VISIT US ONLINE FOR OUR COMPLETE SERIES OF WINDOWS & DOORS
OptimumWindow.com

AMERICA’S MOST DIVERSIFIED STEEL WINDOW & DOOR MANUFACTURER

THE ONLY COMPANY WITH A COMPLETE LINE OF OPERABLE FIRE-RATED WINDOWS
About Optimum Window

Established in 1985, Optimum Window Manufacturing has made its mark in the Steel Window industry as the largest and most diversified manufacturer of Fire-Rated Windows & Doors in the United States.

Competitive drive being the motivation for all entrepreneurs, Optimum has continued its growth with a series of custom, high-tech metal window and door systems designed for commercial, high-end residential and landmark applications.

With our versatility and knowledge in engineering, manufacturing and customer service, Optimum has its focus on producing top of the line products in steel, bronze and stainless steel.

Optimum continues to work with architects that require custom designs for their applications. We bring high performance and structural excellence together with beauty and style, making every idea a reality.
02 ABOUT OPTIMUM WINDOW

04 - 05 SELF-CLOSING OPERABLE WINDOWS & RATING RANGE

05 DIFFERENCES BETWEEN HOT-ROLLED & COLD-ROLLED

06 POWDER COATING FINISH

08 FR4700 SERIES | SELF-CLOSING CASEMENT

12 FR6000 / FR55 SERIES | FIXED

16 FR7650TDH SERIES | SELF-CLOSING DOUBLE HUNG

20 FR7650TSH SERIES | SELF-CLOSING SINGLE HUNG

24 FR8600 SERIES | SELF-CLOSING PROJECT OUT

28 7650TSS SERIES | SELF-CLOSING SINGLE SLIDER

32 FR55 SERIES | SELF-CLOSING OUTSWING DOOR
Optimum has revolutionized the construction industry by offering the most comprehensive line of steel fire-rated windows.

Today, we are the largest and most efficient manufacturer in our field.

Utilized in openings where it is necessary to restrict the spread of fire between buildings, fire-rated windows and glass can be the most pertinent and reliable form of fire-protection for any structure where this is necessary; whether it be a home, school or place of business.

With fire-ratings ranging from 45 to 90 minutes, Optimum’s Fire-Rated windows are put through rigorous testing. Initially a “heat test” is performed, where the window is exposed to temperatures up to 1600 degrees Fahrenheit. Fire-Rated Windows also endure the “Hose Stream Test”, in which the glass holds fast even during this extreme change in temperature. When other windows made from materials such as aluminum, vinyl and wood are placed under these extreme conditions; they will poorly react in a Thermal Shock. Optimum Fire-Rated windows will hold their integrity. Optimum’s multiple window and door series are used in non-temperature rise applications and through various glazing options can be modified to address applications such as:

- **Thermal Performance** (Most units meet and/or exceed NYC energy codes, ask an Optimum representative for more information)
- **Impact Resistance** (Category 2)
- **Sound Transmission**
- **Ballistics**
Optimum’s window and door series can be installed in both interior and exterior applications and are fully tested and listed by UL (Underwriters Laboratories. Our fire-rated windows and doors are MEA/BSA approved for use in the City of New York and meet all pertinent fire-rated window codes as outlined by the International Building Council.

Optimum’s windows and doors are produced from 100% recycled steel. Our units are available in a variety of standard colors as well as the option for custom colors. All Fire-Rated Series are shipped completely assembled, painted and glazed; eliminating additional labor on site.

The systems are designed to assist in the containment of fire for a set period of time, dictated by the glass type and rating chosen. Aside from the spread of fire, there are other reasons to install fire-rated window assemblies such as visibility, ventilation and retrofitting. Our fire-rated frames allow architects and designers to rethink ways to address areas within a building that would normally be restricted from natural daylight and ventilation due to fire-rating applications, combining safety and style. Modern designs are featuring more open floor plans than ever before. Our various fire-rated window & door products offer designers the option of embracing that aesthetic while still maintaining the fire-ratings.

SELFCLOSING OPERABLE WINDOWS & RATING S RANGE

THE DIFFERENCES BETWEEN COLD-ROLLED STEEL & HOT-ROLLED STEEL

Hot-rolled steel windows and doors are made from solid steel sections which are produced from new billet steel into shapes specifically designed for window, door frames and ventilators. Cold-rolled steel windows and doors are made from hollow steel sections, which have been mechanically formed from flat coil stock into specially designed profiles.
POWDER COATING FINISH

Pre-treatment options include marine galvanization, zinc-enriched primer & E-coat (upon request). Finish paints include enamels, polyurethane, & powder coat paints. Consult OWM’s sales staff for more specific information.

POWDER COATING CHARACTERISTICS

- Proven track record of hardness and durability
- Inherently resistant to damage
- Resilient to chemical and corrosive breakdown
- Provides maximum protection of the substrate
- Excellent results with salt spray and humidity testing
- Limited 10 year warranty on finish (Extended Warranties Available)

FINISH

- Pre-treatment (Std.)
  Options: Marine galvanizing, E-coating
- Paint - Super Durable Powder Coat (Std.)
  Options: Enamels & Polyurethane

GREEN DESIGN

- Environmentally friendly
- Integral to contemporary building design/construction
- Ideal for government compliance
- Green alternative to liquid coatings
- Powder does not require high VOC solvents as used in liquid paints
- Zero VOC’s (Volatile Organic Compounds)
- Unparalleled high quality and durable finish

COLOR CUSTOMIZATION

- Wide range of colors
- Optimum’s standard colors meet AAMA 2604

CERTIFIED QUALITY

- Optimum applies its powder coatings in house, allowing for better quality control of its finishes
- Optimum is a certified Powder Coat Applicator
# FR4700 Casement Window

**UL Approved and Certified | Up to 45 Minute Fire-Rating**

45 minute fire-rating
- Hot-Rolled Steel Sections
- UL (Underwriters Laboratories) Listed and Certified
- Fully Weather-Stripped
- 2 1/8" exterior frame depth
- Mitered and fully welded frame construction
- Glazing is held in place via mechanically fastened steel glazing beads
- Can accommodate glazing ranging from 3/16" to 1" in O.A. thickness
- Insulated glazing available for this series
- All FR4700 series casement windows will be factory glazed
- 1 cam lock at center of sash up to 36", 2 locks thereafter
- Standard Optimum Window colors (refer to OWM color chart)
- Units are supplied with installation straps
- All units will receive Zinc Enriched Primer and Powder Coated finish

## Options
- RAL colors available as option & available upon request
- Non-metallic color matches are optional & available upon request
- Steel Break Metal trim
- Screens for in-swing casements
- Screens for out-swing casements
- Clear fire-rated glass/wireless
- Insulated glass
- Applied flat grids
- White Bronze Hardware is OWM’s Standard
- (other options/finishes available)
- Monolithic Glazing Available

## General Test Results & Dimensional Limitations

<table>
<thead>
<tr>
<th>HOUR RATING</th>
<th>MINIMUM FRAME DIM.</th>
<th>MAXIMUM FRAME DIM.</th>
<th>(Air) ASTM E283 @ 6.24psf</th>
<th>(Water) ASTM E331 @ 5.0gph / ft²</th>
<th>Uniform Design Load ASTM E330</th>
<th>MAXIMUM VENT DIM.</th>
<th>MAXIMUM WIRE GLASS DIM.</th>
<th>MAXIMUM SAFETY GLASS</th>
<th>MAXIMUM CERAMIC GLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4</td>
<td>18&quot; x 24&quot;</td>
<td>36&quot; x 60&quot;</td>
<td>.12 cfm / ft²</td>
<td>6.24 psf</td>
<td>73.3 psf</td>
<td>36&quot; x 60&quot;</td>
<td>1,296 sq in</td>
<td>Optional</td>
<td>4,515 sq in</td>
</tr>
</tbody>
</table>

* NOTE: TEST SPECIMEN SIZE 36" X 60"*

## Thermal Performance Value Chart for Fire-Rated Products That Have Been Simulated

<table>
<thead>
<tr>
<th>WINDOW TYPE</th>
<th>&quot;U&quot; VALUE</th>
<th>&quot;SHGC&quot;</th>
<th>&quot;CR&quot;</th>
<th>&quot;VT&quot;</th>
<th>GLASS CONFIGURATION THAT MEETS THE NYCECC (NYC ENERGY CONSERVATION CODE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR4700 Fixed Windows</td>
<td>0.42 BTU/hr/°F</td>
<td>0.42 BTU/hr/°F</td>
<td>17</td>
<td>0.49</td>
<td>1&quot; I.G.U. (1/4&quot; Wire Glass [R.W.G. or P.W.G.] over 3/16&quot; Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
<tr>
<td></td>
<td>0.42 BTU/hr/°F</td>
<td>0.42 BTU/hr/°F</td>
<td>17</td>
<td>0.49</td>
<td>1&quot; I.G.U. (3/16&quot; Polished Ceramic Glass or 3/16&quot; Polished Safety Ceramic Glass w/ Surface Applied Film over 3/16&quot; Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
<tr>
<td></td>
<td>0.42 BTU/hr/°F</td>
<td>0.42 BTU/hr/°F</td>
<td>18</td>
<td>0.48</td>
<td>1&quot; I.G.U. (5/16&quot; Polished Safety Laminated Ceramic Glass over 3/16&quot; Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
<tr>
<td>FR4700 Casement Windows</td>
<td>0.55 BTU/hr/°F</td>
<td>0.35 BTU/hr/°F</td>
<td>16</td>
<td>0.40</td>
<td>1&quot; I.G.U. (1/4&quot; Wire Glass [R.W.G. or P.W.G.] over 3/16&quot; Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
<tr>
<td></td>
<td>0.55 BTU/hr/°F</td>
<td>0.35 BTU/hr/°F</td>
<td>16</td>
<td>0.40</td>
<td>1&quot; I.G.U. (3/16&quot; Polished Ceramic Glass or 3/16&quot; Polished Safety Ceramic Glass w/ Surface Applied Film over 3/16&quot; Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
<tr>
<td></td>
<td>0.56 BTU/hr/°F</td>
<td>0.35 BTU/hr/°F</td>
<td>16</td>
<td>0.39</td>
<td>1&quot; I.G.U. (5/16&quot; Polished Safety Laminated Ceramic Glass over 3/16&quot; Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
</tbody>
</table>

* 1/4" Wire Glass 1296 sq. in. max width or height - not to exceed 54”

**Listings**
- Listed and labeled by Underwriters Laboratories Inc. and Underwriters’ Laboratories of Canada. Test report for labeled 45 minute fire-rated frame assemblies is UL file NO. R-12349. Frame tests performed in accordance with ASTM E283, ASTM E331 & ASTM E330. Approved for use in New York City, MEA# 151-91-M
FR4700
CASEMENT WINDOW
UL APPROVED AND CERTIFIED | UP TO 45 MINUTE FIRE-RATING

Optimum's multiple window and door series are used in non-temperature rise applications. Various glazing options can be modified to address most fire-rated applications.
FR4700
SELF-CLOSING OUT-SWING CASEMENT
UL APPROVED AND CERTIFIED | UP TO 45 MINUTE FIRE-RATING

MAXIMUM ALLOWABLE SINGLE CASEMENT SASH/VENT DIMENSIONS 36'' X 60''

A&B TYPICAL HINGED JAMM 1'' FIRE-RATED GLASS
C TYPICAL LOCKING JAMM 1'' FIRE-RATED GLASS
D TYPICAL MEETING RAIL 1'' FIRE-RATED GLASS
E&F TYPICAL HEAD & SILL 1'' FIRE-RATED GLASS

MAXIMUM ALLOWABLE DOUBLE CASEMENT DIMENSIONS 72'' X 60''

G TYPICAL VERTICAL MUNTIN 1'' FIRE-RATED GLASS
H TYPICAL HORIZONTAL MUNTIN 1'' FIRE-RATED GLASS
I&J TYPICAL FIXED HEAD & SILL 1'' FIRE-RATED GLASS
K&L TYPICAL FIXED JAMM 1'' FIRE-RATED GLASS

INTERIOR
EXTERIOR
INTERIOR
EXTERIOR
INTERIOR
EXTERIOR
INTERIOR
EXTERIOR
INTERIOR
EXTERIOR
FR4700
SELF-CLOSING OUT-SWING CASEMENT
UL APPROVED AND CERTIFIED | UP TO 45 MINUTE FIRE-RATING

M TYPICAL HEAD W/ TRANSOM
1" FIRE-RATED GLASS

M TYPICAL STACKING MULLION
1" FIRE-RATED GLASS

N TYPICAL JAMB W/ SIDELITE
1" FIRE-RATED GLASS

N TYPICAL MULLION

1 TYPICAL JAMB INTERIOR FLANGE
1" FIRE-RATED GLASS

2 TYPICAL JAMB EXTERIOR FLANGE
1" FIRE-RATED GLASS

3 TYPICAL FIXED JAMB EXTERIOR FLANGE
1" FIRE-RATED GLASS

FIRE-RATED WINDOWS & DOORS

OPTIMUMWINDOW.COM
FR6000 / FR55
FIXED WINDOW

45 minute to 90 minute rating
All Cold-Rolled sections are formed from GALVANIZED STEEL
UL (Underwriters Laboratories) Listed and Certified
2 1/2" exterior frame depth
Frames are coped and mechanically assembled
Mitered, corner keyed frame and sash joinery
Glazing is held in place via mechanically fastened steel glazing beads
Can accommodate glazing ranging from 3/16” to 1” in O.A. thickness
Insulated glazing available for this series
All FR6000 windows will be factory glazed
Uniformed sight lines
Standard Optimum Window colors (refer to OWM color chart)
Units can be supplied with installation straps

OPTIONS
RAL colors available as option & available upon request
Non-metallic color matches are optional & available upon request
Steel Break Metal trim
Clear fire-rated glass/wireless
Insulated glass
Applied flat grids
Monolithic Glazing Available

UL APPROVED AND CERTIFIED
45 MINUTE FIRE-RATED WHEN GLAZED WITH 1/4” WIRE GLASS
90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16” CERAMIC & FIRE-RATED GLAZING TAPE

GENERAL TEST RESULTS & DIMENSIONAL LIMITATIONS

<table>
<thead>
<tr>
<th>HOUR RATING</th>
<th>MINIMUM FRAME DIM.</th>
<th>MAXIMUM FRAME DIM.</th>
<th>(Ar) ASTM E283 @ 6.25psf</th>
<th>(Water) ASTM E331 @ 5.0gph / ft²</th>
<th>Uniform Design Load ASTM E330</th>
<th>MAXIMUM VENT DIM.</th>
<th>MAXIMUM WIRE GLASS DIM.</th>
<th>MAXIMUM SAFETY GLASS DIM.</th>
<th>MAXIMUM CERAMIC GLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2</td>
<td>n/a</td>
<td>n/a</td>
<td>.03 cfm / ft²</td>
<td>WTP @ 12.00 psf</td>
<td>60 psf</td>
<td>n/a</td>
<td>n/a</td>
<td>2,627 In²</td>
<td>4,515 In²</td>
</tr>
<tr>
<td>1</td>
<td>n/a</td>
<td>n/a</td>
<td>.03 cfm / ft²</td>
<td>no</td>
<td>interior</td>
<td>n/a</td>
<td>n/a</td>
<td>3,325 In²</td>
<td>4,515 In²</td>
</tr>
<tr>
<td>3/4</td>
<td>18” x 18”</td>
<td>69” x 120”</td>
<td>.03 cfm / ft²</td>
<td>leakage</td>
<td>exterior</td>
<td>n/a</td>
<td>1296 sq in</td>
<td>optional</td>
<td>n/a</td>
</tr>
</tbody>
</table>

*NOTE: TEST SPECIMEN SIZE 48” X 96”*

THERMAL PERFORMANCE VALUE CHART FOR FIRE-RATED PRODUCTS THAT HAVE BEEN SIMULATED

<table>
<thead>
<tr>
<th>WINDOW TYPE</th>
<th>“U” VALUE</th>
<th>“SHGC”</th>
<th>“CR”</th>
<th>“VT”</th>
<th>GLASS CONFIGURATION THAT MEETS THE NYCECC (NYC ENERGY CONSERVATION CODE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR6000 / FR55</td>
<td>0.47 BTU/hr/ft² /°F</td>
<td>0.40 BTU/hr/ft² /°F</td>
<td>22</td>
<td>0.46</td>
<td>1” I.G.U. [1/4” Wire Glass [R.W.G. or P.W.G.] over 3/16” Pilkington Solar E [A type of hard coat LoE] Glass]</td>
</tr>
<tr>
<td></td>
<td>0.47 BTU/hr/ft² /°F</td>
<td>0.40 BTU/hr/ft² /°F</td>
<td>22</td>
<td>0.46</td>
<td>1” I.G.U [3/16” Polished Ceramic Glass or 3/16” Polished Safety Ceramic Glass w/ Surface Applied Film over 3/16” Pilkington Solar E [A type of hard coat LoE] Glass]</td>
</tr>
<tr>
<td></td>
<td>0.46 BTU/hr/ft² /°F</td>
<td>0.40 BTU/hr/ft² /°F</td>
<td>23</td>
<td>0.45</td>
<td>1” I.G.U [5/16” Polished Safety Laminated Ceramic Glass over 3/16” Pilkington Solar E [A type of hard coat LoE] Glass]</td>
</tr>
</tbody>
</table>

SHGC: Solar Heat Gain Coefficient  CR: Condensation Resistance  VT: Visible Transmittance

LISTINGS
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FR6000 / FR55
FIXED WINDOW

UL APPROVED AND CERTIFIED
45 MINUTE FIRE-RATED WHEN GLAZED WITH 1/4" WIRE GLASS
90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16" CERAMIC & FIRE-RATED GLAZING TAPE

OPTIONAL FLANGE FRAME

1. TYPICAL FIXED INTERIOR FLANGE

INTERIOR

A

B

C

D

2 3/16"

2 9/16"

EXTERIOR

2. TYPICAL FIXED EXTERIOR FLANGE

INTERIOR

A

B

C

D

2 3/16"

2 9/16"

EXTERIOR

KEY (TYPICAL)

1. MECHANICALLY FASTENED STEEL GLAZING BEAD
2. FOAM GLAZING TAPE
3. FIRE-RATED GLASS AND GLAZING
4. SILICONE CAP BEAD

OPTIMUMWINDOW.COM
FR6000 / FR55

FIXED

UL APPROVED AND CERTIFIED

45 MINUTE FIRE-RATED WHEN GLAZED WITH 1/4" WIRE GLASS
90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16" CERAMIC & FIRE-RATED GLAZING TAPE

A  TYPICAL LEFT JAMB 1" FIRE-RATED GLASS
B  TYPICAL RIGHT JAMB 1" FIRE-RATED GLASS
C  TYPICAL FIXED HEAD 1" FIRE-RATED GLASS
D  TYPICAL FIXED SILL 1" FIRE-RATED GLASS

OPTIMUMWINDOW.COM
E  TYPICAL VERTICAL MUNTIN 1" FIRE-RATED GLASS

F  TYPICAL HORIZONTAL MUNTIN 1" FIRE-RATED GLASS

G  TYPICAL STACKING MULLION 1" FIRE-RATED GLASS

H  TYPICAL JOINING MULLION 1" FIRE-RATED GLASS
**FR7650TDH**

**SELF-CLOSING DOUBLE HUNG WINDOW**

- **45 minute rating w/ Wire Glass; 90 minute rating w/ Ceramic Glazing**
- All Cold-Rolled sections are formed from **GALVANIZED STEEL**
- UL (Underwriters Laboratories) Listed and Certified
- EPDM and Silicone Pile Weather-Stripping
- Frames are coped and mechanically assembled
- 4 ¼" exterior frame depth
- Glazing is held in place via mechanically fastened steel glazing beads
- Can accommodate glazing ranging from 3/16" to 3/4" in O.A. thickness
- Insulated glazing available
- All FR7650TDH windows will be factory glazed
- 1 Sweep lock at center of sash up to 30”, two sweep locks thereafter 2
- Lift handles per lower sash
- Balances are calibrated based upon sash weight and height
- Standard Optimum Window colors (refer to OWM color chart)
- Units can be supplied with installation straps

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**UL APPROVED AND CERTIFIED**

45 MINUTE FIRE-RATED WHEN GLAZED WITH 1/4" WIRE GLASS
90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16" CERAMIC & FIRE-RATED GLAZING TAPE

**GENERAL TEST RESULTS & DIMENSIONAL LIMITATIONS**

<table>
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<tr>
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<th>MINIMUM FRAME DIM.</th>
<th>MAXIMUM FRAME DIM.</th>
<th>(Air) ASTM E283 @ 6.25 psf</th>
<th>(Water) ASTM E331 @ 6.75 psf</th>
<th>Uniform Design Load ASTM E530</th>
<th>MAXIMUM VENT DIM.</th>
<th>MAXIMUM WIRE GLASS DIM.</th>
<th>MAXIMUM SAFETY GLASS</th>
<th>MAXIMUM CERAMIC GLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1/2</td>
<td>20&quot; x 30&quot;</td>
<td>56 ½&quot; x 120&quot;</td>
<td>.33 cfm / ft²</td>
<td>WTP @ 6.75 psf</td>
<td>90 psf</td>
<td>52&quot; x 56&quot;</td>
<td>n/a</td>
<td>optional</td>
<td>4,515 In²</td>
</tr>
<tr>
<td>1</td>
<td>20&quot; x 30&quot;</td>
<td>56 ½&quot; x 120&quot;</td>
<td>.33 cfm / ft²</td>
<td>no</td>
<td>interior</td>
<td>52&quot; x 56&quot;</td>
<td>n/a</td>
<td>optional</td>
<td>4,515 In²</td>
</tr>
<tr>
<td>3/4</td>
<td>20&quot; x 30&quot;</td>
<td>66&quot; x 126&quot;</td>
<td>.33 cfm / ft²</td>
<td>leakage</td>
<td>exterior</td>
<td>62&quot; x 59&quot;</td>
<td>1,296 sq in</td>
<td>optional</td>
<td>4,515 In²</td>
</tr>
</tbody>
</table>

**Options**
- RAL colors available as option
- Non-metallic color matches are optional & available upon request
- Steel Break Metal trim
- Half screens for operable sash is available
- Limited Stops are available (option)
- Monolithic Glazing Available

**LISTINGS**

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**THERMAL PERFORMANCE VALUE CHART FOR FIRE-RATED PRODUCTS THAT HAVE BEEN SIMULATED**

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<th>WINDOW TYPE</th>
<th>“U” VALUE</th>
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<th>“CR”</th>
<th>“VT”</th>
<th>GLASS CONFIGURATION THAT MEETS THE NYCECC (NYC ENERGY CONSERVATION CODE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.50</td>
<td>0.35</td>
<td>24</td>
<td>0.39</td>
<td>3/4&quot; I.G.U (3/16&quot; Polished Ceramic Glass or 3/16&quot; Polished Safety Ceramic Glass w/ Surface Applied Film over 3/16&quot; Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
<tr>
<td></td>
<td>0.52</td>
<td>0.34</td>
<td>24</td>
<td>0.38</td>
<td>3/4&quot; I.G.U (5/16&quot; Polished Safety Laminated Ceramic Glass over 3/16&quot; Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
</tbody>
</table>

**SHGC:** Solar Heat Gain Coefficient  **CR:** Condensation Resistance  **VT:** Visible Transmittance
FR7650TDH
SELF-CLOSING DOUBLE HUNG
UL APPROVED AND CERTIFIED
45 MINUTE FIRE-RATED WHEN GLAZED WITH 1/4" WIRE GLASS
90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16" CERAMIC & FIRE-RATED GLAZING TAPE

Windows with a width over 36" will receive 2 handles and 2 sweep locks.
Windows with a width of 24"-36" will receive 2 handles and 1 sweep lock.
FR7650TDH
SELF-CLOSING DOUBLE HUNG
UL APPROVED AND CERTIFIED
45 MINUTE FIRE-RATED WHEN GLAZED WITH 1/4" WIRE GLASS
90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16" CERAMIC & FIRE-RATED GLAZING TAPE

A & B TYPICAL JAMB
3/4" FIRE-RATED GLASS

C TYPICAL HEAD
3/4" FIRE-RATED GLASS

D TYPICAL MEETING RAIL
3/4" FIRE-RATED GLASS

E TYPICAL SILL
3/4" FIRE-RATED GLASS

F & G TYPICAL MUNTIN
3/4" FIRE-RATED GLASS

H TYPICAL MULLION
1/4" FIRE-RATED GLASS

K & L TYPICAL TRANSOM HEAD & SILL
3/4" FIRE-RATED GLASS

M & N TYPICAL TRANSOM JAMB
3/4" FIRE-RATED GLASS

TYPICAL STACKING MULLION WITH LOWER TRANSOM
3/4" FIRE-RATED GLASS

TYPICAL STACKING MULLION WITH UPPER TRANSOM
3/4" FIRE-RATED GLASS

TYPICAL MEETING RAIL

TYPICAL SILL

TYPICAL HEAD

TYPICAL JAMB

TYPICAL MUNTIN

TYPICAL MULLION

TYPICAL TRANSOM HEAD & SILL

TYPICAL TRANSOM JAMB

INTERIOR

EXTERIOR

INTERIOR

EXTERIOR

INTERIOR

EXTERIOR

INTERIOR

EXTERIOR

INTERIOR

EXTERIOR

INTERIOR

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FR7650TSH

SELF-CLOSING SINGLE HUNG WINDOW

UL APPROVED AND CERTIFIED
45 MINUTE FIRE-RATED WHEN GLAZED WITH 1/4" WIRE GLASS
90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16" CERAMIC & FIRE-RATED GLAZING TAPE

45 minute rated with Wire Glass; 90 minute rated w/ Ceramic Glazing

All Cold-Rolled sections are formed from GALVANIZED STEEL
UL (Underwriters Laboratories) Listed and Certified
EPDM and Silicone Pile Weather-Stripping
Frames are coped and mechanically assembled
4 1/4” exterior frame depth
Glazing is held in place via mechanically fastened steel glazing beads
Can accommodate glazing ranging from 3/16” to 3/4” in O.A. thickness
Insulated glazing available for this series
All FR7650TSH windows will be factory glazed
1 Sweep lock at center of sash up to 30”, two sweep locks thereafter 2
Lift handles per lower sash
Balances are calibrated based upon sash weight
Standard Optimum Window colors (refer to OWM color chart)

Units can be supplied with installation straps

GROUP PERFORMANCE VALUE CHART FOR FIRE-RATED PRODUCTS THAT HAVE BEEN SIMULATED

<table>
<thead>
<tr>
<th>WINDOW TYPE</th>
<th>“U” VALUE</th>
<th>“SHGC”</th>
<th>“CR”</th>
<th>“VT”</th>
<th>GLASS CONFIGURATION THAT MEETS THE NYCECC (NYC ENERGY CONSERVATION CODE)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.50</td>
<td>0.35</td>
<td>24</td>
<td>0.39</td>
<td>3/4” I.G.U (3/16” Polished Ceramic Glass or 3/16” Polished Safety Ceramic Glass w/ Surface Applied Film over 3/16” Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
<tr>
<td></td>
<td>0.52</td>
<td>0.34</td>
<td>24</td>
<td>0.38</td>
<td>3/4” I.G.U (5/16” Polished Safety Laminated Ceramic Glass over 3/16” Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
</tbody>
</table>

SHGC: Solar Heat Gain Coefficient  CR: Condensation Resistance  VT: Visible Transmittance

LISTINGS
Listed and labeled by Underwriters Laboratories Inc. and Underwriters’ Laboratories of Canada. Test report for labeled 20/45/60/90 minute fire-rated frame assemblies is UL file NO. R-12349. Frame tests performed in accordance with ASTM E283, ASTM E331 & ASTM E330. Approved for use in New York City, MEA# 151-
FR7650TSH

SELF-CLOSING SINGLE HUNG WINDOW
UL APPROVED AND CERTIFIED

45 MINUTE FIRE-RATED WHEN GLAZED WITH 1/4" WIRE GLASS
90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16" CERAMIC & FIRE-RATED GLAZING TAPE

Windows with a width over 36" will receive 2 handles and 2 sweep locks
Windows with a width of 24"-36" will receive 2 handles and 1 sweep lock
FR7650TSH

SELF-CLOSING SINGLE HUNG

UL APPROVED AND CERTIFIED

45 MINUTE FIRE-RATED WHEN GLAZED WITH 1/4" WIRE GLASS
90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16" CERAMIC & FIRE-RATED GLAZING TAPE

G TYPICAL SILL
3/4" FIRE-RATED GLASS

H & I TYPICAL TRANSOM JAMB
3/4" FIRE-RATED GLASS

J TYPICAL TRANSOM HEAD
3/4" FIRE-RATED GLASS

K TYPICAL TRANSOM SILL
3/4" FIRE-RATED GLASS

L TYPICAL JOINING MULLION
3/4" FIRE-RATED GLASS
FR7650TSH

SELF-CLOSING SINGLE HUNG
UL APPROVED AND CERTIFIED
45 MINUTE FIRE-RATED WHEN GLAZED WITH 1/4" WIRE GLASS
90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16" CERAMIC & FIRE-RATED GLAZING TAPE

M  TYPICAL VERTICAL MUNTIN
  3/4" FIRE-RATED GLASS

N  TYPICAL HORIZONTAL MUNTIN
  3/4" FIRE-RATED GLASS

O  TYPICAL STACKING MULLION W/ TRANSOM ABOVE
  3/4" FIRE-RATED GLASS

P  TYPICAL STACKING MULLION W/ TRANSOM BELOW
  3/4" FIRE-RATED GLASS

FIRE-RATED GLASS AND GLAZING (BY OWM)
MECHANICALLY FASTENED STEEL GLAZING BEAD
BALANCER
INSTALLATION PLATE
WEATHER-STRIPPING
FOAM GLAZING TAPE (BY OWM)
SILICONE CAP BEAD (BY OWM)
FR8600
PROJECTED WINDOW
UL APPROVED AND CERTIFIED
45 MINUTE FIRE-RATED WHEN GLAZED WITH 1/4" WIRE GLASS

45 minute fire-rating
All Cold-Rolled sections are formed from GALVANIZED STEEL
UL [Underwriters Laboratories] Listed and Certified
EPDM and Silicone Pile Weather-Stripping
Mitered, corner keyed frame and sash joinery
2 3/16” exterior frame depth
Glazing is held in place via mechanically fastened steel glazing beads
Can accommodate glazing ranging from 3/16” to 1” in O.A. thickness
Insulated glazing available for this series
All FR8600 Projected windows will be factory glazed
1 cam lock at center of sash up to 34”, two cam locks thereafter

Standards Optimum Window colors (refer to OWM color chart)

General Test Results & Dimensional Limitations

<table>
<thead>
<tr>
<th>HOUR RATING</th>
<th>MINIMUM FRAME DIM.</th>
<th>MAXIMUM FRAME DIM.</th>
<th>(Air) ASTM E283 @ 6.25psf</th>
<th>(Water) ASTM E331 @ 5.0gph / ft2</th>
<th>Uniform Load ASTM E330</th>
<th>MAXIMUM VENT DIM.</th>
<th>MAXIMUM WIRE GLASS DIM.</th>
<th>MAXIMUM SAFETY GLASS</th>
<th>MAXIMUM CERAMIC GLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4</td>
<td>20” x 30”</td>
<td>54” x 120”</td>
<td>.27 cfm / ft2</td>
<td>WTP @ 2.86 psf</td>
<td>60 psf</td>
<td>54” x 48”</td>
<td>1,296 sq in</td>
<td>optional</td>
<td>2,096 sq in</td>
</tr>
</tbody>
</table>

Thermal Performance Value Chart for Fire-Rated Products that Have Been Simulated

<table>
<thead>
<tr>
<th>WINDOW TYPE</th>
<th>“U” VALUE</th>
<th>“SHGC”</th>
<th>“CR”</th>
<th>“VT”</th>
<th>GLASS CONFIGURATION THAT MEETS THE NYCECC (NYC ENERGY CONSERVATION CODE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR8600 (Single Projected Vent Only)</td>
<td>0.61</td>
<td>0.32</td>
<td>23</td>
<td>0.34</td>
<td>1&quot; I.G.U. (1/4&quot; Wire Glass [R.W.G. or P.W.G.] over 3/16” Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
<tr>
<td></td>
<td>0.61</td>
<td>0.32</td>
<td>23</td>
<td>0.34</td>
<td>1&quot; I.G.U (3/16” Polished Ceramic Glass or 3/16” Polished Safety Ceramic Glass w/ Surface Applied Film over 3/16” Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
<tr>
<td></td>
<td>0.61</td>
<td>0.31</td>
<td>23</td>
<td>0.34</td>
<td>1&quot; I.G.U (5/16” Polished Safety Laminated Ceramic Glass over 3/16” Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
<tr>
<td>FR8600 (Project-In / Fixed Unit)</td>
<td>0.54</td>
<td>0.36</td>
<td>23</td>
<td>0.40</td>
<td>1&quot; I.G.U (1/4” Wire Glass [R.W.G. or P.W.G.] over 3/16” Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
<tr>
<td></td>
<td>0.54</td>
<td>0.36</td>
<td>23</td>
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<td>1&quot; I.G.U (3/16” Polished Ceramic Glass or 3/16” Polished Safety Ceramic Glass w/ Surface Applied Film over 3/16” Pilkington Solar E [A type of hard coat LoE] Glass)</td>
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<td></td>
<td>0.54</td>
<td>0.35</td>
<td>23</td>
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</tr>
<tr>
<td>FR8600 (Project-Out / Fixed Unit)</td>
<td>0.53</td>
<td>0.35</td>
<td>21</td>
<td>0.40</td>
<td>1&quot; I.G.U (1/4” Wire Glass [R.W.G. or P.W.G.] over 3/16” Pilkington Solar E [A type of hard coat LoE] Glass)</td>
</tr>
<tr>
<td></td>
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<td>0.35</td>
<td>21</td>
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</tr>
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SHGC: Solar Heat Gain Coefficient  CR: Condensation Resistance  VT: Visible Transmittance

* NOTE: TEST SPECIMEN SIZE 48” X 96”

Listings
Listed and labeled by Underwriters Laboratories Inc. and Underwriters’ Laboratories of Canada. Test report for labeled 45 minute fire-rated frame assemblies is UL file NO. R-12349. Frame tests performed in accordance with ASTM E283, ASTM E331 & ASTM E330. Approved for use in New York City, MEA# 151-91-M
Windows with a width over 34" will receive 2 handles and 2 keepers.

Windows with a width under 34" will receive 1 handle and 1 keeper.

All units restricted to open 4"
FR8600
PROJECTED WINDOW
UL APPROVED AND CERTIFIED

1. TYPICAL JAMB INTERIOR FLANGE
   1" FIRE-RATED GLASS

2. TYPICAL JAMB EXTERIOR FLANGE
   1" FIRE-RATED GLASS

3. TYPICAL FIXED INTERIOR FLANGE
   1" FIRE-RATED GLASS

4. TYPICAL FIXED EXTERIOR FLANGE
   1" FIRE-RATED GLASS

KEY (TYPICAL)

- WHITE BRONZE SINGLE POINT FASTENER WITH KEEPER
- MECHANICALLY FASTENED STEEL GLAZING BEAD
- WEATHER-STRIPPING
- FOAM GLAZING TAPE (BY OWM)
- STAINLESS STEEL 4 BAR HINGE
- SILICONE CAP BEAD (BY OWM)
- SELF-CLOSING MECHANISM
- FIRE-RATED GLASS AND GLAZING (BY OWM)
FR7600TSS
SELF-CLOSING SINGLE SLIDER
UL APPROVED AND CERTIFIED | 45 MINUTE FIRE-RATED

45 minute fire-rating
All Cold-Rolled sections are formed from GALVANIZED STEEL
UL (Underwriters Laboratories) Listed and Certified
3 3/4” exterior frame depth
EPDM and Silicone Pile Weather-Stripping
Frames are coped and mechanically assembled
Glazing is held in place via mechanically fastened steel glazing beads
Can accommodate glazing ranging from 3/16” to 3/4” in O.A. thickness
Insulated glazing available for this series
All FR7600 TSS windows will be factory glazed
1 Sweep lock at center of sash up to 36”, two sweep locks thereafter
1 Self Latching Lock
Standard Optimum Window colors (refer to OWM color chart)

Units can be supplied with installation straps

GENERAL TEST RESULTS & DIMENSIONAL LIMITATIONS

<table>
<thead>
<tr>
<th>HOUR RATING</th>
<th>MINIMUM FRAME DIM.</th>
<th>MAXIMUM FRAME DIM.</th>
<th>[Air] ASTM E283 @ 6.25psf</th>
<th>(Water) ASTM E331 @ 5.0gph / ft²</th>
<th>Uniform Design Load ASTM E330</th>
<th>MAXIMUM VENT DIM.</th>
<th>MAXIMUM WIRE GLASS DIM.</th>
<th>MAXIMUM SAFETY GLASS DIM.</th>
<th>MAXIMUM CERAMIC GLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4</td>
<td>30” x 20”</td>
<td>72” x 72”</td>
<td>.25 cfm / ft²</td>
<td>WTP @ 2.86psf</td>
<td>60psf</td>
<td>36” x 68”</td>
<td>1,296 sq in</td>
<td>optional</td>
<td>4,515 In²</td>
</tr>
</tbody>
</table>

*NOTE: TEST SPECIMEN SIZE 48” X 96”

SHGC: Solar Heat Gain Coefficient  CR: Condensation Resistance  VT: Visible Transmittance

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FR7600TSS
SELF-CLOSING SINGLE SLIDER
UL APPROVED AND CERTIFIED | 45 MINUTE FIRE-RATED

A TYPICAL LEFT JAMB 3/4" FIRE-RATED GLASS
B TYPICAL RIGHT JAMB 3/4" FIRE-RATED GLASS
C TYPICAL MEETING RAIL 3/4" FIRE-RATED GLASS
D TYPICAL HEAD 3/4" FIRE-RATED GLASS
FR7600TSS
SELF-CLOSING SINGLE SLIDER
UL APPROVED AND CERTIFIED | 45 MINUTE FIRE-RATED

E  TYPICAL SILL
3/4" FIRE-RATED GLASS

F & G  TYPICAL TRANSOM HEAD & SILL
3/4" FIRE-RATED GLASS

H & I  TYPICAL TRANSOM JAMB
3/4" FIRE-RATED GLASS

J  TYPICAL JOINING MULLION
3/4" FIRE-RATED GLASS

K  TYPICAL HORIZONTAL MUNTIN
3/4" FIRE-RATED GLASS

L  TYPICAL VERTICAL MUNTIN
3/4" FIRE-RATED GLASS

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SELF-CLOSING SINGLE SLIDER
UL APPROVED AND CERTIFIED | 45 MINUTE FIRE-RATED

FR7600TSS

M  TYPICAL STACKING MULLION W/ TRANSOM ABOVE
3/4" FIRE-RATED GLASS

N  TYPICAL STACKING MULLION W/ TRANSOM BELOW
3/4" FIRE-RATED GLASS

O  TYPICAL JOINING MULLION
3/4" FIRE-RATED GLASS

OPTIMUMWINDOW.COM
FR55
SELF-CLOSING OUT-SWING DOOR
ULAPPROVED AND CERTIFIED
45 - 90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16" CERAMIC GLASS

45 min rating w/ Wire Glass; 90 min rating w/ Ceramic Glazing
All Cold Rolled sections are formed from GALVANIZED STEEL
UL (Underwriters Laboratories) Listed and Certified
EPDM and Silicone Pile Weather-Stripping
2 1/4" exterior frame depth
Glazing is held in place via mechanically fastened steel glazing beads
Can accommodate glazing ranging from 3/16" to 1" in O.A. thickness
Insulated glazing available for this series
All FR55 Fixed windows & doors will be factory glazed
Standard Optimum Window colors (refer to OWM color chart)
Units can be supplied with installation straps (upon request)
Fabricated in the United States of America

DOOR FEATURES
Mitered, corner keyed fully welded frame and sash joinery
Doors will arrive with fire resistant hinges and door closer

DOOR OPTIONS
RAL colors available as option
Non metallic color matches are optional & available upon request
Steel Break Metal trim

FIXED FEATURES
Mitered, corner keyed frame and sash joinery

FIXED OPTIONS
RAL colors available as option
Non metallic color matches are optional & available upon request
Steel Break Metal trim

Monolithic Glazing Available

OPTIMUMWINDOW.COM
SELF-CLOSING OUT-SWING DOOR
UL APPROVED AND CERTIFIED
45 - 90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16" CERAMIC GLASS

KEY (TYPICAL)

MECHANICALLY FASTENED STEEL GLAZING BEAD
WEATHER-STRIPPING
FOAM GLAZING TAPE (BY OWM)
SILICONE CAP BEAD (BY OWM)
STEEL WELDED HINGE
STAINLESS STEEL FLEX HANDLE

A TYPICAL LOCKING JAMB 1" FIRE-RATED GLASS

2 3/16" 5 3/16" 2 3/16" 5 3/16" 2 9/16"

EXTERIOR INTERIOR EXTERIOR INTERIOR EXTERIOR

B TYPICAL HINGED JAMB 1" FIRE-RATED GLASS

C TYPICAL MUNTIN 1" FIRE-RATED GLASS

2 3/16" 5 3/16" 2 3/16" 5 3/16" 2 9/16"
FR55
SELF-CLOSING OUT-SWING DOOR
UL APPROVED AND CERTIFIED
45 - 90 MINUTE FIRE-RATED WHEN GLAZED WITH 3/16" CERAMIC GLASS

D TYPICAL MUNTIN
EXTERIOR
INTERIOR
2 3/16"  2 3/16"  2 9/16"

E TYPICAL HEAD W/ DOOR CLOSURE
EXTERIOR
INTERIOR
2 3/16"  2 3/16"  5 3/16"

F TYPICAL KICKPLATE
EXTERIOR
INTERIOR
2 3/16"  5 1/2"  1/4"

G & H TYPICAL FIXED JAMB
EXTERIOR
INTERIOR

I & J TYPICAL FIXED HEAD & SILL
INTERIOR

K TYPICAL JOINING SIDELITE/DOOR
INTERIOR

L TYPICAL STACKING TRANSOM/DOOR
EXTERIOR
INTERIOR
LISTINGS
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GENERAL TEST
CONTACT:
28 CANAL ST  ELLENVILLE, NY 12428
845.647.1900
email: sales@optimumwindow.com
OptimumWindow.com

*Optimum Window reserves the right to modify and change specifications at its discretion.