Norwood Permaglass

The window and door market of the 21st century is more competitive than ever. Designers, builders and homeowners are placing an ever-increasing demand on manufacturers to deliver products that are environmentally friendly, easy to maintain, durable, cost-effective, and not least of all – beautiful.

Norwood Permaglass windows are manufactured from pultruded fiberglass, widely recognized as a leader in material strength, thermal performance and ease of maintenance. Sometimes referred to as the “lumber of the future”, fiberglass will not rot, peel or warp, is impermeable to moisture and will not degrade over time, making it perfect for coastal environments.

Norwood Permaglass windows come in popular styles, such as casement, single-hung, double-hung and slider.

Norwood Permaglass products are now available for purchase through qualified Norwood dealers everywhere.
Superior thermal performance
Pultruded fiberglass, because of its low thermal conductivity and stability in extreme weather conditions, is a better insulator than vinyl or aluminum. Unlike vinyl, which can expand up to seven times more than the glass unit, pultruded fiberglass windows remain rigid and stable in all weather conditions.

Fiberglass for superior strength and stability
Pultruded fiberglass outperforms other window products for strength, thermal performance and low maintenance. All windows and frames are available with an integral nailing fin as part of the frame profile ensuring ease of installation and providing a water tight seal around the opening. Frames and sash components are assembled using galvanized or stainless steel fasteners and custom composite corner keys.

Fiberglass for superior strength and stability

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**Fiberglass Expansion and Contraction Comparison**

- Fiberglass: 1 mm expansion
- Aluminium: 1/8" expansion
- Vinyl: 3/16" expansion

- Fiberglass: 7/8" contraction
- Aluminium: 5/16" contraction
- Vinyl: 5/16" contraction

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**Overall Performance**

<table>
<thead>
<tr>
<th></th>
<th>Fiberglass Composite</th>
<th>Aluminium with Thermal Break</th>
<th>Vinyl</th>
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</thead>
<tbody>
<tr>
<td>Strength</td>
<td>Excellent</td>
<td>Very Good</td>
<td>Fair</td>
</tr>
<tr>
<td>Hot/Cold Performance</td>
<td>Excellent</td>
<td>Excellent</td>
<td>Fair</td>
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<tr>
<td>Thermal Expansion</td>
<td>Excellent</td>
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<td>Fair</td>
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<tr>
<td>Impact Resistance</td>
<td>Excellent</td>
<td>Good</td>
<td>Fair</td>
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<tr>
<td>Durability</td>
<td>Excellent</td>
<td>Very Good</td>
<td>Good</td>
</tr>
<tr>
<td>Energy Efficiency</td>
<td>Excellent</td>
<td>Fair</td>
<td>Excellent</td>
</tr>
</tbody>
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**Notes:**

- **Excellent**: 4 stars
- **Very Good**: 3 stars
- **Good**: 2 stars
- **Fair**: 1 star

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In testing performed in accordance with ASTM testing standards, fiberglass composite has displayed superior performance in strength, ability to withstand extreme heat and cold, and resistance to dents and scratches.
Permaglass Fiberglass Casement Window

Casement windows, a contemporary design for residential and commercial applications, are available with large fixed centres, picture windows, or with fixed and venting combinations. Any of these may be matched with rectangular, segmental or half round transoms. Casement windows swing out for easy cleaning and ventilation. The weatherstripping, in combination with the single handle multi-point locking system, provides an air-tight seal.

◆◆ FEATURES

- Pultruded fiberglass profiles with integral nailing fin included
- Venting sash opens to 90° for easy cleaning
- Impermeable to moisture
- Factory applied, maintenance-free finish
- Truth Maxim operating hardware with single handle multi-point locking system
- E-Gard corrosion resistant hardware
- Triple sealing system with bulb weatherseals
- 3 1/4” full jamb depth or 1 15/16” behind integral nailing fin
- Channel glazed sash for added structural strength
- Galvanized or stainless steel fasteners
- Matching enamelled screen surround with black fiberglass screen mesh

◆◆ OPTIONS & ACCESSORIES

- Available in over 160 standard Norcoat colours and an endless selection of custom colours (exterior only; see page 9 for more information)
- Clear or LowE insulating glass
- White 3/4” Georgian or 5/8” flat grilles installed between glazing units for easy cleaning
- Pultruded fiberglass brickmold and sill nose with a 3 1/2” jamb behind the nailing fin for easy installation
- Wood interior jamb extensions from 4 9/16” to 6 9/16”
- Matching rectangular, segmental and half round transoms available
- Large fixed centers, picture windows and fixed and venting combinations available
Permaglass Fiberglass Tilt Double-Hung or Single-Hung Window

A classic design for residential and commercial application, permaglass double-hung and single-hung windows come in over 160 standard Norcoat colours and an endless selection of custom colours (see page 9 for more information).

Fixed and venting combinations are available with custom transoms and between-the-glass grille designs.

The operating sash slides for ventilation and tilts inward for easy cleaning. The quality hardware provides easy, smooth operation of the sash and, when locked, provides a weather-tight seal.

◆◆ FEATURES

◆ Low thermal conductivity
◆ Impermeable to moisture
◆ Factory applied, maintenance-free finish
◆ Quality Truth locks, keepers and lifts with Constant Force Balances
◆ Flush mount tilt latches
◆ Dual sealing system using a combination of bulb and pile weather seals
◆ Channel glazed sash for added structural strength
◆ Galvanized or stainless steel fasteners

◆◆ OPTIONS & ACCESSORIES

◆ Clear and LowE insulating glass
◆ Wood interior jamb extensions
◆ Natural wood interior trim available
◆ Matching rectangular, segmental and half round transoms available
◆ White Georgian or flat grilles installed between the glass

Permaglass single-hung windows provide great ventilation for any room with easy up and down sash operation. The venting sash tilts in for easy cleaning.
Permaglass Fiberglass Single Slider

This popular window style with a sliding sash is easy to operate and provides excellent ventilation and an unobstructed view of the outside. The quality Truth locks and keepers provide an air-tight seal for maximum energy efficiency. Available in standard or custom sizes in combination with fixed or venting panels.

◆◆ FEATURES

◆ Low thermal conductivity
◆ Impermeable to moisture
◆ Factory applied, maintenance-free finish
◆ Quality Truth locks, keepers and pull handles with custom designed sash gliders
◆ Dual sealing system using a combination of bulb and pile weatherseals
◆ Channel glazed sash for added structural strength
◆ Galvanized or stainless steel fasteners
◆ Matching enamelled screen surround with black fiberglass screen mesh

◆◆ OPTIONS & ACCESSORIES

◆ Available in over 160 standard Norcoat colours and an endless selection of custom colours (see page 9 for more information)
◆ Clear or LowE insulating glass with argon.
◆ White 3/4” Georgian or 5/8” flat grilles installed between glazing units for easy cleaning.
◆ Wood interior jamb extensions from 4 9/16” to 6 9/16” (ask your dealer about other size options)
◆ Matching rectangular, segmental and half round transoms available
◆ Large fixed centers and picture windows

Permaglass Fiberglass Double End Vent Slider Window

The Permaglass double-end vent slider features two venting sashes with fixed center sash. Standard and optional features are the same as single slider.
Pultruded Fiberglass Window Facts

- Pultruded fiberglass windows are ideal for Atlantic coastal climates.
- Fiberglass is impervious to moisture, extreme heat, cold or acidic conditions.
- Fiberglass windows retain dimensional stability throughout extreme temperature fluctuations, while vinyl and aluminum windows can suffer massive air leaks under extreme cold conditions.
- Pultruded fiberglass is truly environmentally friendly, based on product longevity, embodied energy, limited use of natural resources and low pollution levels emitted during the manufacturing process.
- Pultruded fiberglass is a better insulator than vinyl and aluminum
- Fiberglass will not rot, peel or warp, is impermeable to moisture and will not degrade over time.
Features and Options

For new construction and renovation
Permaglass fiberglass windows are designed for new construction and renovation in residential and commercial applications. An integral nailing fin is pultruded as part of the frame profile for ease of installation and to provide a weather-tight seal around the window. Because fiberglass windows do not rot, peel or degrade in harsh climates, the fiberglass window is ideal for projects where quality and longevity are the primary concerns.

Built Tough
Galvanized and stainless steel fasteners and custom composite Polyester corner braces ensure all Permaglass products maintain structural integrity.

Optional brickmold
Optional pultruded fiberglass brickmold is available for ease of installation.

Screens
Black fiberglass screen cloth in an enameled surround is standard on all Permaglass windows. Standard surround colors are available over 160 standard Norcoat colours and an endless selection of custom colours (see page 9 for more information).

Standard and optional glazing
Insulated glass panels are channel-glazed in the frame and sash to add to the overall strength of the window’s construction. Clear 3/4” double glazing is standard. Triple-glazed picture windows (direct set) are available. Optional high performance argon-filled LowE glass or other popular glazing options.

Custom combinations and transoms
Permaglass windows are available with matching custom transoms and decorative between-the-glass grille options. Grilles are available in standard Georgian and flat profiles.

Typical custom transom designs
Norcoat Flexacron colour options

Norwood Permaglass Windows come standard with white interior and your choice of over 160 standard Norcoat colours or an endless selection of custom colours for the exterior. Bring us a sample; we can match it. You won’t find this versatility and flexibility anywhere else.

With a Norcoat Flexacron factory finish you get beautifully coloured windows without the maintenance hassles. Components are electrostatically coated twice before assembly, giving greater resistance to the elements than the finest paint. With a 20-year guarantee, Norcoat is the industry’s highest quality, exterior finish.

Want more interior design options? Any Norcoat colour or custom colour can be applied to both interior and exterior window frames. (48 shown here)