Technical Glass Products
The Fireframes® Heat Barrier Series frames system provides a sleek, modern alternative to traditional hollow metal steel frames. Using narrow steel profiles, the Fireframes Heat Barrier Series frame system can incorporate a wide range of fire-rated glazing materials with glass sizes that surpass traditional fire-rated frame systems in aesthetics and performance. When combined with Pilkington Pyrostop® glass, the Fireframes Heat Barrier Series frame system doors and frames provide a barrier to radiant and conductive heat transfer.

Leveraging precise roll-forming technology, the system also allows full-lite doors for aesthetic or security reasons. Now fabricated in the United States, Fireframes Heat Barrier Series doors (with ratings of 60 and 90 minutes) and frames (with ratings of 60 minutes to 120 minutes) are classified and labeled with Underwriters Laboratories (UL) and Underwriters Laboratories Canada (ULC).

For specifications, photographs and additional information contact:

Technical Glass Products
8107 Bracken Place SE
Snoqualmie, WA 98065

Office: 800.426.0279
        425.396.8200
E-mail: sales@fireglass.com
Web: fireglass.com
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System Exploded Assembly

<table>
<thead>
<tr>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>ITEM</th>
<th>DESCRIPTION</th>
<th>ITEM</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PROFILE</td>
<td>6</td>
<td>FIRE-RATED GLASS</td>
<td>11</td>
<td>.</td>
</tr>
<tr>
<td>2</td>
<td>BEAD STUD</td>
<td>7</td>
<td>PROFILE, DOOR JAMB</td>
<td>12</td>
<td>PIVOT ASSEMBLY</td>
</tr>
<tr>
<td>3</td>
<td>PROFILE, DOOR JAMB &quot;Z&quot;</td>
<td>8</td>
<td>INTUMESCENT TAPE</td>
<td>13</td>
<td>GLAZING TAPE</td>
</tr>
<tr>
<td>4</td>
<td>.</td>
<td>9</td>
<td>GLAZING BEAD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>SETTING BLOCK</td>
<td>10</td>
<td>GASKET, NEOPRENE DOOR STOP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 1 - System Exploded View
### Material Key Chart

<table>
<thead>
<tr>
<th>Material</th>
<th>Required Material NOT PROVIDED With Fireframes Heat Barrier Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>ANCHOR FASTENER</td>
<td>As wall constructions vary widely in design, TGP does not provide perimeter fasteners (anchors). All frames are factory drilled to receive #12 flat head perimeter screws at approximately 18” on center.</td>
</tr>
<tr>
<td>CAP SEAL</td>
<td><strong>REQUIRED</strong> on all exterior applications, use a continuous silicone sealant. Select color to match frame.</td>
</tr>
<tr>
<td>DOOR STOPS</td>
<td>If elevation includes a door, a door stop is recommended to prevent damage to door and surrounding conditions.</td>
</tr>
<tr>
<td>FINISH SEALANT</td>
<td>Sealant installed into the interior and exterior perimeter cavity. Select color for sealant to match frame or as directed by project architect.</td>
</tr>
<tr>
<td>FIRESAFING</td>
<td>Intumescent sealant or firmly packed mineral wool must be installed in a continuous fashion between frame assembly and wall construction, being interrupted only by the perimeter anchor shims. Sealant manufacturers such as Tremco, Pemko and many others supply intumescent sealants.</td>
</tr>
<tr>
<td>GLAZING TAPE</td>
<td>Single or double sided adhesive, closed cell PVC glazing tape of any common brand available from your local glazing supply house. Refer to Glazing Specifications for glazing tape sizes, and Glazing Installation Instructions.</td>
</tr>
<tr>
<td>HEEL BEAD</td>
<td><strong>REQUIRED</strong> in exterior applications: apply a continuous bead of silicone sealant at all horizontal to vertical intersections in the glazing pocket, and a heel bead along the sill and 4” vertically up each jamb. Sealant must be installed between the glass edge and frame profile.</td>
</tr>
<tr>
<td>SHIMS</td>
<td>Perimeter shims at anchor locations are to be of hardwood (oak) or non-combustible (steel) materials. Plastic shims may not be used. TGP recommends a 3/8” (9.5 mm) caulk joint between frame and all wall conditions.</td>
</tr>
<tr>
<td>WALL CONDITION</td>
<td>Rated wall construction by other trades.</td>
</tr>
<tr>
<td>BEAD STUD</td>
<td>Glazing beads snap onto factory installed, steel bead studs at approximately 12” on center.</td>
</tr>
</tbody>
</table>

### Fasteners Provided With Fireframes Heat Barrier Series

<table>
<thead>
<tr>
<th>Material</th>
<th>Fasteners Provided With Fireframes Heat Barrier Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEAD STUD</td>
<td>Glazing beads snap onto factory installed, steel bead studs at approximately 12” on center.</td>
</tr>
</tbody>
</table>

### Components Provided With Fireframes Heat Barrier Series

<table>
<thead>
<tr>
<th>Material</th>
<th>Components Provided With Fireframes Heat Barrier Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>SETTING BLOCKS</td>
<td>6 mm calcium silicate, or hardwood, setting blocks shipped loose for field installation. Refer to Glazing Installation Instructions.</td>
</tr>
<tr>
<td>FIRE-RATED GLAZING MATERIAL</td>
<td>Refer to the Fire-Rated Glazing Options and Specifications, and Glazing Installation Instructions.</td>
</tr>
<tr>
<td>INTUMESCENT TAPE</td>
<td>Fire Rated Intumescent tape as supplied must be installed on the glass, or in the glazing pocket on the framing prior to glazing each opening.</td>
</tr>
<tr>
<td>MECHANICAL JOINT CONNECTOR</td>
<td>In the event of a mechanically joined frame, this clip inserts into the receiving end of the frame to be joined and fastens with provided screws. (Not used with exterior applications).</td>
</tr>
<tr>
<td>GLAZING BEAD</td>
<td>Snap-on glazing bead to hold glass in system.</td>
</tr>
</tbody>
</table>

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Figure 2 - Material Key Chart
General Information

This document is meant as a general description of typical installations. As such, it is the responsibility of the installer to ensure the window and doors are installed per the conditions that exist on any given project in accordance with these instructions and project drawings. TGP project drawings may detail modifications to the surrounding conditions required for a given project, (if architectural details or sketches were provided to TGP) and should be used in conjunction with these instructions. In the event of any conflict between these instructions and TGP project drawings, the TGP project drawings shall govern. TGP does not accept any warranty and / or liability for installations not in compliance with this document or other non-conforming use of the TGP products and / or system. Contact TGP with questions concerning these details as they apply to the particulars of a given project.

FEATURES

- Fabricated in the U.S.A.
- Narrow steel profiles
- Easy installation similar to typical storefront systems
- Frames supplied welded or “K-D” (knock-down) ready for installation
- Surface powder coated at the factory to match the desired color scheme
- Can incorporate large individual panes of Pilkington Pyrostop®
- Passes positive pressure test standards UL 10C.
- Variety of hardware available
- Listed as a transparent firewall

LISTINGS

- Classified and labeled by Underwriters Laboratories, Inc.® (UL) and Underwriters Laboratories of Canada (ULC)
- Test report number for labeled 60/90/120 minute fire-rated frame assemblies is UL File No. R-19207 design U533
- Frame tested in accordance with ASTM E-119, NFPA 251, UL 263, and UL 9.
- Approved for use in New York City, MEA# 242-00-M
## SIZING GUIDELINES

### GLASS SIZES

<table>
<thead>
<tr>
<th>Product</th>
<th>Application</th>
<th>Rating Minutes</th>
<th>Max. Exposed Area</th>
<th>Max. Exposed Width</th>
<th>Max. Exposed Height</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilkington Pyrostop®</td>
<td>Doors</td>
<td>45</td>
<td>3,724</td>
<td>2.40</td>
<td>41 - 5/8</td>
</tr>
<tr>
<td></td>
<td>Doors - Dbl. Egress</td>
<td>45</td>
<td>3,584</td>
<td>2.31</td>
<td>40 - 7/8</td>
</tr>
<tr>
<td></td>
<td>Transom/Sidelites/Windows</td>
<td>45</td>
<td>4,500</td>
<td>2.90</td>
<td>95 - 1/4</td>
</tr>
<tr>
<td>45-200 (19 mm)</td>
<td>Doors</td>
<td>60</td>
<td>3,724</td>
<td>2.40</td>
<td>41 - 5/8</td>
</tr>
<tr>
<td></td>
<td>Doors - Dbl. Egress</td>
<td>60</td>
<td>3,584</td>
<td>2.31</td>
<td>40 - 7/8</td>
</tr>
<tr>
<td></td>
<td>Transom/Sidelites/Windows/</td>
<td>60</td>
<td>5,616</td>
<td>3.62</td>
<td>96</td>
</tr>
<tr>
<td>60-101 (23 mm) or</td>
<td>Walls</td>
<td>60</td>
<td>7,442</td>
<td>4.80</td>
<td>96</td>
</tr>
<tr>
<td>60-201 (27 mm)</td>
<td>60</td>
<td>7,442</td>
<td>4.80</td>
<td>96</td>
<td>2,438</td>
</tr>
<tr>
<td>60-101 (23 mm)</td>
<td>Doors</td>
<td>90</td>
<td>3,724</td>
<td>2.40</td>
<td>41 - 5/8</td>
</tr>
<tr>
<td></td>
<td>Doors - Dbl. Egress</td>
<td>90</td>
<td>3,584</td>
<td>2.31</td>
<td>40 - 7/8</td>
</tr>
<tr>
<td>90-102 (37 mm)</td>
<td>Doors</td>
<td>120</td>
<td>3,730</td>
<td>2.41</td>
<td>111</td>
</tr>
<tr>
<td>120-202 (40 mm)</td>
<td>Walls</td>
<td>120</td>
<td>7,442</td>
<td>4.80</td>
<td>63</td>
</tr>
</tbody>
</table>

Note: IGUs consisting of the same monolithic Pilkington Pyrostop are limited by the same parameters.

### Fireframes ClearView® System

<table>
<thead>
<tr>
<th>Product</th>
<th>Rating Minutes</th>
<th>Max. Exposed Glass Area Per Piece</th>
<th>Max. Glass Width</th>
<th>Max. Glass Height</th>
<th>Min. Glass Width</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilkington Pyrostop®</td>
<td></td>
<td></td>
<td>Per Piece</td>
<td>Per Piece</td>
<td>Per Piece</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Square Inches</td>
<td>Square Meters</td>
<td>Inches</td>
<td>Millimeters</td>
</tr>
<tr>
<td>60-201 (27 mm)</td>
<td>60</td>
<td>7,442</td>
<td>4.80</td>
<td>63</td>
<td>1,600</td>
</tr>
<tr>
<td>120-108 (47 mm)</td>
<td>120</td>
<td>7,442</td>
<td>4.80</td>
<td>63</td>
<td>1,600</td>
</tr>
</tbody>
</table>

### ASSEMBLY AND DOOR SIZES

<table>
<thead>
<tr>
<th>DOORS</th>
<th>Rating (Minutes)</th>
<th>Max. Width (Inches)</th>
<th>Max. Width (Millimeters)</th>
<th>Max. Height (Inches)</th>
<th>Max. Height (Millimeters)</th>
<th>Max. Area (Sq. Feet)</th>
<th>Max. Area (Sq. Meters)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max door leaf size:</td>
<td>60</td>
<td>48 - 7/8</td>
<td>1,241</td>
<td>95 - 15/16</td>
<td>2,437</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Max door leaf size:</td>
<td>90</td>
<td>48 - 7/8</td>
<td>1,241</td>
<td>95 - 15/16</td>
<td>2,437</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

### DOOR WEIGHT

Fire Protection Doors may be heavier than Non-Rated Doors. Fire-rated doors prevent the spread of flames and smoke during a fire. To perform this function, they are typically heavier than non-rated doors, and may require greater force to open and close. The greater the level of fire protection the doors offer, the greater the operating forces can become. TGP fire “resistive” steel doors carry ratings of 60 and 90 minutes with temperature rise protection. This product acts as a barrier to heat transfer, i.e. like a cement block barrier wall. To accomplish this rating, the glass is rather thick (up to 1.5” thick) and the framing is insulated. Accordingly, the doors are heavy. Typical 60 or 90-minute rated doors are 310 and 425 pounds respectively. Issues such as HVAC and wind pressure loads effectively add to the weight. Therefore it is HIGHLY recommended that these doors use an electric power assist.
AMERICANS WITH DISABILITY ACT STANDARDS ON FIRE PROTECTION DOORS
If fire doors were required to meet A.D.A. (Americans with Disability Act) Standards, many would not open or close with adequate force to prevent passage of flames and smoke. Recognizing this special fire safety need, NFPA 101 (National Fire Protection Association) allows operational features for fire doors (opening forces, closing speeds, etc.) that are different than for non-fire-rated doors. These fire “protective” steel doors carry ratings from 20-90 minutes for fire protection. Heat transfer through the door is not an issue, so they are constructed without interior insulation.

CONVENTIONAL WOOD OR HOLLOW METAL DOORS IN FIREFRAMES HEAT BARRIER SERIES FRAMES
Conventional fire-rated wood or hollow metal doors can also be installed into TGP’s narrow profiled Fireframes Heat Barrier Series frame, but will require coordination with respect to preparation of door hardware. Prior to producing your shop drawings, TGP will need to evaluate relevant hardware schedule information.

When ordering wood or hollow metal doors, you must supply our engineering staff with the manufacturer, model number, fabrication templates, door handing and, if required, physical samples. If TGP must prepare special fabrication drawings to accommodate your hardware needs, your project lead time may be extended.
FIRE-RATED GLAZING OPTIONS

Technical Glass Products provides a complete line of Pilkington Pyrostop® fire-rated glazing options to complement the Fireframes Heat Barrier Series Frame System. Refer to your Technical Glass Products SpeciFIRE® Selection Guide, available from your sales representative or online at [www.fireglass.com](http://www.fireglass.com).

Please consult your Technical Glass Products sales representative to determine the best option for your application.

Pilkington Pyrostop® fire resistant glass, with fire-ratings up to 2 hours, offers up to a Level III bullet resistance rating. It can also be combined with other glazing products to achieve nearly any level of security protection. Fireframes Heat Barrier Framing system when combined with Pilkington Pyrostop® is classified and labeled by UL as a transparent wall; a fire resistive assembly that blocks the transfer of radiant heat during a fire.

<table>
<thead>
<tr>
<th>Manufacturer's Designation</th>
<th>Glazing Type</th>
<th>Application</th>
<th>Fire Rating (minutes)</th>
<th>Nominal Thickness</th>
<th>Weight - Pounds per Square Foot (approx.)</th>
<th>Daylight Transmission (approx.)</th>
<th>STC Rating (dB) (approx.)</th>
<th>UL-752 Bullet Resistance Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>60-101</td>
<td>Single</td>
<td>Interior</td>
<td>60</td>
<td>7/8” (23 mm)</td>
<td>10.86</td>
<td>87%</td>
<td>41</td>
<td></td>
</tr>
<tr>
<td>90-102</td>
<td>Single</td>
<td>Interior</td>
<td>90</td>
<td>1-7/16” (37 mm)</td>
<td>17.61</td>
<td>84%</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>120-104</td>
<td>IGU</td>
<td>Interior</td>
<td>120</td>
<td>2-1/8” (54 mm)</td>
<td>21.71</td>
<td>75%</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>120-108</td>
<td>Single</td>
<td>Interior</td>
<td>120</td>
<td>1-7/8” (47 mm)</td>
<td>21.92</td>
<td>81%</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>60-201</td>
<td>Single</td>
<td>Exterior</td>
<td>60</td>
<td>1-1/16” (27 mm)</td>
<td>12.90</td>
<td>86%</td>
<td>44</td>
<td>***Level I</td>
</tr>
<tr>
<td>60-261 or 60-361•</td>
<td>IGU</td>
<td>Exterior</td>
<td>60</td>
<td>1-5/8” (41 mm)</td>
<td>15.98</td>
<td>77%</td>
<td>44</td>
<td></td>
</tr>
<tr>
<td>120-201</td>
<td>Single</td>
<td>Exterior</td>
<td>120</td>
<td>2-7/16” (62 mm)</td>
<td>25.81</td>
<td>73%</td>
<td>46</td>
<td>***Level III</td>
</tr>
<tr>
<td>120-202</td>
<td>Single</td>
<td>Exterior</td>
<td>90 or 120</td>
<td>1-9/16” (40 mm)</td>
<td>18.64</td>
<td>86%</td>
<td>46</td>
<td>***Level II</td>
</tr>
<tr>
<td>120-262 or 120-362•</td>
<td>IGU</td>
<td>Exterior</td>
<td>90 or 120</td>
<td>2-3/8” (60 mm)</td>
<td>21.71</td>
<td>74%</td>
<td>46</td>
<td></td>
</tr>
</tbody>
</table>

Note:  
* Exterior IGU is available with Low E or Solar Control coating.  
** Doors Only.  
*** With Film. For filmed products, one dimension of the glass cannot exceed 60” (1.52m).
GLAZING SPECIFICATIONS
Closed cell 1/2" wide single or double sided adhesive PVC glazing tape of any common brand (available from your local glazing supply house) is recommended. See “Glazing Tape” on the Material Key Chart. Refer to tables below for glazing tape thickness required for specific glazing products.

<table>
<thead>
<tr>
<th>60-101 - 60 Minute Interior Window</th>
<th>60-201 - 60 Minute Interior Window</th>
<th>60-261 - 60 Minute Interior Window</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Image of 60-101 Glazing Tape" /></td>
<td><img src="image2" alt="Image of 60-201 Glazing Tape" /></td>
<td><img src="image3" alt="Image of 60-261 Glazing Tape" /></td>
</tr>
<tr>
<td>3/8&quot; [90mm]</td>
<td>3/8&quot; [90mm]</td>
<td>3/8&quot; [90mm]</td>
</tr>
<tr>
<td>3/8&quot; [8mm]</td>
<td>3/8&quot; [4.7mm]</td>
<td>3/8&quot; [8mm]</td>
</tr>
<tr>
<td>3/8&quot; [23mm]</td>
<td>3/8&quot; [27mm]</td>
<td>3/8&quot; [27mm]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>60-261 or 60-361 (Low-E) - 60 Minute Exterior Window</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image4" alt="Image of 60-261 Glazing Tape" /></td>
</tr>
<tr>
<td>3/8&quot; [90mm]</td>
</tr>
<tr>
<td>3/8&quot; [8mm]</td>
</tr>
<tr>
<td>3/8&quot; [6mm]</td>
</tr>
<tr>
<td>3/8&quot; [27mm]</td>
</tr>
<tr>
<td>3/8&quot; [41mm]</td>
</tr>
</tbody>
</table>

Figure 3a - 60 Minute Window Glazing Options
## General Information

<table>
<thead>
<tr>
<th>120-104 - 120 Minute Interior Window</th>
<th>120-104 - 120 Minute Interior Use Window, Single Side Glazing Bead</th>
<th>120-202 - 120 Minute Interior Window</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Diagram 120-104" /></td>
<td><img src="image2" alt="Diagram 120-104" /></td>
<td><img src="image3" alt="Diagram 120-202" /></td>
</tr>
<tr>
<td><strong>120-201 - 120 Minute Exterior Window</strong></td>
<td><strong>Bullet Resistant Level III</strong></td>
<td><strong>120-202 - 120 Minute Exterior Window</strong></td>
</tr>
<tr>
<td><img src="image4" alt="Diagram 120-201" /></td>
<td><img src="image5" alt="Diagram 120-201" /></td>
<td><img src="image6" alt="Diagram 120-202" /></td>
</tr>
<tr>
<td><strong>120-262 or 120-362 (Low-E)</strong></td>
<td><strong>120 Minute Exterior Window</strong></td>
<td><img src="image7" alt="Diagram 120-202" /></td>
</tr>
</tbody>
</table>

**Figure 3b - 120 Minute Window Glazing Options**
## General Information

<table>
<thead>
<tr>
<th>60-101 - 60 Minute Door Leaf</th>
<th>60-201 - 60 Minute Door Leaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>37/₆₄&quot; [95mm]</td>
<td>37/₆₄&quot; [95mm]</td>
</tr>
<tr>
<td>3/₄&quot; [20mm]</td>
<td>3/₄&quot; [20mm]</td>
</tr>
<tr>
<td>3/₄&quot; [20mm]</td>
<td>3/₄&quot; [20mm]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>90-102 - 90 Minute Door Leaf</th>
<th>120-202 - 90 Minute Door Leaf</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior doors only</td>
<td>with 120 minute exterior windows</td>
</tr>
<tr>
<td>27/₆₄&quot; [66mm]</td>
<td>27/₆₄&quot; [66mm]</td>
</tr>
<tr>
<td>1/₁₆&quot; [1.6mm]</td>
<td>1/₁₆&quot; [1.6mm]</td>
</tr>
<tr>
<td>1/₁₆&quot; [1.6mm]</td>
<td>1/₁₆&quot; [1.6mm]</td>
</tr>
</tbody>
</table>

![Figure 3c - Door Glazing Options](image)

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**Figure 3c - Door Glazing Options**
ARCHED TOP (RADIUS) FRAMES
Fireframes Heat Barrier Series window frames can be bent to custom requirements. Refer to Figures 4 and 5 for minimum bend radius for each frame profile.

Figure 4 Profiles

Figure 5 Arched Top Examples
SEGMENTED (ANGLED) FRAMES
For interior application, horizontals and glass may be angled up to a maximum of two degrees (2°) on either side of the shared vertical mullion.

60 Minute Fire Rated System
3 9/16" [90mm] Width Profiles

120 Minute Fire Rated System
4 5/16" [110 mm] Width Profiles

Figure 6 - Segmented Frames
HOW TO DETERMINE DOOR HANDING

Doors are always viewed and identified by the secure (lockable) side of the door (except for double egress). The non-lockable side is not secured and always available for emergency egress (panic exit).

**NOTE:**
- * The fixed leaf in a pair can be outfitted with either a manual or automatic flushbolt.
- ** Active/Active pairs of doors require exit devices be installed on both leafs.
- *** Double egress pair of doors are unsecured and require exit devices be installed on both leafs.

### General Information

<table>
<thead>
<tr>
<th>LH</th>
<th>Left Hand Single Door</th>
<th>RH</th>
<th>Right Hand Single Door</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>![Diagram](Egress Side)</td>
<td></td>
<td>![Diagram](Egress Side)</td>
</tr>
<tr>
<td></td>
<td>![Diagram](Lockable Side)</td>
<td></td>
<td>![Diagram](Lockable Side)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LHR</th>
<th>Left Hand Reverse Single Door</th>
<th>RHR</th>
<th>Right Hand Reverse Single Door</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>![Diagram](Egress Side)</td>
<td></td>
<td>![Diagram](Egress Side)</td>
</tr>
<tr>
<td></td>
<td>![Diagram](Lockable Side)</td>
<td></td>
<td>![Diagram](Lockable Side)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LHA Pair</th>
<th>Left Hand Active &amp; Right Hand Fixed Pair of Doors</th>
<th>RHA Pair</th>
<th>Right Hand Active &amp; Left Hand Fixed Pair of Doors</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Diagram](Egress Side)</td>
<td>![Diagram](Lockable Side)</td>
<td>![Diagram](Egress Side)</td>
<td>![Diagram](Lockable Side)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LHRA Pair</th>
<th>Left Hand Reverse Active &amp; Right Hand Reverse Fixed Pair of Doors</th>
<th>RHRA Pair</th>
<th>Right Hand Reverse Active &amp; Left Hand Reverse Fixed Pair of Doors</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Diagram](Egress Side)</td>
<td>![Diagram](Lockable Side)</td>
<td>![Diagram](Egress Side)</td>
<td>![Diagram](Lockable Side)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LHRA/RHRA Pair</th>
<th>Left Hand Reverse Active &amp; Right Hand Reverse Pair of Doors</th>
<th>Double Egress</th>
<th>Dual Left Hand Reverse Pair of Doors</th>
</tr>
</thead>
<tbody>
<tr>
<td>![Diagram](Egress Side)</td>
<td>![Diagram](Lockable Side)</td>
<td>![Diagram](Push Open)</td>
<td>![Diagram](Push Open)</td>
</tr>
</tbody>
</table>

**Figure 7 - Door Handing Chart**
DOOR HARDWARE CONFIGURATIONS AND HARDWARE OPTIONS

The Fireframes® Heat Barrier Series has been developed with narrow steel profiles which exceed traditional fire-rated frame systems in aesthetics and performance. TGP offers a complete line of select hardware options which have been fit- and function-tested for use with these profiles. Not all fire-rated hardware components available are compatible with TGP’s narrow profile systems. Should you request an item of hardware not standardly supplied by TGP, please forward all relevant information (manufacturer, model number, fabrication template and if required physical sample) to TGP for evaluation by our engineering staff, to determine if it can be supplied by TGP for use. Use of non-standard hardware may incur additional cost and lead time.

Compare door swing types (LH, RH, LHR, etc.) from the Door Handing Chart (in this manual) to the chart’s types to see available hardware standards and options for each door swing combination. For detailed hardware information refer to individual cut sheets available from Technical Glass Products.

<table>
<thead>
<tr>
<th>Door Swing Type</th>
<th>LH</th>
<th>RH</th>
<th>LHR</th>
<th>RHR</th>
<th>LHRA/RHRA (PAIR)</th>
<th>LHA (PAIR)</th>
<th>RHA (PAIR)</th>
<th>LHRA (PAIR)</th>
<th>RHRA (PAIR)</th>
<th>Manufacturer - Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door Bottom</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>Pemko – Automatically seals to floor when door is closed.</td>
</tr>
<tr>
<td>Smoke Seal</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>TGP – Double overlapping seal system provide effective seal against weather and smoke.</td>
</tr>
<tr>
<td>Perimeter Gaskets</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>TGP – Three pivots standard.</td>
</tr>
<tr>
<td></td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dorma – TS9315GSR, with integrated coordinator.</td>
</tr>
<tr>
<td></td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>LCN – 4040XP, with Trimco 3092 coordinator.</td>
</tr>
<tr>
<td>Exit Device and Latching</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>Trimco – Automatic. Latches fixed door leaf.</td>
</tr>
<tr>
<td>Electric Strike</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>RCI – With mortise lock only, not for use with exit devices.</td>
</tr>
<tr>
<td>Profile Lock Cylinder</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>TGP – Schlage C Keyway (with mortise locks only).</td>
</tr>
<tr>
<td>Magnetic Shear Lock</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>Securitron – SAM2-24 concealed mounting.</td>
</tr>
<tr>
<td>Concealed Power Transfer</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>Securitron – For use with electric options.</td>
</tr>
<tr>
<td>Power Supply</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td>○</td>
<td></td>
<td></td>
<td></td>
<td>Dorma or Von Duprin – Power for electric exit devices.</td>
</tr>
</tbody>
</table>

Figure 8 Hardware Configuration Chart
Recommended Guidelines

1. REVIEW CONTRACT DOCUMENTS
   Review architectural drawings, specifications, and approved TGP project drawings, installation instructions, and shipping lists to become thoroughly familiar with the project. The TGP project drawings take precedence and include specific details for your installation. These installation instructions are of a general nature and cover most conditions.

2. BUILDING CODES
   Due to the diversity in local, state / provincial, or federal laws and the codes that govern design and application of architectural products, it is the responsibility of the individual architect / owner and installer to assure that products selected for use on projects comply with all the applicable building codes and laws. Technical Glass Products exercises no control over the use or application of its products, glazing materials, and operating hardware and assumes no responsibility thereof. Compliance of TGP project drawings with applicable codes for a given project shall be the responsibility of the Buyer.

3. COORDINATION WITH OTHER TRADERS
   Coordinate with the general contractor any sequence with other trades which impact installation (i.e. fire proofing, back-up walls, partitions, ceilings, mechanical ducts, converters etc.) or in which installation may impact the work of adjacent trades.

4. INSTALLATION
   All materials are to be installed plumb and level.

5. BENCH MARKS
   All work should start from bench marks and/or column lines as established by the architectural drawings and the general contractor with guaranteed accuracy. Using these datum points and lines, determine:
   a. The plane of the wall in reference to offset lines provided on each floor;
   b. The finish floor lines in reference to bench marks on the outer building columns; and
   c. Mullion spacing from both ends of openings to prevent dimensional build-up of daylight opening.

6. SURROUNDING CONDITIONS
   Unless specifically contracted to do so, TGP does not draw or detail the project specific surrounding conditions. (The area of the building that surrounds the TGP framing) Coordination of adjacent material and construction tolerances to TGP’s systems must be facilitated by the installer. TGP recommends that a professional engineer review the project drawings to verify the structural integrity of the installation. Please contact TGP if you would like a quote for fully detailed project drawings including surrounding details and or Professional Engineering (PE) services.
   a. Coordination of adjacent material and construction tolerances to TGP’s systems may be facilitated by TGP as part of preparing project drawings, and these drawings may indicate acceptable tolerances for critical dimensions. The installer should verify that surrounding construction is in accordance with the approved project drawings. Do not accept rough opening dimensions less than shown on project drawings. It is assumed that the minimal joint dimensions shown on the TGP project drawings match the field conditions. A frame may fit within a given opening but sealants may not perform as detailed if a smaller sealant joint is installed. Expansion / contraction issues may also be compromised. IF THE JOINTS ARE SMALLER THAN THAT SHOWN ON THE TGP PROJECT DRAWINGS, DO NOT PROCEED. Notify the General Contractor that the conditions are not as detailed and wait for corrective work to be completed before starting this work.
b. The installer MUST notify and receive approval from TGP and the general contractor when conditions are not in accordance with approved project drawings and/or change any aspect of the structural performance of the Fireframes® system before making any modifications to the TGP-furnished material or making changes which are different from those shown on the TGP project drawings. These conditions include, but are not limited to, anchor placement/location, changes in adjacent materials the anchor is being connected to or changes to dimensional relationships between framing, anchors and connection to adjacent materials.

c. TGP must review and approve any changes required prior to the subcontractor installing any “corrective” work. These reviews may incur additional charges, which must be approved by the TGP customer prior to TGP’s review.

7. **FRAME CONSTRUCTION VARIES**
Depending on size restrictions, frames are shipped fully welded ready for installation or “K-D” (knock-down) to be assembled on site with mechanical joints.

8. **FASTENING**
Within the body of these instructions, “fastening” means any method of securing one part to another or to adjacent materials by means other than welding, adhering or using a mechanical fastener as shown on the approved details. Only those fasteners used within the system are specified in these instructions. Due to the varying perimeter conditions and performance requirements, perimeter and anchor fasteners are not specified in these instructions and are the responsibility of the installer.

9. **SEALANTS**
   a. Sealants must be compatible with all materials they are in contact with, including other sealant surfaces. Consult with sealant manufacturer for recommendations relative to joint size, shelf life, compatibility, cleaning/priming, tooling, adhesion, etc.
   b. The chemical compatibility and/or adhesion of all glazing materials and framing sealants with each other and with like materials used in glass and frame fabrication must be established by the installer. This is required on every project.
   c. If required by the project specifications, it is the responsibility of the glazing contractor to submit any documentation or samples from the sealant manufacturer indicating that glass and glazing material has been tested for chemical compatibility and / or adhesion with glazing sealants. This applies to all TGP materials in contact with any sealant. TGP will furnish samples of these materials upon request.
   d. The implementation of the test results is the responsibility of the installing contractor, and includes material performance and recommendations for primers and substrate preparation required to obtain adhesion.

10. **PERIMETER JOINTS**
Perimeter seals and/or expansion joints shown in these instructions and in the TGP project drawings are shown at nominal size. Actual dimensions may vary due to perimeter conditions and / or difference in metal temperature between the time of fabrication and the time of installation. Design and detailing have been based on a fabrication / installation temperature of 70° F (21° C). If extreme temperatures exist at time of installation, gaps between expansion members may require slight adjustment.
Typical Elevations – Windows

**Detail Legend:**
- 60 Minute Fire-Rating
- 120 Minute Fire-Rating

**Perimeter Anchors**
- Approximate anchor hole location

**Figure 9** Window and Corner Condition (Welded Joinery)
INTERIOR Application

**Figure 10** Window and Corner Condition (Welded Joinery)
EXTERIOR Application

**Figure 11** Mechanical Joinery Example
INTERIOR Application
Typical Section Details – Windows

NOTE: Install Frame Flange on the EXTERIOR of opening. Typical IGU shown.
Typical Section Details – Windows

Figure 14 - INTERIOR - 120 Minute Application

Figure 15 EXTERIOR 120 Minute Application

NOTE: Install Frame Flange on the EXTERIOR of opening. Typical IGU shown.
Typical Section Details – Windows

Figure 16 - INTERIOR 60 Minute Application

Figure 17 - EXTERIOR 60 Minute Application

Figure 18 - INTERIOR 120 Minute Application

Figure 19 - EXTERIOR 120 Minute Application

Figure 20 - 60 Minute Mechanical Joinery

Figure 21 - 120 Minute Mechanical Joinery
Typical Section Details – Corners

Figure 22 - Corner Details
Typical Elevations – Single Doors

Figure 23 Standalone Door

Figure 24 Standalone Door By Others (DBO)

Figure 25 Single Door with Sidelite and Transom

INTERIOR Application Shown
Typical Elevations – Door Pairs

Figure 26 Pair of Doors with Sidelite and Transom
INTERIOR Application Shown

Figure 27 Active/Active Pair

Figure 28 Active / Fixed Pair
Typical Elevations – Door Pairs

Figure 29  Double Egress Pair with Meeting Stile

Figure 30  Double Egress Pair with Center Mullion
Typical Section Details – Doors

Figure 31 - Standalone 60/90 Minute Door
Typical Section Details – Doors

Figure 32 - Door By Others in 90 mm Frame
Figure 33 - Door By Others in 100 mm Frame
Typical Section Details – Doors

Figure 34 - 60 Minute Frame Assembly with 60 Minute Door
Typical Section Details – Doors

Figure 35 - 120 Minute Frame Assembly with 90 Minute Door
In accordance with California Prop 65, products received from TGP may contain the required warning label (below) indicating that they may contain door hardware or other components known to cause cancer and reproductive harm. For more information, go to www.P65Warnings.ca.gov.