

TEXAS DEPARTMENT OF INSURANCE

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PRODUCT EVALUATION WIN-1369

Effective February 1, 2011

*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 **December 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.

Series V100 Vinyl Dual Action Tilt and Turn Windows, Impact Resistant, manufactured by

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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

The Series V100 window is a vinyl dual action tilt and turn window. The vinyl tilt and turn windows evaluated in this report are impact resistant windows. The following options are available:

- Dual action tilt and turn (full size lite or true divided muntin with two equal or unequal lites)
- Dual action tilt and turn twin (full size lite or true divided muntin with two equal or unequal lites, any combination)
- Dual action tilt and turn vertically stacked (full size lite or true divided muntin with two equal or unequal lites, any combination)

This product evaluation report is for vinyl tilt and turn windows based on the following tested constructions:

General Description:

System	Description	Label Rating
1	Series V100 Vinyl Tilt and Turn Windows; (X); Large Missile Impact Rating	DAW-C90 54 x 80; Neg DP=130; Missile Level D
2	Series V100 Vinyl Tilt and Turn Windows; (XX); Large Missile Impact Rating	DAW-C90 84 x 80; Neg DP=130; Missile Level D
3	Series V100 Vinyl Tilt and Turn Windows; Stacked Combination; (X/X); Large Missile Impact Rating	DAW-C90 54 x 158; Neg DP=130; Missile Level D
4	Series V100 Vinyl Tilt and Turn Windows; (X); Small Missile Impact Rating	DAW-C90 54 x 80; Neg DP=130; Missile Level A
5	Series V100 Vinyl Tilt and Turn Windows; (XX); Small Missile Impact Rating	DAW-C90 84 x 80; Neg DP=130; Missile Level A
6	Series V100 Vinyl Tilt and Turn Windows; Stacked Combination; (X/X); Small Missile Impact Rating	DAW-C90 54 x 158; Neg DP=130; Missile Level A

Product Dimensions:

System	Overall Size	Sash Size
1	54" x 80"	One: 50" x 76"
2	84" x 80"	Two: 38 $\frac{3}{4}$ " x 76"
3	54" x 158"	Two: 50" x 76"
4	54" x 80"	One: 50" x 76"
5	84" x 80"	Two: 38 $\frac{3}{4}$ " x 76"
6	54" x 158"	Two: 50" x 76"

Daylight Opening Dimension Options: The sash may be either: (1) a full lite; (2) contain a muntin with two equal size lites; or (3) contain a muntin with two unequal size lites. Twin windows (Systems 2 and 5) and stacked windows (Systems 3 and 6) may contain any combination of the sash options. The following sash options are available for Systems 1-6:

- Full Lite: Maximum Daylight Opening size: 43 $\frac{5}{8}$ " x 69 $\frac{5}{8}$ ".
- Integral muntin with two (2) equal size lites: Maximum Daylight Opening Size: 43 $\frac{5}{8}$ " x 33 $\frac{3}{16}$ ".
- Integral muntin with two unequal lites: Minimum Daylight Opening Size: 43 $\frac{5}{8}$ " x 16 $\frac{3}{16}$ " and Maximum Daylight Opening Size: 43 $\frac{5}{8}$ " x 46 $\frac{1}{2}$ ".

Glazing Description:

System	Glass Construction ¹	Glazing Method ²
1	IG-1	GM-1
2	IG-1	GM-1
3	IG-1	GM-1
4	IG-2	GM-1
5	IG-2	GM-1
6	IG-2	GM-1

Note: ¹ See the "Glass Construction Key" for the glazing construction.

² See the "Glazing Method Key" for the glazing method description.

Glass Construction Key:

IG-1: The window contains an insulating glass unit. The insulating glass unit is comprised of a $\frac{3}{16}$ " fully tempered glass lite and a laminated glass unit separated by a desiccant filled spacer system. The laminated glass unit is comprised of two $\frac{3}{16}$ " heat strengthened glass lites with a 0.060" thick SGP interlayer by Dupont.

IG-2: The window contains an insulating glass unit. The insulating glass unit is comprised of a $\frac{3}{16}$ " fully tempered glass lite and a laminated glass unit separated by a desiccant filled spacer system. The laminated glass unit is comprised of two $\frac{3}{16}$ " heat strengthened glass lites with a 0.035" thick SGP interlayer by DuPont.

Glazing Method Key:

GM-1: The insulating glass units are exterior glazed with a glazing bead. There is a glazing gasket on the exterior and a glazing leg adaptor on the interior.

Frame Construction: The frame members are manufactured from extruded vinyl (PVC). The frame corners are mitered and welded construction.

Vertical Mullion Construction (Systems 2 and 5): The integral mullion is secured to the frame head and sill using a dual leg connector with screws.

Horizontal Mullion Construction (Systems 3 and 6): The integral mullion is secured to the frame side jambs using a dual leg connector with screws.

Sash Construction: The sash members are manufactured from extruded vinyl (PVC). The sash corners are mitered and welded construction.

Reinforcement:

Systems 1 and 4: Steel reinforcement is utilized in all the sash members and in all the frame members. Steel reinforcement is utilized in the sash muntin. The reinforcement extends the length of the members.

Systems 2 and 5: Steel reinforcement is utilized in all the sash members and in all the frame members. Steel reinforcement is utilized in the sash muntin. Steel reinforcement is utilized in the vertical mullion. The reinforcement extends the length of the members.

Systems 3 and 6: Steel reinforcement is utilized in all the sash members and in all the frame members. Steel reinforcement is utilized in the sash muntin. Steel reinforcement is utilized in the horizontal mullion. The reinforcement extends the length of the members.

Product Identification: Two certification program labels (Keystone) will be affixed to the window. One certification program label includes the performance characteristics and approved inspection agency to indicate compliance with the requirements of AAMA/WDMA/CSA 101/I.S.2/A440-05. The second certification program label includes the performance characteristics and approved inspection agency to indicate compliance with the requirements of ASTM E1886 and ASTM E 1996.

Each label contains a Certification Authorization Report (CAR) number located on the top right side of the label and a model name for the window. The following CAR numbers and model names are located on each label:

Label Identification:

System	Model	Certification Authorization Report (CAR) number	
		Label with AAMA/WDMA/CSA 101/I.S.2/A440-05	Label with ASTM E 1886 and ASTM E 1996
1	V100 uPVC Impact Tilt Turn	167-420	167-237
2	V100 uPVC Impact Twin Tilt Turn	167-422	167-239
3	V100 uPVC Impact Stacked Tilt Turn Combination Assembly	167-424	167-241
4	V100 uPVC Impact Tilt Turn	167-419	167-236
5	V100 uPVC Impact Twin Tilt Turn	167-421	167-238
6	V100 uPVC Impact Stacked Tilt Turn Combination Assembly	167-423	167-240

LIMITATIONS

Design pressures:

System	Maximum Width (in.)	Maximum Height (in.)	Design Pressures (psf)
1	54	80	+90/-130
2	84	80	+90/-130
3	54	158	+90/-130
4	54	80	+90/-130
5	84	80	+90/-130
6	54	158	+90/-130

Impact Resistance:

Systems 1, 2, and 3: These window assemblies satisfy the Texas Department of Insurance's criteria for protection from windborne debris in both the **Inland I zone** and the **Seaward zone**. The window assemblies passed Missile Level D specified in ASTM E 1996-04. The window assemblies may be installed at any height on the structure as long as the design pressure rating for the assemblies is not exceeded. These window assemblies will not need to be protected with an impact protective system.

Systems 4, 5, and 6: These window assemblies satisfy the Texas Department of Insurance's criteria for protection from windborne debris in both the **Inland I zone** and the **Seaward zone**. The window assemblies passed Missile Level A specified in ASTM E 1996-04. The window assemblies may be installed at heights **30 feet or higher** on the structure as long as the design pressure rating for the assemblies is not exceeded. **Note: These window assemblies may not be installed at heights less than 30 feet.** These window assemblies will not need to be protected with an impact protective system.

Acceptance of Smaller Assemblies: Window assemblies with dimensions equal to or smaller than those specified above are acceptable within the limitations specified in this report.

INSTALLATION INSTRUCTIONS

General: The window assembly shall be installed in accordance with the manufacturer's installation instructions. Detailed installation instructions and drawings are available from the manufacturer.

Installation:

Wall Framing Construction: The windows may be mounted to several types of wall framing construction. The types of wall framing construction allowed include:

- Concrete (minimum compressive strength: 3,200 psi)
- Hollow concrete block (ASTM C-90, Grade N, Type 1 or greater)
- Wood dimension lumber (minimum Spruce-Pine-Fir)
- Wood backed (minimum Spruce-Pine-Fir) minimum 20 gauge steel

Fasteners:

- Concrete and hollow concrete block wall framing; Minimum $\frac{1}{4}$ " diameter ITW Tapcons; Minimum $1\frac{1}{4}$ " embedment; Minimum $2\frac{1}{2}$ " edge distance.
- Wood and wood backed steel wall framing; Minimum No. 14 screw; Minimum $1\frac{3}{4}$ " embedment

Fastener Spacing:

Systems 1 and 4: The fasteners shall be installed through the window frame and into the wall framing. Along the head and the sill, the fasteners shall be spaced approximately 6 inches from each corner and approximately 14 inches on center on center along the perimeter of the window assembly. Along the side jambs, the fasteners shall be spaced approximately 6 inches from each corner and approximately $13\frac{1}{2}$ inches on center on center along the perimeter of the window assembly

Systems 2 and 5: The fasteners shall be installed through the window frame and into the wall framing. Along the head and the sill, the fasteners shall be spaced approximately 6 inches from each corner and approximately $14\frac{1}{2}$ inches on center on center along the perimeter of the window assembly. Along the side jambs, the fasteners shall be spaced approximately 6 inches from each corner and approximately $16\frac{1}{2}$ inches on center on center along the perimeter of the

window assembly. At the vertical mullion location, three (3) fasteners are required on each side, spaced 3 inches on center.

Systems 3 and 6: The fasteners shall be installed through the window frame and into the wall framing. Along the head and the sill, the fasteners shall be spaced approximately 6 inches from each corner and approximately 14 inches on center on center along the perimeter of the window assembly. Along the side jambs, the fasteners shall be spaced approximately 6 inches from each corner and approximately 13 inches on center on center along the perimeter of the window assembly. At the horizontal mullion location, two (2) fasteners are required on each side, spaced 3 inches on center.

Note: The manufacturer's installation instructions 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.