

TEXAS DEPARTMENT OF INSURANCE

Engineering Services / MC 103-3A 333 Guadalupe Street P.O. Box 149104 Austin, Texas 78714-9104
Phone No. (512) 322-2212 Fax No. (512) 463-6693

PRODUCT EVALUATION SHU-182

Effective October 1, 2009

*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 **February 2012**.*

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.

Polycarbonate Hurricane Shutter Panel manufactured by:
Clear Strength USA, LLC
1414 Commerce Park Drive
Tipp City, Ohio 45371
(937) 667-4485

will be accepted for use in designated catastrophe areas along the Texas Gulf Coast when installed in accordance with this product evaluation and the design drawings that are referenced in this evaluation report.

PRODUCT DESCRIPTION

The polycarbonate hurricane shutter panels are constructed of minimum 0.073 inch thick polycarbonate clear panels conforming to ASTM D-638 with a minimum yield strength of 9.36 ksi. The panels are vacuum formed from flat stock material into a two ribbed, 2" x 16" section with a nominal coverage (effective) width of 14". All aluminum extrusions shall be 6063-T6 aluminum alloy. The mounting extrusions are 'F' angle track, Reverse angle track, 'F' track, 'F Built-out' track, 'Y' track, and 'H' header track. The panels may be mounted vertically or horizontally as applicable. The span direction is perpendicular to the line of anchorage.

LIMITATIONS

Design Drawings: The polycarbonate shutters shall be installed in accordance with the drawing entitled "Polycarbonate Hurricane Shutter Panel," by Clear Strength USA, LLC, Drawing No. 09-161, Sheets 1 of 8 through 8, dated June 24, 2009, signed, sealed, and dated June 29, 2009, by Pedro Figueiredo. The design 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.

Wall Construction: The polycarbonate shutters may be mounted to several types of wall framing construction. Refer to the approved drawings for the mounting options. The types of wall framing construction include:

- Concrete (Minimum 3,000 psi compressive strength)
- Hollow concrete block
- Wood (Southern Yellow Pine, minimum specific gravity of 0.55)

Anchors: Refer to Sheet 7 of 8 of the approved design drawings for the anchor options, the minimum embedment depth, and the minimum edge distance.

Maximum Allowable Design Wind Pressure: ± 132 psf (maximum allowable span of 60")

Maximum Panel Span: 120" (maximum allowable pressure of ± 45 psf)

Separation Distance from Glazing: The product does not have a required minimum separation distance from the glazed opening.

Impact Resistance: This shutter assembly satisfies the Texas Department of Insurance's criteria for protection from windborne debris in both the **Inland I zone** and the **Seaward zone**. The shutter assemblies passed Missile Level D specified in ASTM E 1996-04. The shutter assemblies may be installed at any height on the structure as long as the design pressure rating for the assemblies is not exceeded.

Product Identification: A certification program label (NAMI) will be affixed to the shutter. The certification program label includes the manufacturer's name (**Clear Strength USA, LLC**); product name **Polycarbonate Hurricane Shutter Panel**; the approved inspection agency (NAMI); and the applicable standards: ASTM E 1886-05/ASTM E 1996-05/ASTM E 330-02. **NOTE:** The performance rating for the product is specified in this evaluation report and on the approved drawings that are referenced in this evaluation report.

INSTALLATION INSTRUCTIONS

General Installation Requirements:

All shutters shall be installed in accordance with the approved drawings and this product evaluation report.

Mounting Conditions:

The shutters shall be mounted in accordance with the mounting details shown on the approved drawings. The shutter panels may be mounted vertically or horizontally using the applicable anchoring details on the approved drawings.

Wall Construction: The polycarbonate shutters may be mounted to several types of wall framing construction. Refer to the approved drawings for the mounting options. The types of wall framing construction include:

- Concrete (Minimum 3,000 psi compressive strength)
- Hollow concrete block
- Wood (Southern Yellow Pine, minimum specific gravity of 0.55)

Anchors: Refer to Sheet 7 of 8 of the approved design drawings for the anchor options, the minimum embedment depth, and the minimum edge distance.

Note: The manufacturer's installation instructions and 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.