Thickness

- 3.2 mm (1/8") \*
- 4 mm (5/32") \*
- 5 mm (3/16") \*
- 6 mm (1/4")
- 8 mm (5/16")

\* Only available in Clear



Allan Gray Building  
Cape Town, South Africa  
Pilkington **Solar-E™** Clear

### Features and Benefits

- Durable pyrolytic coating
- Low U-factor
- Low SHGC
- Low UV (ultraviolet) transmittance
- Can be used on internal exposed surface (#4 surface) of a laminate
- For further improved thermal control, add Pilkington **Energy Advantage™** low-e to an insulated unit (coating on the #4 surface)



The Huntington Center  
Toledo, Ohio  
Pilkington **Solar-E™** Clear





## Pilkington **Solar-E™** Plus Solar Control low-e glass

Pilkington **Solar-E™** Plus is a low-e glass that is ideal for warm climate regions.

The Pilkington **Solar-E™** Plus coating, preferably situated on surface #2, offers enhanced solar absorption when compared to Pilkington **Solar-E™**. As such, this product is the perfect solution for glazing in hot, high solar radiation environments, softening the impact of harsh direct sunlight on your window.

### Available Tints

- Clear
- Blue-Green
- Arctic Blue
- Grey

### Available Thickness

- 6 mm (1/4")
- 8 mm (5/16")

### Features and Benefits

- Durable pyrolytic coating
- Low U-factor
- Low SHGC values
- Low internal and external reflection
- Low UV (ultraviolet) transmittance.
- Can be used on internal exposed surface (#4 surface) of a laminate
- For further improved thermal control, add Pilkington **Energy Advantage™** low-e to an insulated unit (coating on the #4 surface)



## Pilkington **Eclipse Advantage™** Solar Control low-e glass

Pilkington **Eclipse Advantage™** is the world's first reflective pyrolytic low-e glass. It is designed for buildings that require both solar control performance and the insulating benefits of a low-e coating.

### Available Tints

- Clear
- Blue-Green
- Bronze
- Grey
- EverGreen™
- Arctic Blue™

### Available Thickness

- 6 mm (1/4")
- 8 mm (5/16")

### Features and Benefits

- Durable pyrolytic coating
- Low U-factor
- Low SHGC values
- Low UV (ultraviolet) transmittance
- Can be used on internal exposed surface (#4 surface) of a laminate
- For further improved thermal control, add Pilkington **Energy Advantage™** low-e to an insulated unit (coating on the #4 surface)



X Cluster  
Dubai  
Pilkington **Eclipse Advantage™** Arctic Blue



FireKeepers Casino  
Battle Creek, Michigan  
Pilkington **Eclipse Advantage™** ;  
Pilkington **Eclipse™** Sunset Gold



## Pilkington **Eclipse™** Gold and Sunset Gold Reflective Solar Control glass

The Pilkington **Eclipse™** Gold family enhances visual performance and is suitable for monolithic use or use within an insulated glass unit.

Pilkington **Eclipse™** Gold is coated on a clear substrate providing brighter gold reflection and Pilkington **Eclipse™** Sunset Gold is coated on a bronze substrate providing a richer gold tone.

### Available Thickness

- 6 mm (1/4")
- 8 mm (5/16") Pilkington **Eclipse™** Gold only

### Features and Benefits

- Durable pyrolytic coating
- Easy to temper, bend and laminate
- Can be used on internal exposed surface (#4 surface) of a laminate
- For further improved thermal control, add Pilkington **Energy Advantage™** low-e to an insulated unit (coating on the #4 surface)





## Special Applications

Toledo Museum of Art Glass Pavillion™  
Toledo, Ohio  
Pilkington **Optiwhite™**



Photograph © Floto + Warner

### Pilkington **Optiwhite™** Low Iron glass

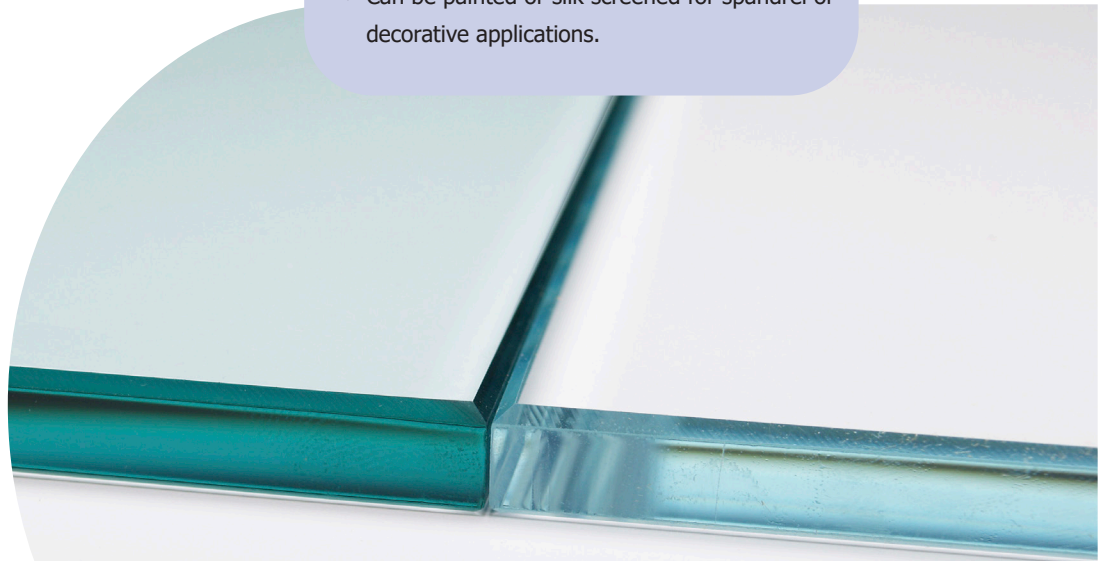
Pilkington **Optiwhite™** is an extra-clear, low iron float glass; it is practically colorless, and the green cast inherent to clear glasses is reduced. It is therefore ideal for use where glass edges are visible or where a neutral color is desired. As its light transmission is higher than clear float glass, it is perfect for applications where transparency and purity of color are desired.

#### Available Thickness

- 3 mm (1/8")
- 4 mm (5/32")
- 5 mm (3/16")
- 6 mm (1/4")
- 8 mm (5/16")
- 10 mm (3/8")
- 12 mm (1/2")
- 16 mm (5/8")
- 19 mm (3/4")

#### Features and Benefits

- High light transmittance
- Purity of color
- High Daylighting
- Pale blue edge color
- High solar heat transmittance
- Easy to temper, bend and laminate
- Can be painted or silk-screened for spandrel or decorative applications.



Clear

Pilkington **Optiwhite™**



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

Pilkington **OptiView™** is a color-neutral, anti-reflective, pyrolytic coating that maximizes visible light transmittance by reducing the coated surface reflectance. When used on both exposed surfaces in a laminated configuration, visible light reflectance is less than 2 percent as compared to clear glass which is 8 percent.

### Available Tints

- Clear
- Low-iron

### Available Thickness

- 3 mm (1/8")
- 4 mm (1/6")
- 6 mm (1/4")
- 10 mm (3/8")

### Applications

- Shop fronts and Showrooms
- Museum display cases
- Zoo exhibits
- Sports facilities
- Digital Signage
- Touch panel displays
- Specialty vehicle windshields and instrument panels

### Features and Benefits

- Durable pyrolytic coating
- Low reflection, less than 1% from coated surface
- High light transmittance
- Easy to temper, bend, and laminate

Kauffman Stadium  
Kansas City, MO  
Pilkington **OptiView™**



## Pilkington **OptAR™** Plus Anti-reflective glass

Pilkington **OptAR™** Plus is a high performance, anti-reflective glass for use in computer screens, aircraft transparencies, televisions, flat panels, and as the cover glass for digital displays. It is ideally suited for projected capacitive and other touch screen technologies. This high performance glass reduces reflection to ~0.7% from the coated surface, while providing high light transmittance. As a result, visual acuity is increased and displays are easier to read.

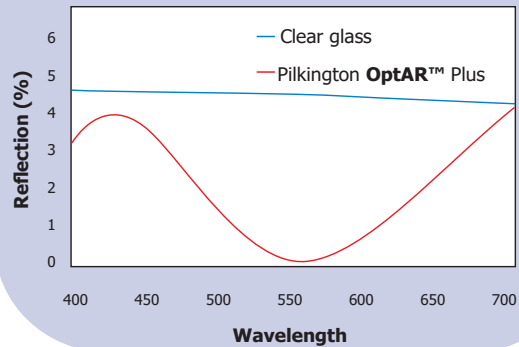
### Available Thickness

- 3.2 mm (1/8")
- 4 mm (1/6")
- 6 mm (1/4")

### Applications

- Digital displays
- Aircraft transparencies
- Touch screens
- Flat-panel LCD monitors
- Televisions
- Specialty vehicle windshields and instrument panels
- Specialty electronic applications

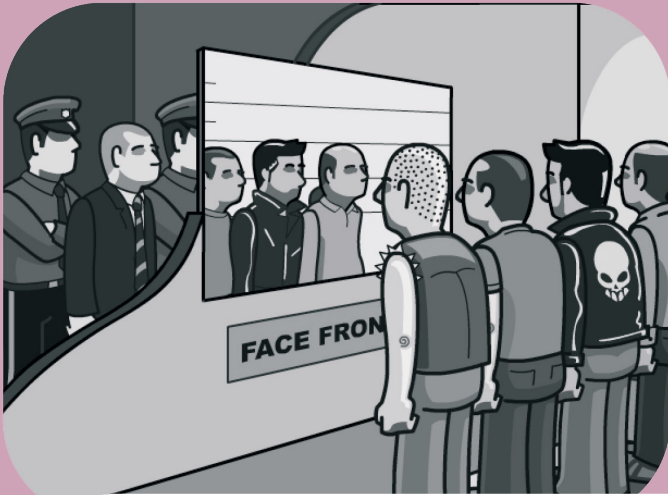
Total Reflectance (from coated surface) of Pilkington **OptAR™** Plus compared to Clear Glass



### Features and Benefits

- Durable pyrolytic coating
- High light transmittance
- Low reflection
- Easy to temper, bend and laminate
- Available on clear and low iron substrates





## Pilkington **Mirropane™** One-way mirror

Pilkington **Mirropane™** is an observation mirror offering high quality, one-way vision that effectively provides discreet, unobtrusive monitoring for interior applications. It has the appearance of a mirror on the subject side, while providing privacy to observers on the other side.

### Design Considerations

- Orientation
- Type of lighting
- Background colors
- Distances and light levels
- 8:1 light ratio is recommended with subject side brightly lit, and observer side dimly lit.

### Available Thickness

- 6 mm (1/4")

### Applications

- Security
- Retail stores
- Supermarkets
- Airport security
- Workplace monitoring
- Banks or cash offices
- Medical facilities
- Schools
- Marketing focus group monitoring
- Any area requiring observation

### Features and Benefits

- Durable pyrolytic coating
- Low transmission, Grey substrate
- High reflectivity
- Ideal for surveillance
- Easy to temper and laminate





## Pilkington **MirroView™** and Pilkington **MirroView™** 50/50 Semi-transparent mirror

Pilkington **MirroView™** and Pilkington **MirroView™** 50/50 provide a highly reflective mirror coating on a clear substrate. They are ideal to give digital displays and video screens a modern, high-tech look.

Pilkington **MirroView™** is perfect for concealing digital displays and video screens for commercial and residential applications with low ambient light.

Pilkington **MirroView™** 50/50 offers higher transmission than the original product, making it optimal for use in applications with high ambient light.

When the screen is turned 'off' Pilkington **MirroView™** and Pilkington **MirroView™** 50/50 maintain a mirrored appearance while concealing the screen. When the screen is turned 'on' the screen image shows through.

Pilkington **MirroView™** and Pilkington **MirroView™** 50/50 have the capability to work with all touch screen technologies, including projected capacitive, while maintaining a smoother surface for a better touch experience.

### Applications

- Hotel rooms
- Lobbies and salons
- Retail
- Digital signage
- Touch screens
- Bars and restaurants
- Bathrooms
- Smart mirrors

### Available Thickness

- 3.2mm (1/8")
- 4 mm (1/6")
- 6 mm (1/4")

### Features and Benefits

- Durable pyrolytic coating
- Higher transmission, Clear substrate
- Easily handled and transported
- High reflectivity
- No edge deletion required
- Easy to temper and laminate



## NSG **TEC™** Glass Special Applications

Whether your application involves heated glass for commercial refrigeration, heat reflection, electrochromics, home appliances, computer screens, touch screens, static control, thin film photovoltaics\*, EMI/RFI shielding or other electro-optical and insulating applications, there is a durable pyrolytic NSG **TEC™** Glass product to meet your specific performance requirements.

NSG **TEC™** Glass offers a wide range of thermal and heated glass performance properties and optimizes electrical conductivity.

There are a variety of NSG **TEC™** Glass products to meet your specific needs, including:

### NSG **TEC™** 15

The best choice for applications requiring passive condensation control and thermal performance with low emissivity and color-neutral appearance.

### NSG **TEC™** 7

Offers the lowest resistivity value in the NSG **TEC™** Glass range. Combined with low haze, it can be used for a wide range of applications including electrochromics and electromagnetic shielding.

\*See Page 23

NSG **TEC™** 35, 50, 70, 100, 160, 250 and 450  
For use in heated glass applications, these products combine thermal control with superior electro-optical properties.

### NSG **TEC™** SB

Uses barrier layer to block sodium migration into the deposited film, particularly at elevated temperatures. As such, the performance of an off-line coating is enhanced with the use of NSG **TEC™** SB as the substrate.

#### Features and Benefits

- Durable pyrolytic coating
- Electrically conductive
- Electrostatic dissipation
- Reduced transmittance of electromagnetic radiation.
- Color neutral, minimizing reflected color.
- Easy to temper and laminate
- Scratch and abrasion resistant.
- Available on clear, low iron and grey substrates
- Available in a variety of glass thicknesses and sheet resistances ranging from 7 ohms/sq. up to several hundred ohms/sq.





## Pilkington **AviSafe™** Bird-friendly glass

Unlike humans, birds do not see building elements, such as window frames, as visual markers to identify glass as a physical barrier. Instead, birds see a clear line of sight to what is on the other side of the glass, or an uninterrupted reflected image of natural surroundings on the glass surface. As a result, birds perceive an unobstructed flight path to vegetation or open skies leading to collisions with windows.

Pilkington **AviSafe™** creates a more bird-friendly environment through a combination of our glass coating innovation with an understanding of bird vision. It is an award-winning solution that is proven to save birds' lives.

### How it Works

Birds can see light in the ultraviolet spectrum. Pilkington **AviSafe™** uses a unique patterned UV reflective coating that provides a visible marker to birds and prevents collisions.

The Pilkington **AviSafe™** coating pattern uses the industry accepted 2x4 rule making the glass more visible to birds while remaining aesthetically appealing on both the interior and exterior surfaces to humans.

Pilkington **AviSafe™** has been tested by the American Bird Conservancy (ABC) and provides a product leading threat factor of 12 when the coating is glazed on the exterior surface.

### Features and Benefits

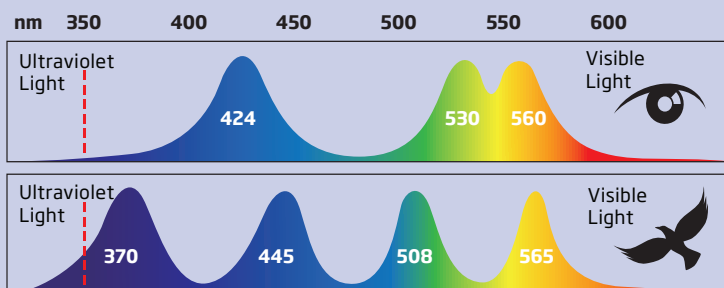
- Highly durable surface #1 coating
- Easy to temper, bend and laminate
- Can be combined with other products for additional benefits such as thermal insulation, solar control and noise control



Solina Gondola Lift  
Poland  
Pilkington **AviSafe™**



## COMPARISON OF HUMAN AND AVIAN VISION





## Pilkington **OptiShower™** Glass for high-humidity environments

Pilkington **OptiShower™** is an excellent solution for high-humidity environments like showers.

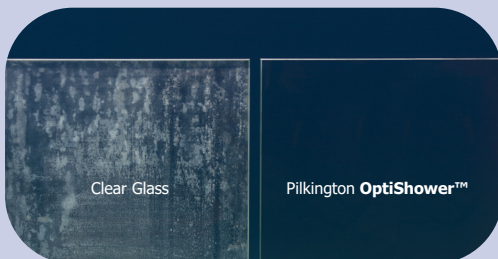
Water stains in high-humidity environments can be a significant challenge. This occurs when the water starts to pull sodium from the glass and deposits a soda-rich scale on the glass. These water stains are an eyesore to the crisp aesthetics of a glass enclosure and are often difficult to clean.

Pilkington **OptiShower™** mitigates this by preventing sodium leaching. This on-line coating is durable enough to withstand tough and even outdoor environments. The coating blocks the water and sodium interactions, effectively eliminating the mechanism that leads to this type of stain formation. Now you can maintain a cleaner glass surface with minimal upkeep by using Pilkington **OptiShower™**.

Due to its durable and transparent coating, Pilkington **OptiShower™** can also be used in other high-humidity environments such as indoor pools, balustrades, car washes etc.

### Features and Benefits

- Durable pyrolytic coating
- Easy to clean
- Available on Clear and Pilkington **Optiwhite™**
- No special handling
- Easy to temper, bend and laminate
- Never needs retreating



Aging tests at high temperatures and humidity demonstrate that Pilkington **OptiShower™** limits the corrosive process and limescale deposits compared to untreated glass.







## Self-Cleaning

GE Plaza  
Vancouver, British Columbia, Canada  
Pilkington **Activ™** Clear  
Pilkington **Energy Advantage™** low-e

### Pilkington **Activ™** Self-cleaning glass

A revolutionary glass that uses the power of the sun to clean itself. Pilkington **Activ™** can dramatically reduce or eliminate window cleaning, while providing a crisp unspoiled exterior aesthetic.

With the coating glazed on the exterior surface, Pilkington **Activ™** uses UV energy from the sun, abundant even on cloudy, overcast days, to keep windows naturally clean with:

- A photocatalytic process that loosens dirt and gradually breaks down organic residue so it doesn't adhere to the glass.
- A hydrophilic action that causes rain to sheet on the glass, carrying dirt away with minimal spotting or streaking.

Under most conditions, rain is sufficient to keep the window clean, and a quick spray with a hose will achieve the same result even in prolonged dry weather.

#### Available Thickness

- 3 mm (1/8")
- 4 mm (5/32")
- 6 mm (1/4")

#### Features and Benefits

- Durable pyrolytic coating
- Self-cleaning properties
- Never needs re-treating
- Color neutral
- Easy to temper, bend and laminate
- Available in various glass thickness
- Ideal for glass roofs and canopies





Pilkington North America, Plant 21  
Northwood, Ohio  
NSG **TEC™** Glass

## NSG **TEC™** Photovoltaics

### Thin Film Photovoltaic Applications

NSG Transparent Electrically Conductive (**TEC™**) Glass products make a great choice for thin film photovoltaic (PV) applications.

We produce a range of transparent conductive oxides that have been specifically tuned to meet the requirements of the thin film PV industry.

NSG **TEC™**, by acting as the superstrate in a PV module, is designed to maximize the light transmittance and optimize module efficiency for each of the thin film technologies.

The manufacturing process provides a high degree of flexibility. Consequently, properties such as sheet resistance, haze and light transmittance can be optimized to meet individual customer's needs in thin film technologies such as: cadmium telluride, dye-sensitized solar cells, perovskites etc.

The PV range of NSG **TEC™** products may be heat strengthened and fully tempered without any shift in sheet resistance.

### Features and Benefits

- Durable pyrolytic coating
- High light transmittance
- High conductivity
- Coating properties remain durable and unaffected under very high fabrication temperatures.
- Easy to heat strengthen and temper
- Available on standard clear or low iron glass



1.4 MW Solar Array  
Pilkington North America, Rossford Plant  
Rossford, Ohio  
NSG **TEC™** Glass





## Health Applications



### Pilkington **SaniTise™** Antimicrobial glass

Pilkington **SaniTise™** is a transparent pyrolytic coated antiviral and antibacterial glass developed as our commitment to creating a healthier, cleaner, safer world.

#### Features and Benefits

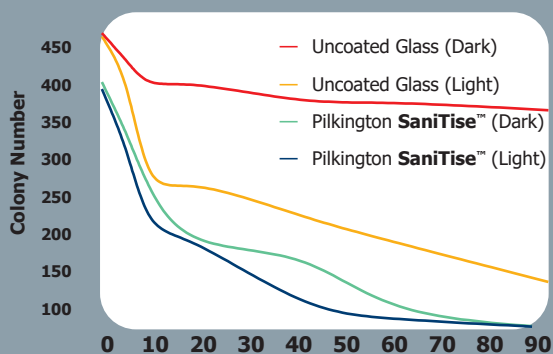
- Durable pyrolytic coating
- Easy to temper and bend
- Compatible with harsh commercial grade cleaning products

#### How it works

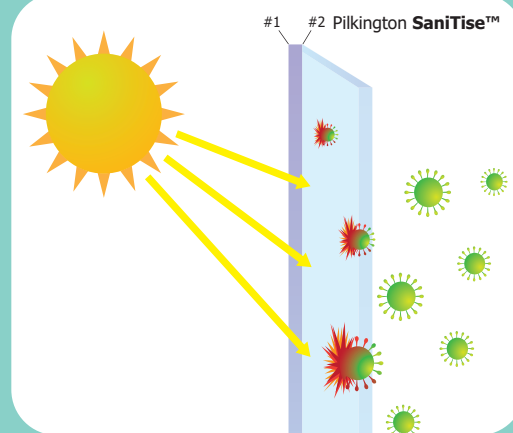
The glass is produced with a titania based coating deposited directly onto its surface. When exposed to UV radiation through natural daylight the Pilkington **SaniTise™** coating is activated. It then reacts with water vapor within the atmosphere resulting in a photocatalytic process that inactivates (destroys) the viruses and bacteria on the glass surface.

Once Pilkington **SaniTise™** reaches full activation, it will maintain its antimicrobial properties during natural UV exposure and then for an additional 2 hours, even after the UV radiation has ceased.

Antibacterial Testing: Staphylococcus aureus F.



All samples pre-exposed to UV light before deposition of pathogens at 0 minutes; 'Dark' samples then kept in darkness, 'Light' samples continuously exposed to UV.







### Pilkington **Optiphon™** Acoustic control glass

Pilkington **Optiphon™** is the ideal choice of glass in situations where there is excess noise from road, rail or air traffic, or various other sources, for example factories or nightclubs.

By using a special PVB (polyvinyl butyral) interlayer, Pilkington **Optiphon™** is a high quality acoustic laminated glass that offers excellent noise reduction without compromising on light transmittance or impact performance.

The desired acoustic performance can be achieved through combining various thicknesses of glass with the PVB interlayer.

#### **Available Thickness**

- 8.5 mm laminate
- 10.5 mm laminate





## Decoration

### Pilkington Texture Glass

Pilkington Texture Glass is manufactured by passing a continuous molten glass ribbon between two rollers, one of which has a pattern that creates a permanent impression.

#### Privacy with Translucency

Privacy is an important design consideration. Pilkington Texture Glass is appropriate for areas requiring both obstruction and privacy, without sacrificing any natural light. Pilkington Texture Glass provides degrees of privacy through light diffusion and obstruction.

#### Applications

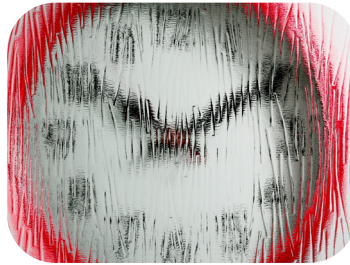
- Windows for privacy and decoration
- Shower and bath enclosures
- Interior partitions
- Door inserts
- Wall panels and wall features
- Furniture
- Backsplashes
- Exterior glazing

#### Wide Range of Texture Options

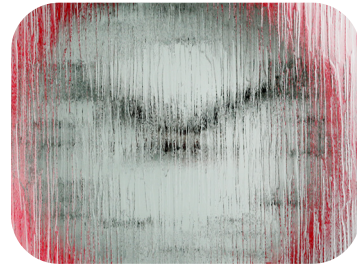
Available in more than 20 different textures to suit almost any design need. For more information, contact your sales representative.



Autumn™



Charcoal Sticks™



Cotswold™



Everglade™



Flemish™



Minster™



Reeded™



Stippolyte™



Taffeta™





## Pilkington **Pyrostop**<sup>®</sup> Fire-resistant glass

Specifically designed to provide high levels of fire protection, Pilkington **Pyrostop**<sup>®</sup> fire resistant glass offers a full range of properties traditionally associated with glass.

The Pilkington **Pyrostop**<sup>®</sup> range limits conductive and radiative heat transfer with product performances ranging from 20 to 120 minutes. These products must always be used as part of an approved fire resistance or fire protected framing assembly.

Pilkington **Pyrostop**<sup>®</sup> consists of multiple laminates of float glass and a special transparent intumescent interlayer, which is totally compatible and optically homogeneous with the glass. When exposed to fire, the pane facing the flames fractures but remains in place. As the heat penetrates the glass, the interlayers, one after the other, react by foaming to form a thick, opaque, resilient and tough insulating shield that blocks the conductive and radiant heat of the blaze.

Pilkington **Pyrostop**<sup>®</sup> is available through Technical Glass Products (TGP).

Please contact Technical Glass Products at (800)-426-0279 for further details

### Features and Benefits

- Allows natural light and unobstructed views for fire rated walls, openings and doors.
- Reduces fire damage to property and valuables.
- Restricts the spread of heat, smoke, flames and hot gases.
- Excellent sound reduction properties.
- Designed to be combined with the full range of Pilkington glass products.
- Security, bullet and hurricane resistant configurations available with Pilkington **Pyrostop**<sup>®</sup>.
- Pilkington **Pyrostop**<sup>®</sup> passes the hose stream test required in the USA and Canada.
- All products classified with Underwriters Laboratories (UL) and accepted for use in NYC by Dept. of Buildings.
- Human impact safety rated category II.
- Available in short lead times for internal or

Martin Braun KG, Hannover  
Pilkington **Pyrostop**<sup>®</sup>







## Pilkington **Profilit™** Channel glass

Pilkington **Profilit™** is a self-supporting glazing system of U-shaped channel glass and is supplied as a glass and framing system for facades and internal partitions. This highly durable product allows diffused light to enter the building while presenting a translucent external appearance. Pilkington **Profilit™** can be installed as a single wall unit or a double wall for additional sound and thermal insulation. The system can be configured vertically or horizontally.

Pilkington **Profilit™** is an elongated "u-shaped" cast glass providing structural properties beyond normal flat glass.

Perimeter frame and self-supporting channels offer excellent flexibility to meet many radii and a wide range of design options.

This system is an excellent alternative to glass block and other translucent materials for use in commercial and residential applications, both interior and exterior. The Pilkington **Profilit™** Glazing System has been widely used in Europe for many years.

The channels are manufactured in single lengths of up to 23 ft. Please consult with TGP for details on spans and safety requirements. The appearance of the glass presents a subtle texture providing light diffusion and privacy. The joints between the panels are silicon sealed.

### Features and Benefits

- Available in channel lengths up to 23 feet.
- Allows natural light in while maintaining privacy.
- Wired channels available for increased impact safety.
- Can be utilized in curved walls.
- Installs vertically or horizontally.
- Channels can be fully tempered.
- Aluminum perimeter frame provides structural strength.
- Excellent light transmission.
- Minimal maintenance.
- Energy efficient.
- Proven performance.
- Sound insulation.

Engineering, installation and technical support for Pilkington **Profilit™** glass is coordinated by Technical Glass Products (TGP). For more information visit [www.fireglass.com](http://www.fireglass.com), or contact TGP.

### Technical Glass Products

8107 Bracken Place SE  
Snoqualmie, WA 98065  
Phone (800) 426-0279  
Fax (800) 451-9857







## Warranty Information

This warranty is provided by the NSG Group Affiliate (as defined below) that you have a contractual relationship with. Any reference to Pilkington below shall be a reference to that NSG Group Affiliate. "Pilkington Affiliate" shall mean any Person who directly or indirectly, controls, is controlled by, or is under the common control with the NSG Group. The term "control" is used in the sense of the possession by a Person or a group of Persons acting in concert, directly or indirectly, of the right to direct or cause the direction of the management and policies of another Person, whether through the board of directors or ownership of voting rights by such other Person, by the Articles of Association or Bylaws, contract or otherwise. A Person or a group of Persons acting in concert shall be deemed to be in control of a body corporate if such Person or group of Persons is in a position to appoint or appoints the majority of the directors of such body corporate. "Person" shall mean and include any individual, legal entity, partnership firm, company, association, or body corporate.

This warranty covers:

Pilkington **Activ™**, Pilkington **Arctic Blue™**,  
Pilkington **AviSafe™**, Pilkington **Eclipse™** Gold,  
Pilkington **Eclipse™** Sunset Gold,  
Pilkington **Eclipse Advantage™**,  
Pilkington **Energy Advantage™**,  
Pilkington **EverGreen™**, Pilkington **K Glass™**,  
Pilkington **Mirropane™**, Pilkington **MirroView™**,  
Pilkington **Optimirror™**, Pilkington **Optiphon™**,  
Pilkington **Optifloat™**, Pilkington **OptiView™**,  
Pilkington **Optiwhite™**, Pilkington **Pyroshield™** 2,  
Pilkington **Reflite™**, Pilkington **SaniTise™**,  
Pilkington **Solar-E™**, Pilkington **SunShade™** Silver,  
Pilkington **SuperGrey™** NSG **TEC™**.

### GLASS WARRANTY

Pilkington warrants that, with proper handling and maintenance, each of its above named glass building products (or in the case of coated glass products, the glass to which the coating is applied) will meet Pilkington's own published standards, which can be found at [www.pilkington.com](http://www.pilkington.com) (current as of the date of original factory shipment by Pilkington) and specification details in the relevant external standards for glass and building (such as ASTM C1036 and/or EN572 for flat glass). A full list of standards can be found within the Pilkington Glass Handbook 2010 – BP

Global Exports (or the Pilkington Glass Handbook in force from time to time). This warranty shall extend for a period of ten (10) years from the date of original factory shipment.

### COATING WARRANTY

Pilkington further warrants that, with proper handling and maintenance, the Pilkington applied coating on each of its above named coated glass building products will not peel under normal conditions for a period of ten (10) years from the date of original factory shipment. Pilkington further warrants that, with proper handling and maintenance, the applied coating on its Pilkington **Activ™** Self-Cleaning Glass will not be defective under normal conditions for a period of ten (10) years from the date of original factory shipment. For the purpose of this paragraph, a coating defect means only (i) failure of the special hydrophilic features of the Pilkington **Activ™** Self-Cleaning Glass that is evidenced by the fact that the contact angle of the water on the pane is more than 25 degrees in the manually cleaned and activated condition providing the handling and processing instructions with respect to the sealant recommendations have been followed or (ii) the complete de-lamination of the special coating that does not arise from any improper cleaning, handling or processing and is evident within ten (10) years from the date of original factory shipment.

### WARRANTY CLAIMS;

#### CONFIRMATION OF DEFECT;

Notwithstanding other provisions of the Pilkington warranties, any warranty claim will be void unless:

(a) such claim is made in writing and is received by Pilkington within thirty (30) days of the Discovery Date (as defined below). The Discovery Date is defined as the earlier of the date that an alleged defect is actually discovered or the date when such alleged defect should have been discovered (in Pilkington's sole opinion), and

(b) such alleged defect, has been confirmed as a defect on examination and/or laboratory analysis by a qualified representative from Pilkington (in Pilkington's sole opinion). Any waiver of the foregoing, including Pilkington's right to confirm defective products through inspection or laboratory testing, must be in writing and signed by Pilkington to be binding against Pilkington.



Notwithstanding other provisions of the Pilkington warranties, any warranty claim will be void unless written notice of it is received by Pilkington before expiration of the warranty period.

**REQUIREMENTS FOR PROPER HANDLING AND MAINTENANCE; COPIES OF INSTRUCTIONS**

Each of the foregoing warranties is subject to the products having been fabricated, transported, installed, used, cleaned and maintained, all in accordance with Pilkington's published instructions. It is essential that fabricators, glazing contractors, providers of cleaning services and end-users be familiar with such instructions. Copies of such instructions are available at [www.pilkington.com](http://www.pilkington.com).

**ALL OTHER WARRANTIES ARE DISCLAIMED**

THE FOREGOING ARE THE ONLY WARRANTIES FOR THE ABOVE NAMED PRODUCTS. EXCEPT FOR THE FOREGOING LIMITED WARRANTIES AND NOTWITHSTANDING ANY WARRANTIES THAT MAY BE MADE BY FABRICATORS, ASSEMBLERS OR DISTRIBUTORS TO THIRD PARTIES UPON ANY RE-SALE OF THE ABOVE NAMED PRODUCTS, PILKINGTON HEREBY DISCLAIMS ALL REPRESENTATIONS OR WARRANTIES OF ANY KIND TO ANY PERSON, WHETHER EXPRESS OR IMPLIED, IN FACT OR IN LAW, INCLUDING WITHOUT LIMITATION THE WARRANTY OF MERCHANTABILITY OR THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, REGARDLESS OF PILKINGTON'S KNOWLEDGE (IF ANY) OF THE INTENDED USE OF THE PRODUCTS.

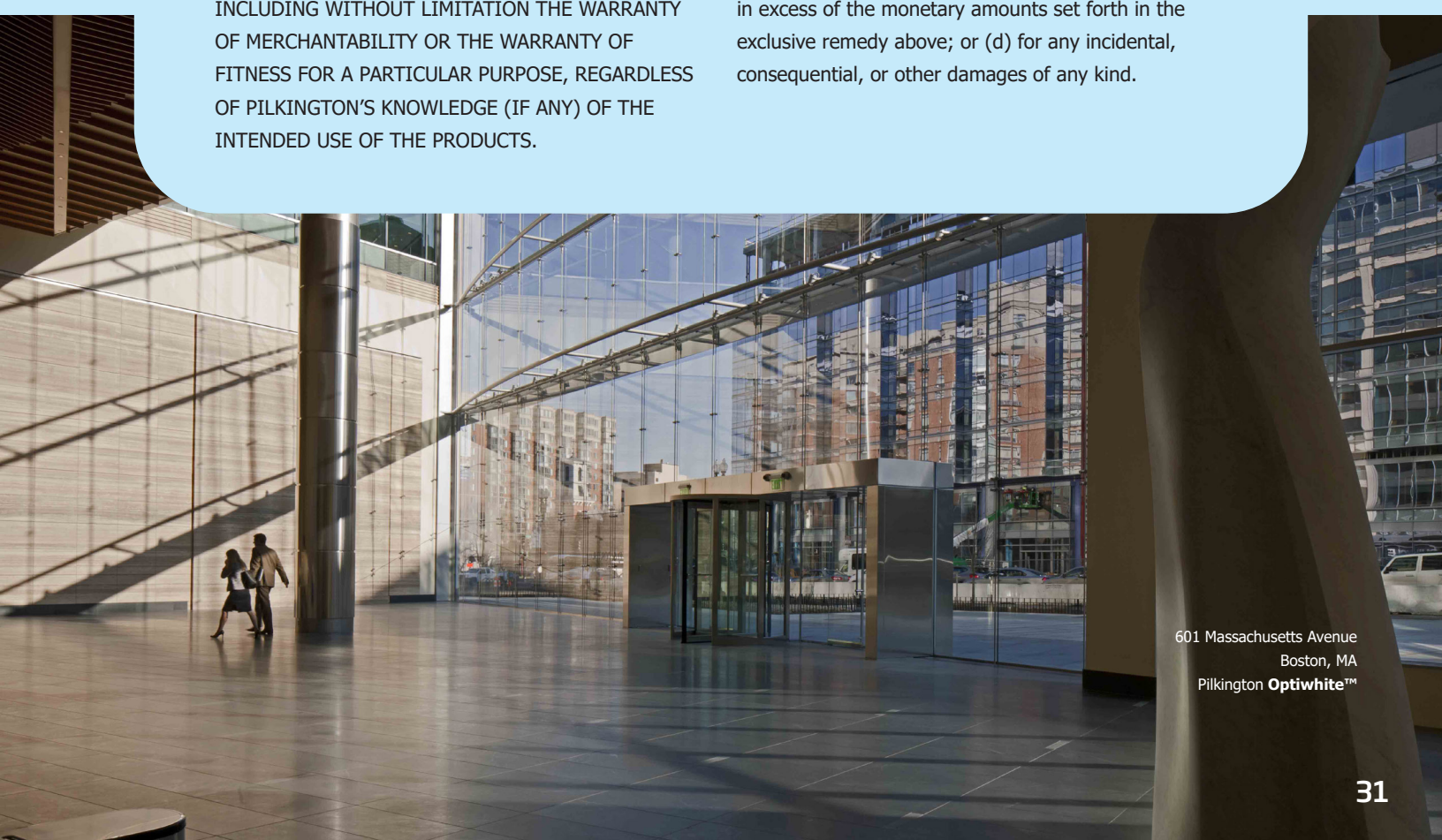
**LIMITATION OF REMEDY:**

**LIMITATION OF LIABILITY**

Exclusive Remedy: Pilkington's sole liability under either of the foregoing warranties shall be limited to replacement of the Pilkington glass product that is confirmed to be defective with the same delivery terms as applied to the original shipment, or, at Pilkington's option, to refund the purchase price. If Pilkington elects to replace the product, the product furnished as such replacement will carry the same warranties for the balance of the original warranty period, and the same delivery terms that applied to the original shipment. Such replacement or refund is the sole and exclusive remedy provided under each of the foregoing warranties.

**LIMITATION OF LIABILITY:**

In no event shall Pilkington or its directors, officers, employees or agents be liable (a) for glass breakage, for glass degradation, or coating damage caused by seal failure in an insulating unit or incompatible ceramic frits fired onto either surface of the glass, or in any case for any costs of removal, installation, or refabrication and reinstallation, for loss of use, or for incidental, consequential, or other damages of any kind; (b) for any costs of glass removal, installation or refabrication and reinstallation; (c) for direct damages in excess of the monetary amounts set forth in the exclusive remedy above; or (d) for any incidental, consequential, or other damages of any kind.



601 Massachusetts Avenue  
Boston, MA  
Pilkington **Optiwhite™**





## Pilkington **OptiShower™** Limited Lifetime Warranty

Pilkington North America, Inc. ("Pilkington") warrants that, with proper handling and maintenance, the Pilkington applied coating on Pilkington **OptiShower™** coated glass product will not peel or corrode under normal conditions for as long as the original end-user owns the shower in the original property where the shower enclosure was installed. Liability is limited only to the delamination or corrosion of the coating that does not arise from any improper cleaning, handling and processing that directly leads to corrosion of the exposed surface. This limited lifetime warranty is only provided for Pilkington **OptiShower™** products installed in North America. Except where prohibited by state law, this warranty extends to the original end-user customer and is non-transferable. The original end-user customer is the original purchaser of Pilkington **OptiShower™** who installs the product in the purchaser's property, or one who contracts through a remodeler or contractor for the original purchase and installation of Pilkington **OptiShower™** for their property, or the first buyer of a property that contains Pilkington **OptiShower™** glass as a new installation.

### **WARRANTY CLAIMS;**

#### **CONFIRMATION OF DEFECT;**

Notwithstanding other provisions of the Pilkington warranties, any warranty claim will be void unless: (a) proof of purchase is provided to verify warranty coverage, and (c) such claim is made in writing and is received by Pilkington within thirty (30) days of the Discovery Date (as defined below). The Discovery Date is defined as the earlier of the date that an alleged defect is actually discovered or the date when such alleged defect should have been discovered (in Pilkington's sole opinion), and (b) such alleged defect, has been confirmed as a defect on examination and/or laboratory analysis by a qualified representative from Pilkington (in Pilkington's sole opinion). Any waiver of the foregoing, including Pilkington's right to confirm defective products through inspection or laboratory testing, must be in writing and signed by Pilkington to be binding against Pilkington. Notwithstanding other provisions of the Pilkington warranties, any warranty claim will be void unless written notice of it is received by Pilkington before expiration of the warranty period.



**REQUIREMENTS FOR PROPER HANDLING AND MAINTENANCE; COPIES OF INSTRUCTIONS**

Each of the foregoing warranties is subject to the products having been fabricated, transported, installed, used, cleaned and maintained, all in accordance with Pilkington's published instructions. It is essential that fabricators, glazing contractors, providers of cleaning services and end-users be familiar with such instructions. Copies of such instructions are available at [www.pilkington.com](http://www.pilkington.com).

**ALL OTHER WARRANTIES ARE DISCLAIMED**

THE FOREGOING ARE THE ONLY WARRANTIES FOR THE ABOVE NAMED PRODUCTS. EXCEPT FOR THE FOREGOING LIMITED WARRANTIES AND NOTWITHSTANDING ANY WARRANTIES THAT MAY BE MADE BY FABRICATORS, ASSEMBLERS OR DISTRIBUTORS TO THIRD PARTIES UPON ANY RE-SALE OF THE ABOVE NAMED PRODUCTS, PILKINGTON HEREBY DISCLAIMS ALL REPRESENTATIONS OR WARRANTIES OF ANY KIND TO ANY PERSON, WHETHER EXPRESS OR IMPLIED, IN FACT OR IN LAW, INCLUDING WITHOUT LIMITATION THE WARRANTY OF MERCHANTABILITY OR THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, REGARDLESS OF PILKINGTON'S KNOWLEDGE (IF ANY) OF THE INTENDED USE OF THE PRODUCTS.

**LIMITATION OF REMEDY:  
LIMITATION OF LIABILITY**

Exclusive Remedy: Pilkington's sole liability under either of the foregoing warranties shall be limited to replacement of the Pilkington glass product that is confirmed to be defective with the same delivery terms as applied to the original shipment, or, at Pilkington's option, to refund the purchase price. If Pilkington elects to replace the product, the product furnished as such replacement will carry the same warranties for the balance of the original warranty period, and the same delivery terms that applied to the original shipment. Such replacement or refund is the **sole and exclusive remedy** provided under each of the foregoing warranties.

**LIMITATION OF LIABILITY:**

In no event shall Pilkington or its directors, officers, employees or agents be liable (a) for glass breakage, for glass degradation, or coating damage caused by seal failure in an insulating unit or incompatible ceramic frits fired onto either surface of the glass, or in any case for any costs of removal, installation, or refabrication and reinstallation, for loss of use, or for incidental, consequential, or other damages of any kind; (b) for any costs of glass removal, installation or refabrication and reinstallation; (c) for direct damages in excess of the monetary amounts set forth in the exclusive remedy above; or (d) for any incidental, consequential, or other damages of any kind.





Monolithic Glass Standards and Sizes

Nominal Glass Thickness		Approximate Weight		Thickness Tolerance Range				Maximum Standard Size	
in.	mm	lb/ft²	kg/m²	in.		mm		in.	mm
				min.	max.	min.	max.		
Pilkington <b>Optifloat™</b> Clear									
3/32	2.5	1.2	6	0.085	0.101	2.16	2.57	96 x 130	2438 x 3302
1/8	3	1.6	8	0.115	0.134	2.92	3.40		
5/32	4	2.1	10.1	0.149	0.165	3.78	4.19		
3/16	5	2.5	12.2	0.180	0.199	4.57	5.05	130 x 204	3302 x 5182
1/4	6	3	14.9	0.219	0.244	5.56	6.20		
Pilkington <b>Optifloat™</b> Heavy Clear									
5/16	8	4.1	20.1	0.292	0.332	7.42	8.43	130 x 204	3302 x 5182
3/8	10	5	24.5	0.355	0.406	9.02	10.31		
1/2	12	6.6	32.1	0.469	0.531	11.91	13.49		
5/8	16	8.2	40.2	0.595	0.656	15.11	16.66		
3/4	19	9.9	48.2	0.719	0.781	18.26	19.84		
Pilkington <b>Optifloat™</b> Grey or Bronze									
1/8	3	1.6	8	0.115	0.134	2.92	3.40	96 x 130	2438 x 3302
3/16	5	2.5	12.2	0.180	0.199	4.57	5.05	130 x 204	3302 x 5182
1/4	6	3	14.9	0.219	0.244	5.56	6.20		
Pilkington <b>Optifloat™</b> Heavy Grey or Bronze									
5/16	8	4.1	20.1	0.292	0.332	7.42	8.43	130 x 204	3302 x 5182
3/8	10	5	24.5	0.355	0.406	9.02	10.31		
1/2	12	6.6	32.1	0.469	0.531	11.91	13.49		
Pilkington <b>Optifloat™</b> Blue-Green, Green, Pilkington <b>EverGreen™</b> , and Pilkington <b>SuperGrey™</b>									
1/8	3	1.6	8	0.115	0.134	2.92	3.40	96 x 130	2438 x 3302
3/16	5	2.5	12.2	0.180	0.199	4.57	5.05	130 x 204	3302 x 5182
1/4	6	3	14.9	0.219	0.244	5.56	6.20		
Pilkington <b>Optifloat™</b> Heavy Blue-Green									
5/16	8	4.1	20.1	0.292	0.332	7.42	8.43	130 x 204	3302 x 5182
3/8	10	5	24.5	0.355	0.406	9.02	10.31		
Pilkington <b>Arctic Blue™</b> High Performance Tint									
5/32	4	2.1	10.1	0.149	0.165	3.78	4.19	130 x 180	3302 x 4572
1/4	6	3	14.9	0.219	0.244	5.56	6.20	130 x 204	3302 x 5182
3/8	10	5	24.5	0.355	0.406	9.02	10.31		
Pilkington <b>Optiwhite™</b>									
1/8	3.2	1.6	8	0.115	0.134	2.92	3.40	96 x 130	2438 x 3302
3/16	5	2.5	12.2	0.180	0.199	4.57	5.05	130 x 204	3302 x 5182
1/4	6	3	14.9	0.219	0.244	5.56	6.20		
5/16	8	4.1	20.1	0.292	0.332	7.42	8.43		
3/8	10	5	24.5	0.355	0.406	9.02	10.31		
1/2	12	6.6	32.1	0.469	0.531	11.91	13.49		
5/8	16	8.2	40.2	0.595	0.656	15.11	16.66		
3/4	19	9.9	48.2	0.719	0.781	18.26	19.84		
Pilkington Texture Glass (all products except as noted below)									
5/32	4	2.1	10.1	0.143	0.172	3.63	4.37	52 x 84	1320 x 2140
1/4	6	3.2	15.4	0.224	0.256	5.69	6.50		
Pilkington Texture Glass <b>Reeded™</b>									
5/32	4	2.1	10.1	0.143	0.172	3.63	4.37	52 x 84	1320 x 2140
Pilkington Texture Glass <b>Austral™</b> and <b>Morisco™</b>									
5/32	4	2.1	10.1	0.143	0.172	3.63	4.37	63 x 98	1600 x 2500
Pilkington Texture Glass <b>Rayado™</b> , <b>Sparkel™</b> and <b>Yacare™</b>									
5/32	4	2.1	10.1	0.143	0.172	3.63	4.37	57 x 98	1450 x 2500
3/16	5	2.5	12.4	0.173	0.213	4.39	5.41	63 x 98	1600 x 2500

Standard quality level is ASTM C1036 Q3 with an exception of Pilkington Textures (EN572-5).  
Other thicknesses and sizes may be available upon request  
Coatings applied on select substrates above.



## Uncoated Monolithic Performance Data

	Nominal Glass Thickness		Visible Light (%)			Solar Energy (%)			U-Factor (Btu/hr-ft²·°F)		Solar Heat Gain Coefficient	Shading Coefficient
	in.	mm	Transmittance	Reflectance		Transmittance	Reflectance	UV Transmittance	Summer	Winter		
				Outside	Inside							
Pilkington <b>Optifloat™</b> Clear												
	3/32	2.5	91	8	8	89	8	82	0.95	1.05	0.90	1.03
	1/8	3	91	8	8	88	8	80	0.94	1.04	0.89	1.02
	5/32	4	90	8	8	86	8	78	0.94	1.04	0.88	1.01
	3/16	5	89	8	8	80	7	65	0.93	1.03	0.83	0.96
	1/4	6	88	8	8	77	7	63	0.93	1.03	0.82	0.94
	5/16	8	87	8	8	73	7	57	0.92	1.01	0.79	0.91
	3/8	10	86	8	8	70	7	54	0.91	1.00	0.77	0.88
	1/2	12	84	8	8	64	6	49	0.89	0.98	0.73	0.84
	5/8	16	83	8	8	59	6	45	0.88	0.97	0.70	0.81
3/4	19	81	7	7	55	6	41	0.86	0.95	0.67	0.78	
Pilkington <b>Optiwhite™</b> low iron												
	1/8	3	91	8	8	91	8	88	0.94	1.04	0.91	1.05
	5/32	4	91	8	8	90	8	87	0.93	1.04	0.91	1.04
	3/16	5	91	8	8	90	8	86	0.93	1.03	0.91	1.04
	1/4	6	91	8	8	90	8	85	0.92	1.02	0.90	1.04
	5/16	8	91	8	8	89	8	84	0.91	1.01	0.90	1.03
	3/8	10	91	8	8	88	8	83	0.91	1.00	0.89	1.03
	1/2	12	90	8	8	88	8	81	0.89	0.99	0.89	1.02
	5/8	16	90	8	8	87	8	79	0.88	0.97	0.88	1.02
	3/4	19	90	8	8	86	8	78	0.86	0.95	0.88	1.01
Pilkington <b>Optifloat™</b> Tints												
Green	1/4	6	76	7	7	46	5	29	0.93	1.03	0.61	0.70
Blue-Green	1/4	6	75	7	7	48	6	32	0.92	1.02	0.62	0.72
	5/16	8	70	7	7	40	5	25	0.91	1.01	0.57	0.66
	3/8	10	67	6	6	36	5	21	0.91	1.00	0.55	0.63
Bronze	1/8	3	68	6	6	65	6	37	0.94	1.04	0.74	0.84
	3/16	5	59	6	6	55	6	28	0.93	1.03	0.67	0.77
	1/4	6	51	6	6	48	5	22	0.92	1.02	0.62	0.72
	5/16	8	44	5	5	39	5	16	0.91	1.01	0.57	0.65
	3/8	10	39	5	5	34	5	13	0.91	1.00	0.53	0.61
	1/2	12	29	5	5	25	4	8	0.89	0.98	0.48	0.55
Grey	1/8	3	61	6	6	59	6	35	0.94	1.04	0.69	0.80
	3/16	5	50	6	6	48	5	26	0.93	1.03	0.62	0.71
	1/4	6	44	5	5	41	5	21	0.92	1.02	0.58	0.66
	5/16	8	33	5	5	31	5	14	0.91	1.01	0.51	0.59
	3/8	10	28	5	5	26	5	11	0.91	1.00	0.48	0.55
	1/2	12	19	4	4	17	4	7	0.89	0.98	0.43	0.49
Pilkington <b>EverGreen™</b> High Performance Tint												
	1/4	6	66	6	6	33	5	14	0.92	1.02	0.53	0.61
Pilkington <b>Arctic Blue™</b> High Performance Tint												
	5/32	4	65	6	6	45	5	31	0.93	1.04	0.61	0.70
	1/4	6	53	6	6	33	5	20	0.92	1.02	0.52	0.60
	5/16	8	42	5	6	25	5	13	0.91	1.01	0.47	0.54
	3/8	10	41	5	5	21	5	13	0.91	1.00	0.45	0.52
Pilkington <b>SuperGrey™</b> High Performance Tint												
	1/8	3	25	5	5	23	4	6	0.94	1.04	0.46	0.52
	3/16	5	12	4	4	11	4	2	0.93	1.03	0.38	0.44
	1/4	6	9	4	4	8	4	1	0.93	1.03	0.36	0.41

U-Factor (Btu/hr·ft²·°F) is based on NFRC/ASTM standards. All performance values are center-of-glass values calculated using the LBNL Window 7.7 program.



## Coated Monolithic Performance Data

	Nominal Glass Thickness		Visible Light (%)			Solar Energy (%)			U-Factor (Btu/hr.ft².°F)		Solar Heat Gain Coefficient	Shading Coefficient
	in.	mm	Transmittance	Reflectance		Transmittance	Reflectance	UV Transmittance	Summer	Winter		
				Outside	Inside							

Pilkington **Energy Advantage™** thermal control low-e (coating on #2 surface)

Clear	1/8	3	84	11	11	74	11	66	0.50	0.65	0.77	0.88
	5/32	4	84	11	11	73	11	64	0.50	0.65	0.76	0.87
	3/16	5	83	11	12	68	10	53	0.49	0.65	0.71	0.82
	1/4	6	82	10	11	66	10	49	0.49	0.64	0.70	0.81
	5/16	8	81	10	11	62	9	45	0.49	0.64	0.67	0.77
	3/8	10	80	10	11	59	9	42	0.49	0.63	0.65	0.75
	1/2	12	79	10	11	56	8	42	0.49	0.63	0.63	0.73
Optiwhite	1/4	6	83	11	12	75	12	68	0.49	0.64	0.77	0.89

Pilkington **Solar-E™** solar control low-e (coating on #2 surface)

Clear	1/8	3	60	8	9	46	8	48	0.50	0.66	0.54	0.63
	5/32	4	60	8	9	45	8	46	0.50	0.65	0.54	0.62
	3/16	5	60	7	9	44	7	44	0.50	0.65	0.53	0.61
	1/4	6	60	8	9	44	7	44	0.50	0.65	0.53	0.61
	5/16	8	59	8	9	42	7	41	0.49	0.64	0.52	0.59
	3/8	10	60	8	9	40	7	38	0.49	0.64	0.5	0.58
	1/2	12	59	8	9	39	7	37	0.49	0.64	0.5	0.58
EverGreen™	1/4	6	45	6	9	20	5	8	0.50	0.65	0.35	0.40
	5/16	8	40	7	9	16	5	5	0.50	0.64	0.32	0.37

Pilkington **Solar-E™** Plus solar control low-e (coating on #2 surface)

Blue-Green	1/4	6	41	6	9	24	5	19	0.50	0.65	0.38	0.44
Arctic Blue™	1/4	6	30	5	8	17	5	11	0.50	0.65	0.32	0.37
Grey	1/4	6	24	5	9	19	5	12	0.50	0.65	0.34	0.39

Pilkington **Eclipse Advantage™** solar control low-e (coating on #2 surface)

Clear	1/4	6	67	25	28	58	19	30	0.53	0.67	0.62	0.72
Blue-Green	1/4	6	56	19	27	35	11	16	0.53	0.67	0.46	0.53
EverGreen™	1/4	6	48	15	27	23	8	7	0.53	0.67	0.37	0.43
Arctic Blue™	1/4	6	39	12	27	23	8	10	0.53	0.67	0.37	0.43
Bronze	1/4	6	38	11	27	35	10	11	0.53	0.67	0.46	0.53
Grey	1/4	6	32	10	27	29	8	10	0.53	0.67	0.42	0.48

Pilkington **Eclipse™** Gold (coating on #2 surface)

	1/4	6	40	36	45	45	25	9	0.92	1.02	0.54	0.62
	5/16	8	40	34	44	42	23	8	0.91	1.01	0.53	0.61

Pilkington **Eclipse™** Sunset Gold (coating on #2 surface)

	1/4	6	24	16	44	30	12	3	0.92	1.02	0.48	0.55
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Pilkington **Activ™** self-cleaning (coating on #1 surface)

	1/8	3	84	15	15	80	12	49	0.94	1.04	0.82	0.95
	5/32	4	83	15	15	79	12	47	0.93	1.04	0.81	0.94
	1/4	6	82	15	15	75	12	44	0.92	1.02	0.79	0.90

U-Factor (Btu/hr·ft²·°F) is based on NFRC/ASTM standards. All performance values are center-of-glass values calculated using the LBNL Window 7.7 program.



## Insulating Glass Unit Performance for Uncoated Float Glass

	Visible Light (%)			Solar Energy (%)			U-Factor (Btu/hr.ft².°F)				Solar Heat Gain Coefficient	Shading Coefficient
	Transmittance	Reflectance		Transmittance	Reflectance	UV Transmittance	Summer		Winter			
		Outside	Inside				Air	Argon	Air	Argon		

Pilkington Uncoated Float Glass outer lite and Pilkington **Optifloat™** Clear inner lite

Clear	78	15	15	61	12	47	0.50	-	0.47	-	0.71	0.81
Green	68	14	12	38	8	23	0.50	-	0.47	-	0.49	0.56
Blue-Green	67	14	12	39	8	26	0.50	-	0.47	-	0.51	0.58
Bronze	45	12	8	38	7	18	0.50	-	0.47	-	0.50	0.58
Grey	39	12	7	32	6	17	0.50	-	0.47	-	0.45	0.52
EverGreen™	58	13	10	28	6	11	0.50	-	0.47	-	0.40	0.46
Arctic Blue™	47	13	8	27	6	17	0.50	-	0.47	-	0.40	0.46
SuperGrey™	8	11	4	6	4	1	0.50	-	0.47	-	0.22	0.25

Pilkington Uncoated Float Glass outer lite and Pilkington **Energy Advantage™** low-e (coating on #3 surface) inner lite

Clear	73	16	17	52	14	37	0.33	0.28	0.33	0.29	0.67	0.77
Green	63	15	13	33	9	18	0.33	0.28	0.33	0.29	0.44	0.50
Blue-Green	62	15	13	34	9	21	0.33	0.28	0.33	0.29	0.46	0.52
Bronze	42	14	8	32	8	14	0.33	0.28	0.33	0.29	0.45	0.52
Grey	36	14	7	27	7	13	0.33	0.28	0.33	0.29	0.40	0.46
EverGreen™	54	14	11	24	7	9	0.33	0.28	0.33	0.29	0.35	0.40
Arctic Blue™	43	14	9	23	7	13	0.33	0.28	0.33	0.29	0.34	0.39
SuperGrey™	7	13	4	5	4	1	0.33	0.28	0.33	0.29	0.16	0.18

An insulating unit consists of two lites of 1/4" (6mm) glass and a 1/2" (12.7mm) spacer width

U-Factor (Btu/hr·ft²·°F) is based on NFRC/ASTM standards. All performance values are center-of-glass values calculated using the LBNL Window 7.7 program.

Pilkington North America  
Float Operation  
Laurinburg, NC





## Insulating Glass Unit Performance for Coated Float Glass

	Visible Light (%)			Solar Energy (%)			U-Factor (Btu/hr·ft²·°F)				Solar Heat Gain Coefficient	Shading Coefficient
	Transmittance	Reflectance		Transmittance	Reflectance	UV Transmittance	Summer		Winter			
		Outside	Inside				Air	Argon	Air	Argon		
Pilkington Glass (coating on #2 surface) outer lite and Pilkington <b>Optifloat™</b> Clear inner lite												
Energy Advantage™	73	17	16	52	13	37	0.33	0.28	0.33	0.29	0.62	0.71
Solar-E™	53	15	11	35	9	33	0.33	0.28	0.33	0.29	0.45	0.51
Solar-E™ on EverGreen™	40	15	8	17	6	7	0.33	0.28	0.33	0.29	0.26	0.30
Solar-E™ Plus on Grey	21	15	6	16	6	10	0.33	0.28	0.33	0.29	0.26	0.30
Solar-E™ Plus on Blue-Green	37	15	8	20	6	15	0.33	0.28	0.33	0.29	0.30	0.34
Solar-E™ Plus on Arctic Blue	27	14	6	14	5	9	0.33	0.28	0.33	0.29	0.24	0.28
Eclipse Advantage™	60	31	29	46	21	24	0.35	0.30	0.35	0.30	0.55	0.63
Eclipse Advantage™ on Blue-Green	51	29	21	29	12	13	0.35	0.30	0.35	0.30	0.38	0.44
Eclipse Advantage™ on EverGreen™	43	30	17	20	9	6	0.35	0.30	0.35	0.30	0.29	0.34
Eclipse Advantage™ on Arctic Blue™	35	30	13	19	9	9	0.35	0.30	0.35	0.30	0.29	0.33
Eclipse Advantage™ on Bronze	34	29	13	28	11	9	0.35	0.30	0.35	0.30	0.38	0.44
Eclipse™ Gold	36	45	38	35	27	7	0.50	0.47	0.47	0.45	0.45	0.52
Eclipse™ Sunset Gold	22	16	44	24	13	3	0.50	0.47	0.47	0.45	0.36	0.42
Pilkington Glass (coating on #2 surface) outer lite and Pilkington <b>Energy Advantage™</b> low-e (coating on #4 surface) inner lite												
Energy Advantage™	68	18	17	47	14	29	0.24	0.21	0.26	0.23	0.58	0.66
Solar-E™	49	17	11	32	9	26	0.24	0.22	0.26	0.23	0.41	0.47
Solar-E™ on EverGreen™	37	17	8	16	6	5	0.24	0.22	0.26	0.23	0.24	0.27
Solar-E™ Plus on Grey	20	17	6	14	6	8	0.24	0.22	0.26	0.23	0.23	0.27
Solar-E™ Plus on Blue-Green	34	17	8	18	6	12	0.24	0.22	0.26	0.23	0.27	0.31
Solar-E™ Plus on Arctic Blue™	25	16	6	13	5	7	0.24	0.22	0.26	0.23	0.21	0.25
Eclipse Advantage™	56	30	30	41	22	19	0.25	0.23	0.27	0.24	0.51	0.58
Eclipse Advantage™ on Blue-Green	48	29	22	26	12	10	0.25	0.23	0.27	0.24	0.35	0.40
Eclipse Advantage™ on EverGreen™	40	30	18	18	9	5	0.25	0.23	0.27	0.24	0.26	0.30
Eclipse Advantage™ on Arctic Blue™	33	29	14	17	9	7	0.25	0.23	0.27	0.24	0.26	0.30
Eclipse Advantage™ on Bronze	32	29	13	24	11	7	0.25	0.23	0.27	0.24	0.34	0.39
Eclipse™ Gold	34	43	38	29	28	5	0.33	0.32	0.35	0.33	0.39	0.45
Eclipse™ Sunset Gold	21	16	42	19	14	2	0.33	0.32	0.35	0.33	0.30	0.35

An insulating unit consists of two lites of 1/4" (6mm) glass and a 1/2" (12.7mm) spacer width

U-Factor (Btu/hr·ft<sup>2</sup>·°F) is based on NFRC/ASTM standards. All performance values are center-of-glass values calculated using the LBNL Window 7.7 program.



## Anti-reflective Performance Data

Nominal Glass Thickness		Visible Light (%)			Solar Energy (%)			U-Factor (Btu/hr.ft².°F)		Solar Heat Gain Coefficient	Shading Coefficient
in.	mm	Transmittance	Reflectance		Transmittance	Reflectance	UV Transmittance	Summer	Winter		
			Outside	Inside							
Pilkington <b>OptiView™</b> laminates (coating on surface #1 and #4)											
1/4	6.8	92	2	2	70	4	<1	0.68	0.80	0.77	0.88
5/16	8.8	90	2	2	67	4	<1	0.67	0.79	0.75	0.86
1/2	12.8	88	2	2	62	3	<1	0.66	0.77	0.71	0.82
Pilkington <b>Optifloat™</b> Clear (for comparative purposes)											
1/4	6	88	8	8	77	7	63	0.93	1.03	0.82	0.94
5/16	8	87	8	8	73	7	57	0.92	1.01	0.79	0.91
1/2	12	84	8	8	64	6	49	0.89	0.98	0.73	0.84

Laminates consists of two lites of equal glass thickness, and a 0.030 in. (0.8 mm) pvb

U-Factor (Btu/hr·ft²·°F) is based on NFRC/ASTM standards. All performance values are center-of-glass values calculated using the LBNL Window 7.7 program.

## One-Way Mirror Performance Data

Nominal Glass Thickness		Visible Light (%)			Glass Substrate	Glaze Mirror Coating Toward
in.	mm	Transmittance	Reflectance			
			Coated Surface	Uncoated Surface		
Pilkington <b>Mirropane™</b>						
1/4	6	10	74	19	Grey	Subject Side
Pilkington <b>MirroView™</b>						
1/8	3	24	66	58	Clear	Viewer Side
1/4	6	22	66	57	Clear	Viewer Side
Pilkington <b>MirroView™</b> 50/50						
1/8	3	39	50	47	Clear	Viewer Side
1/4	6	37	50	46	Clear	Viewer Side

Typical values of Pilkington production are provided.

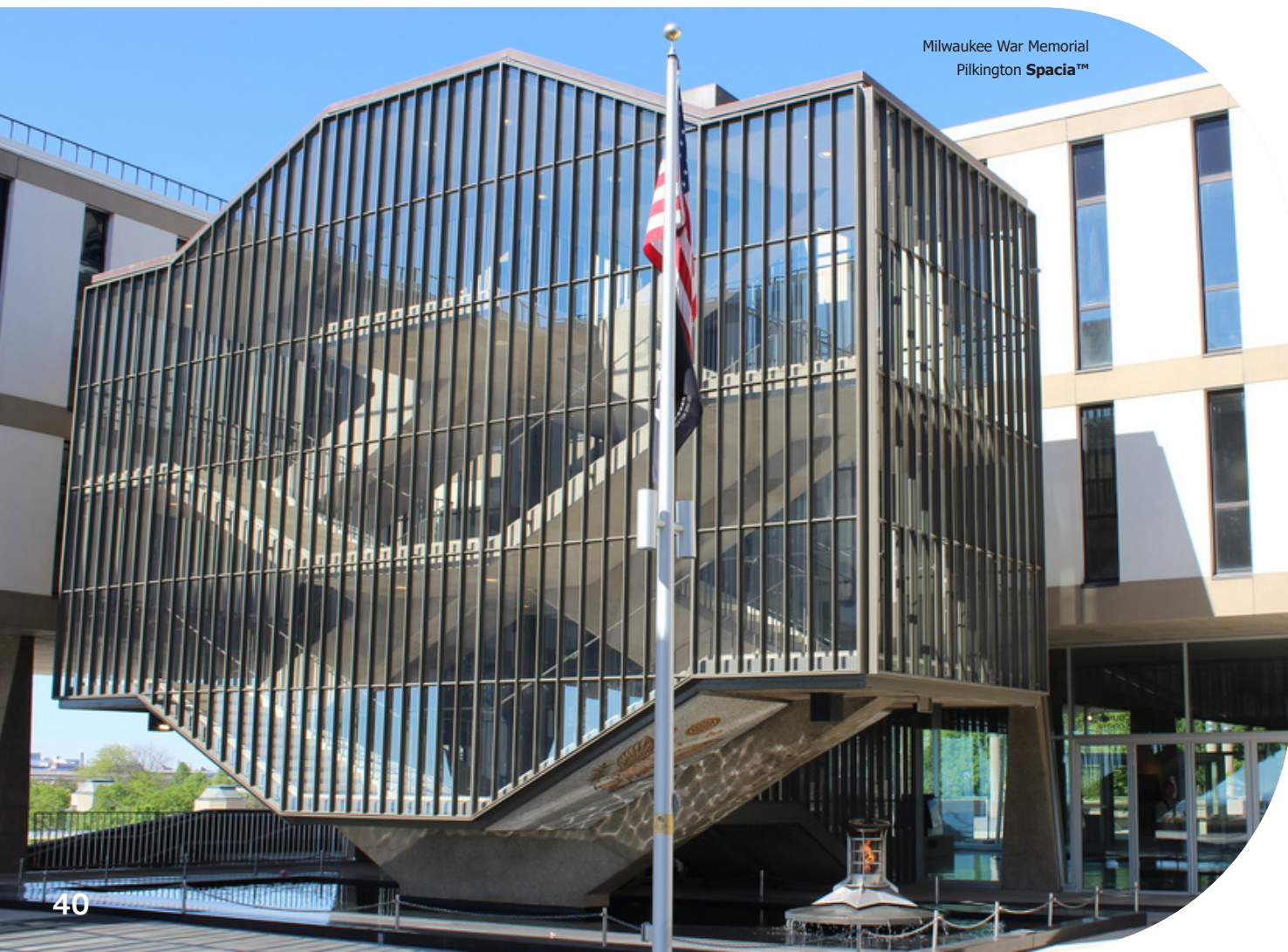
U-Factor (Btu/hr·ft²·°F) is based on NFRC/ASTM standards. All performance values are center-of-glass values calculated using the LBNL Window 7.7 program.



## Vacuum Insulated Glazing Unit Performance Data

Nominal Glass Thickness		Visible Light (%)			Solar Energy (%)			U-Factor (Btu/hr·ft²·°F)		Solar Heat Gain Coefficient
in.	mm	Transmittance	Reflectance		Transmittance	Reflectance	UV Transmittance	Summer	Winter	
			Outside	Inside						
Pilkington <b>Spacia™</b>										
1/4	6.2	77	17	17	66	16	55	0.27	0.25	0.69
5/16	8.2	76	17	17	60	16	47	0.26	0.25	0.68
3/8	10.2	74	17	17	55	14	41	0.26	0.25	0.63
Pilkington <b>Spacia™</b> Cool										
1/4	6.2	70	23	21	47	36	43	0.18	0.18	0.49
5/16	8.2	69	23	20	43	36	37	0.18	0.18	0.49
3/8	10.2	68	22	20	40	30	33	0.18	0.18	0.46
Pilkington <b>Super Spacia™</b>										
3/8	10.2	68	22	20	40	30	33	0.12	0.12	0.45
Pilkington <b>Spacia™</b> Shizuka										
-	9.2	73	15	-	56	13	-	-	0.25	0.61

U-Factor (Btu/hr·ft²·°F) is based on NFRC/ASTM standards. All performance values are center-of-glass values calculated using the LBNL Window 7.7 program.



## NSG TEC™ Glass Performance Data

	Thickness (mm)	Visible Light Transmittance (%)	Sheet Resistance ( $\Omega/\square$ )	Typical Sheet Resistance ( $\Omega/\square$ )	Typical Haze (%)
NSG TEC™ 7	2.2, 3.0, 3.2	80.0 - 82.0	<8	7	1.5
NSG TEC™ 8	2.2, 3.2	80.0 - 81.5	<9	8	12.0
NSG TEC™ 10	4.0, 6.0	81.5 - 84.4	<11	10	0.6
NSG TEC™ 15	2.2, 3.0, 3.2, 4.0, 5.0, 6.0	81.5 - 84.5	<14	13	0.4
NSG TEC™ 20	4.0, 6.0	82.3 - 85.2	<20	19	0.4
NSG TEC™ 35	3.2, 6.0	82.0 - 84.0	<48	40	0.5
NSG TEC™ 50	3.2, 4.0	82.0 - 84.5	<53	48	0.5
NSG TEC™ 70	3.2, 4.0	82.0 - 84.7	<75	65	0.3
NSG TEC™ 100	3.2, 4.0	82.0 - 84.5	<120	110	0.5
NSG TEC™ 160	3.2	82.0 - 84.5	<200	170	0.4
NSG TEC™ 250	3.2, 4.0	84.0 - 87.0	<325	240	0.3
NSG TEC™ 450	3.2	82.0 - 84.0	<600	550	0.7
NSG TEC™ SB	2.2, 3.2	91.0 - 92.0	-	-	0.1

The technical data are calculated according to EN 410, EN 673, and EN 12898.

The above performance data should be considered representative. There may be differences within a single production run or from one production run to another, but these are subject to manufacturing tolerances.

The data presented in this table is related to the as-supplied product. Some values, such as sheet resistance, may change after the toughening process depending on toughening/tempering conditions.

Please note that not all NSG TEC™ glass types are available in all markets. Please contact your local NSG Group representative to check the available offer.



The low-emissivity properties of NSG TEC™ Glass are used in household appliances, for oven doors, to insulate the high temperatures inside from the external glass surface. The low-emissivity coating of NSG TEC™ Glass protects the user from the risk of burns thanks to the thermal insulation

The glass types mainly used for oven doors are: NSG TEC™ 10 and NSG TEC™ 15.



This publication provides only a general description of the product. 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 this product 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, "Activ," "AviSafe," "Eclipse," "Eclipse Advantage," "Energy Advantage" "Mirropane," "MirroView," "OptAR," "Optifloat," "Optiphon," "OptiShower," "OptiView," "Optiwhite," "Profilit," "Pyrostop," "SaniTise," "Solar-E," "Spacia," "Super Spacia," and "TEC" are trademarks owned by Nippon Sheet Glass Co. Ltd, or a subsidiary thereof.



**Pilkington North America**

811 Madison Ave Toledo, Ohio 43604-5684

buildingproducts.pna@nsg.com

800 221 0444 • Fax 419 247 4573

**[www.pilkington.com/na](http://www.pilkington.com/na)**