



High Performance Glass Products for
Digital Signage, Digital Displays and Touch Screens





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Color Clarity & Optimal Light Transmission

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 other clear glasses is not present. It is perfect for applications where transparency and purity of color are desired.

Available in thicknesses between 3 mm and 19 mm (the widest range on the market), Pilkington **Optiwhite™** provides increased design flexibility and, when combined with other Pilkington products, it can offer additional benefits such as anti-reflective or conductivity.

Features

- 92% light transmittance
- True color and outstanding visual clarity
- Ensures a more natural, brighter view
- Improves aesthetics of laminated glass
- Brilliant clarity when compared to ordinary standard clear float glass
- Can be toughened or laminated for safety and security

- Can be painted or silk-screened for spandrel or decorative applications
- Can be combined with other products from the Pilkington range to provide additional benefits such as anti-reflective or conductivity

**Uncoated
Cover Glass
for Digital
Displays**



Pilkington **Optifloat™** Clear

Pilkington **Optiwhite™** (low iron glass)

Performance Data

Product	Nominal Glass Thickness		Visible Light (%)		
	in.	mm	Transmittance	Reflectance	
				Outside	Inside
Pilkington Optiwhite™	1/8	3	91	9	9
	5/32	4	91	9	9
	3/16	5	91	9	9
	1/4	6	91	9	9
	5/16	8	91	9	9
	3/8	10	91	9	9
	1/2	12	90	9	9
	5/8	15	90	9	9
	3/4	19	90	8	8

Anti-Reflective Display Cover Glass

The Pilkington **OptiView™** range and Pilkington **OptAR™** range of coated anti-reflective glasses provide a complete set of solutions to minimize reflections in digital signage. These products reduce distracting reflections on computer screens, televisions, flat panels, aircraft transparencies and other electronic displays. As a result, displays are easier to read and eye strain is minimized while visual acuity is increased.

Monolithic Anti-Reflective Products

- Pilkington **OptiView™** is a color neutral, anti-reflective pyrolytic coating with excellent durability. It is easy to clean and reduces the appearance of fingerprints relative to other AR coatings.
- Pilkington **OptiView™** Fusion is pyrolytic coated on one side with a sputter coat on the other for a double sided anti-reflective glass.
- Pilkington **OptAR™** is a single sided, anti-reflective pyrolytic coating available in a thickness as thin as 1.6 mm.

- Pilkington **OptAR™** Plus offer all the benefits of Pilkington **OptAR™** but provides higher light transmission and is compatible with all touch technologies including projected capacitive.

Features and Benefits

- Low reflection, less than 1% from front surface
- Range in thicknesses from 1.6 mm to 10 mm
- Improved visual performance with high light transmission
- Easily fabricated
- Bendable
- Available on low iron substrate
- Durable and robust coating
- Large stock sizes: 130" x 204"

Applications

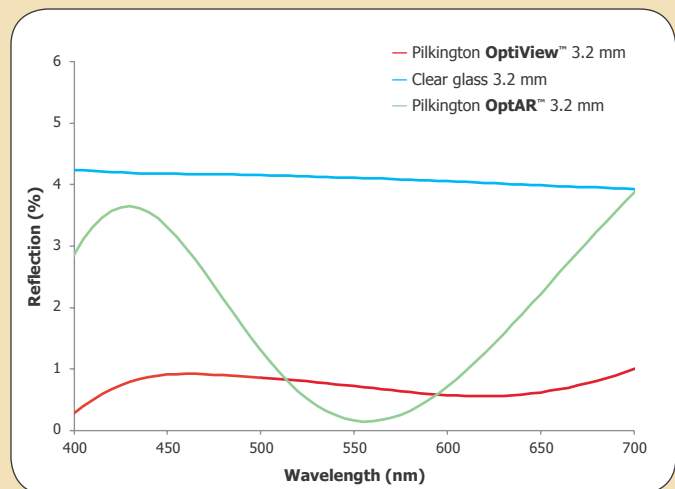
- Digital signage and displays
- Touch panel displays
- Aircraft transparencies
- Flat-panel LCD monitors
- Televisions and HDTV
- Specialty vehicle windshields and instrument panels
- Specialty electronic applications

Performance Data

Product	Nominal Glass Thickness	Coated Surface Reflection	Visible Transmittance	Total Visible Reflectance
	mm	(%)		
Clear Glass	3	<1	91	8
Pilkington OptAR™	3.2	<1	92	<5
Pilkington OptAR™ Plus	3.2	<1	95	<5
Pilkington OptiView™	3.2	<1	92	<5
Pilkington OptiView™ OW	3.2	<1	93	<5
Pilkington OptiView™ Fusion	3.2	<1	96	<1

Sheet resistance (Ω/\square) is <200 for all products listed above.

Front (coated) surface reflectance of Pilkington **OptiView™** and Pilkington **OptAR™** glass compared to 3.2 mm clear glass



Laminated Anti-Reflective

Pilkington **OptiView™** for Outdoor Digital Signage

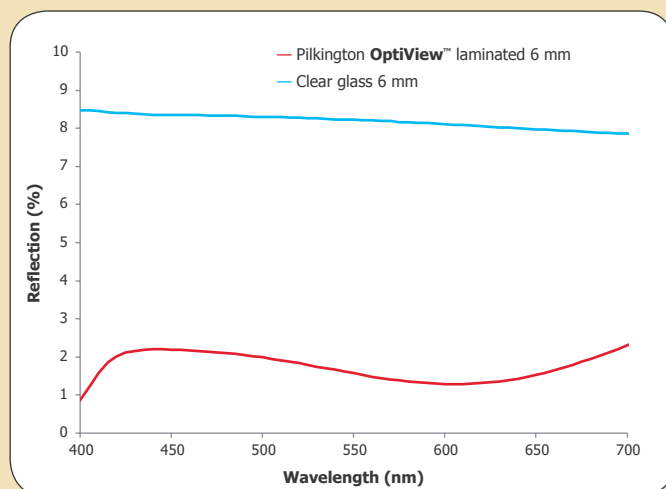
Many signage installations are used outdoors. Outdoor applications require additional safety and security. Laminated Pilkington **OptiView™** offers many of benefits for outdoor signage.

Features and Benefits

- High light transmission: >90%
- Low reflection: <2%
- Neutral color
- UV Control. UV and IR rays can damage displays. Laminated Pilkington **OptiView™** blocks almost 100% of UV and reduces infrared radiation.
- Available on low iron glass
- Increased safety & security in comparison to monolithic glass
- No visual distortion
- High durability
- Reduces the appearance of fingerprints
- Range of thicknesses from 3.6 mm to 20 mm



Reflectance of laminated Pilkington **OptiView™** compared to 6 mm clear glass



Smart Mirrors

Pilkington **MirroView™** digital display mirror, for low light applications

Pilkington **MirroView™** is a highly reflective mirror-like coating on a clear substrate that is compatible with all touch technologies including projected capacitive. Pilkington **MirroView™** gives digital displays and video screens a modern, high-tech look.

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

When the screen is turned 'off', Pilkington **MirroView™** maintains a mirrored appearance while concealing the screen. When the screen is turned 'on', the image on the screen shows through.

Pilkington **MirroView™** is available in large stock sizes providing the ability to provide a versatile range of design opportunities. The pyrolytic coating is very durable and can be easily handled,

transported and processed, including tempering and laminating. Due to the durability of the pyrolytic coating, it does not degrade over time, which gives the product a virtually unlimited shelf-life.

Applications

- Bars
- Restaurants
- Bathrooms
- Digital signage
- Touch screens
- Smart mirrors

Features & Benefits

- Conceals digital screens in unique, modern display
- Durable pyrolytic coating
- Large sizes available: 130" × 204"
- Bright, natural reflected
- Works with all touch screen technologies

Available Thickness

- 3.2 mm
- 6 mm



Pilkington **MirroView™** 50/50 digital display mirror, for high light applications

Pilkington **MirroView™** 50/50 offers the same qualities as the original product, yet it is designed for use in applications with high ambient light.

Applications

- Hotel rooms
- Lobbies
- Salons
- Retail
- Digital signage
- Touch screens
- Smart mirrors

Features & Benefits

- Conceals digital screens in unique, modern display
- Durable pyrolitic coating
- Large sizes available: 130" × 204"
- Bright, natural reflected
- Works with all touch screen technologies

Available Thickness

- 3.2 mm
- 6 mm



Photo courtesy of Virginia Tech

Performance Data

Product	Nominal Glass Thickness		Visible Transmittance	Visible Reflectance Coated Side	Visible Reflectance Glass Side
	in.	mm	(%)		
Generation 2 Pilkington MirroView™	1/8	3.2	24	66	58
	1/4	6.0	22	66	57
Generation 2 Pilkington MirroView™ 50/50	1/8	3.2	39	50	47
	1/4	6.0	37	50	46

Nominal values shown.

Ultra Thin Applications

Pilkington **Microwhite™** and NSG **UFF™**

NSG **UFF™** (Ultra Fine Float) and Pilkington **Microwhite™** are extremely thin, high-grade float glass products. They are made according to the highest specifications with very tight thickness tolerances to ensure flat and uniform products, suitable for a variety of applications. NSG **UFF™** is produced with a clear glass composition and so has an iron oxide level of 1000 ppm. Pilkington **Microwhite™** uses a low-iron composition of around 100 ppm iron oxide, which produces a very pure, clear glass to improve color rendering and increase light transmission.

Applications

- Digital signage and displays
- Microscope slides
- Cosmetic mirrors
- Chromatographic plates
- LCD photo masks
- Automotive and technical glass
- Computer and tablet screens



Features

- High-grade thin float glass with very tight thickness tolerances
- Flat and uniform products
- Pilkington **Microwhite™** thickness range: 1.0 mm - 1.3 mm
- NSG **UFF™** thickness range: 0.3 mm - 1.3 mm
- High optical transmission
- Cut to customer specifications

Additional features of Pilkington **Microwhite™**:

- Neutral edge color
- High color rendering
- Superior light and energy transmission



NSG **glanova™** for chemical strengthening

NSG **glanova™** is a unique, thin glass composition designed for chemical strengthening. With thicknesses ranging from 0.33 mm - 2.8 mm, it has a high optical transmittance of 91%, great color rendering, and superb durability.

Once chemically strengthened, NSG **glanova™** has a much higher compressive stress and depth of layer than conventional soda-lime glass. NSG **glanova™** is engineered to have a softening point similar to that of soda lime glass, allowing the use of conventional heat forming processes such as heat molding or sag bending. It's also compatible with all standard glass processes including lamination, printing, anti-glare, and anti-reflection treatments.

Features

- Excellent chemical strengthening performance and strength
- High optical transmittance of 91%
- Great color rendering for displays
- Easy to process
- Can be combined with anti-glare and anti-reflective treatments
- Available in thicknesses of 0.33mm to 2.8mm
- Automotive and technical glass
- Tablet and phone screens



Applications

- Digital signage and displays
- Microscope slides
- Automotive interiors



Transparent Wire

NSG **TEC™**: Glass as wire

NSG **TEC™** products have a conductive pyrolytic coating making them ideal for a wide range of products. Whether it is appliance glass, computer screens, touch screens, static controls, LED displays or many others, there are NSG **TEC™** products to meet your specific needs.

Applications

- Digital signage and displays
- Smart watches
- Touch screens
- Automotive interiors
- LED displays
- Electromagnetic (EM) shielding

Features

- Static control
- Electrically conductive for touch sensing
- Range of thicknesses
- Variety of sheet resistance ranging from 7 ohms/sq. to several thousand ohms/sq
- Color neutral
- Easily fabricated and bendable



Touch Screen Compatibility

Pilkington has a range of products that can be used with all type of capacitive touch products to create touch screen and allow for unlimited design opportunities

Products

- Pilkington **OptAR™** Plus a single sided, anti-reflective pyrolytic coating available in a thickness as thin as 1.6 mm which also has the ability to work with all types of capacitive touch products (page 3 for more information).
- Pilkington **MirroView™** is a one sided highly reflective pyrolytic coated glass that when placed in front of a screen will look like a mirror when the display is off but will let the display image show through when turned on. This product is ideal for low-ambient light (pages 6-7 for more information).
- Pilkington **MirroView™** 50/50 is the same as Pilkington **MirroView™** but is ideal for locations with high-ambient light (pages 6-7 for more information).
- NSG **TEC™** product range is made up of various glass thicknesses with pyrolytic coatings with different levels of conductivity that can be used for touch screen applications (page 10 for more information).



Features and Benefits

- Ability to work with all types of capacitive touch products
- Easily fabricated
- Bendable
- Durable pyrolytic coating
- Large stock sizes: 130" x 204"

Product	Compatibility with touch screen technology			
	Resistive	Capacitive	Infrared	Optical
NSG UFF™	✓	✓	✓	✓
NSG glanova™	✓	✓	✓	✓
Pilkington Microwhite™	✓	✓	✓	✓
Pilkington Optiwhite™		✓	✓	✓
Pilkington OptiView™	✓		✓	✓
Pilkington OptiView™ Fusion			✓	✓
Pilkington OptAR™			✓	✓
Pilkington OptAR™ Plus	✓	✓	✓	✓
Pilkington MirroView™		✓	✓	✓
Pilkington MirroView™ 50/50		✓	✓	✓

NSG **TEC™** is different from the above products as it can be used as the transparent conductor for touch screen design.

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, NSG, "TEC", "OptiView", "OptAR", "MirroView", "Optiwhite", "Optifloat", "glanova", and "Microwhite" are trademarks owned by Nippon Sheet Glass Co. Ltd, or a subsidiary thereof.



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