

# TEXAS DEPARTMENT OF INSURANCE

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## PRODUCT EVALUATION MU-12

Effective March 1, 2010

*The following product has been evaluated for compliance with the wind loads specified in the **International Residential Code (IRC)** and the **International Building Code (IBC)**. This product shall be subject to reevaluation **November 2013**.*

*This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.*

*This product evaluation is intended for use by those individuals who are following the design wind load criteria in Chapter 3 of the IRC and Section 1609 of the IBC. The design loads determined for the building or structure shall not exceed the design load rating specified for the products shown in the limitations section of this product evaluation. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Insurance Code, the Texas Administrative Code and the Texas Engineering Practice Act.*

**Mulled Window Assemblies for Series 4700 Aluminum Windows, Non-impact Resistant,**  
manufactured by:

**Alenco**  
**615 Carson Street**  
**Bryan, Texas 77801**  
**Telephone: (979) 779-7770**

will be acceptable in designated catastrophe areas along the Texas Gulf Coast when installed in accordance with the manufacturer's installation instructions and this product evaluation.

## PRODUCT DESCRIPTION

This evaluation report is for mulled window assemblies for Series 4700 aluminum windows manufactured by Alenco and currently listed in Texas Department of Insurance (TDI) product evaluation reports. The mulled window assemblies evaluated in this report are for non-impact resistant windows. The windows can be either factory mulled or field mulled.

**Applicable Alenco Window Products:** This evaluation report is applicable to the following window products listed in TDI evaluation reports:

Series 4710F Aluminum Single Hung Windows  
Series 4701F Aluminum Fixed Windows

The mulled assembly consists of individual window units that are secured to the structural mullions described in this evaluation report. The mullions can be installed vertically (for side by side units), horizontally (for stacked units) or both vertically and horizontally for mulled units with transoms.

**Substrate:** The mullion is secured directly to the rough opening of the window and can be attached to wood (minimum Southern Yellow Pine); cast-in-place or pre-cast concrete, or concrete masonry block substrates.

The frames of the window units are secured to the extruded aluminum mullion tube (Mullion #11090) using minimum No. 8 screws. The minimum required size and spacing of the fasteners is as described in on the drawings. Extruded aluminum mullion clips (#11087) are used to secure the aluminum mullion tube to the wall framing. An extruded aluminum mullion clip (#11091) is used to secure a vertical mullion to a horizontal mullion.

**Mullion Components:**

**Mullion:** Aluminum mullion. Part No. 11090. Manufactured from 6063-T6 aluminum. The mullion is  $2\frac{7}{8}$ " long,  $1\frac{1}{16}$ " wide, and has a wall thickness of  $\frac{1}{16}$ ".

**Mullion Clip:** Mullion anchor bracket (T Clip). Part No. 11091. Manufactured from 6063-T6 aluminum. The dimensions are 4" x 1.6875". This mullion clip is used to secure the vertical aluminum mullion to the horizontal aluminum mullion.

**Mullion Clip:** Mullion anchor bracket (mullion clip). Part No. 11087. Manufactured from 6063-T6 aluminum. The dimensions are 3.4375" x 2.625". This mullion clip is used to secure the vertical aluminum mullion to the wall framing.

### LIMITATIONS

**Design Drawings:** The mulled window assembly shall be constructed and installed in accordance with the following design drawings:

- Drawing No. ALEN0023, sheet 1 through 1, titled *Series 4700 Twinning Vertical Mullion-Mullion Installation Details*, dated July 6, 2009, signed, sealed, and dated by Robert James Amoruso, PE. on July 6, 2009. The stated drawings will be referred to as "Approved Drawings" in this evaluation report. A copy of the approved drawings shall be available at the job site.
- Drawing No. ALEN0024, sheet 1 through 1, titled *Series 4700 Standard Fin Horizontal Mullion-Mullion Installation Details*, dated July 6, 2009, signed, sealed, and dated by Robert James Amoruso, PE. on July 6, 2009. The stated drawings will be referred to as "Approved Drawings" in this evaluation report. A copy of the approved drawings shall be available at the job site.

**Design Pressure Rating:** The design pressure rating for the mulled window assembly is dependant on the mullion load rating based on the mullion span, the dimensions of the individual windows in the mulled assembly, and the design pressure rating for the individual windows in the mulled assembly. Refer to the approved drawings to determine the mullion load rating for the mulled assembly based on the configuration of the mulled assembly.

**Maximum Sizes:** The height and width of each individual window in the mulled assembly shall not exceed the maximum allowable height and width specified on the certification program labels for the individual windows.

For vertical mullions, the maximum unit window width shall not exceed 53 inches and the maximum window height (mullion span) shall not exceed 84 inches. Refer to the approved drawings for the allowable dimensions of the mulled window assemblies and for the individual windows for their allowable dimensions..

For horizontal mullions (transoms over a single window), the maximum transom height shall not exceed 42 inches and the maximum mullion span shall not exceed 53 inches. Refer to the approved drawings for the allowable dimensions of the mulled assemblies and for the individual windows for their allowable dimensions.

For horizontal mullions (transoms over a twin window), the maximum transom height shall not exceed 42 inches and the maximum mullion span shall not exceed 106 inches. Refer to the approved drawings for the allowable dimensions of the mulled assemblies and to the evaluation reports for the individual windows for their allowable dimensions.

The following procedure should be used to determine the design pressure rating for the mulled window assembly:

1. Determine the window width (transom height) and the mullion span for the mulled window assembly. Refer to the mullion configuration sketches on the approved drawings for mullion span and the window width determination. NOTE: In no case shall the maximum allowable dimensions of the individual windows, as specified on the certification program labels and in the TDI product evaluation reports, exceed the window dimensions in the approved drawings.
2. Using the approved drawings, select the appropriate table. Determine the design pressure rating (PSF) of the mulled assembly as a function of window height (transom height) and the mullion span.
3. Review the design pressure rating on the certification program label and in the TDI product evaluation report for each individual window of the mulled assembly.
4. If the design pressure rating for each individual window of the mulled assembly is greater than the design pressure rating for the mulled assembly determined from the table in the approved drawings, then the design pressure rating of the mulled assembly is the design pressure capacity determined from the table in the approved drawings.
5. If the design pressure rating for any of the individual windows is less than the design pressure rating of the mulled assembly determined from the table in the approved drawings, then the design pressure rating of the mulled assembly shall be the design pressure rating of the lowest rated individual window in the assembly.

**Impact Resistance:** The mulled window assemblies will need to be protected with an impact protective system when installed in areas where windborne debris protection is required. Refer to the TDI evaluation reports for each of the windows in the mulled assembly to determine the locations where the mulled window assemblies can be used (ex. Inland I zone only or Inland I and Seaward zones).

**Product Identification:** A certification program label will be affixed to each individual window of the mulled assembly. Refer to the TDI evaluation report for each individual window in the mulled assembly for the information that must be specified on the certification program label. **Note:** The certification program label is for the performance characteristics of the individual windows in the mulled assembly and not for the mulled assembly. The design pressure rating for the mulled assembly is as specified in the Limitations Section of this evaluation report.

## INSTALLATION INSTRUCTIONS

**General:** The mulled window assembly shall be installed in accordance with the manufacturer's installation instructions, the approved drawings, and this product evaluation report. Detailed drawings and installation instructions are available from the manufacturer.

**Attachment of Window Frames to Mullions:** The window frames shall be anchored to the aluminum mullions (part No. 11090) with minimum No. 8 screws. The fasteners shall penetrate through the window frame and into the aluminum mullion. The fasteners shall be long enough such that a minimum of three (3) threads protrude through the wall of the aluminum mullion. The spacing of the fasteners shall be as specified on the approved drawings.

**Attachment of Vertical Mullions to Horizontal Mullions:** Vertical mullions shall be secured to horizontal mullions using the mullion anchor bracket (T Clip), part No. 11091. The mullion anchor bracket shall be secured to each mullion as specified in the approved drawings.

**Attachment of Mullled Assembly to Wall Framing:** The requirements for the wall framing shall be as specified in the TDI evaluation reports for the windows. The mulled window assembly shall be secured to the wall framing using the type, size, quantity, and spacing of fasteners as specified in the TDI evaluation reports for the windows. As a point of reference for locating fasteners at window corners, where a window unit joins with a mullion shall be considered a corner location for a window.

**Attachment of Mullions to Wall Framing:** The mullions shall be secured to the wall framing using the mullion clip, part No. 11087. The mullion clip shall be secured to the mullion and to the wall framing as specified in the approved drawings. Refer to the approved drawings for minimum embedment depths and minimum edge distances for the fasteners.

**Note:** The manufacturer's installation instructions shall be available on the job site during installation. The approved drawings shall be available on the job site during installation. All fasteners shall be corrosion resistant as specified in the International Residential Code (IRC), the International Building Code (IBC), and the Texas Revisions.