Intertek | Architectural Testing

**TEST REPORT**

**Report No.**: F2626.01-301-44

**Rendered to**:

INTERNATIONAL WINDOW
Fullerton, California

**PRODUCT TYPE**: Polyvinyl Chloride (PVC) O/X Awning Projected Window
**SERIES/MODEL**: 5321

**SPECIFICATION**: AAMA/WDMA/CSA 101/I.S.2/A440-11, *NAFS 2011 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

| Title | Summary of Results |
|---|---|
| AAMA/WDMA/CSA 101/I.S.2/A440-11 | Class LC – PG30 1219 x 2404 (48 x 95) – Type AP |
| Design Pressure | ±1440 Pa (±30.08 psf) |
| Air Infiltration | 0.6 L/s/m$^2$ (0.12 cfm/ft$^2$) |
| Water Penetration Resistance | Test Pressure: 220 Pa (4.59 psf) |

**Test Completion Date**: 04/15/16

Reference must be made to Report No. F2626.01-301-44, dated 06/21/16 for complete test specimen description and detailed test results.

**1.0 Report Issued To:** International Window
1551 East Orangethorpe Avenue
Fullerton, California 92831

**2.0 Test Laboratory:** Intertek-ATI
2524 East Jensen Avenue
Fresno, California 93706
559-233-8705

**3.0 Project Summary:**

**3.1 Product Type:** Polyvinyl Chloride (PVC) O/X Awning Projected Window

**3.2 Series/Model:** 5321

**3.3 Compliance Statement:** Results obtained are tested values and were secured by using the designated test method. The specimen tested successfully met the performance requirements for the following rating:

**Class LC – PG30 1219 x 2404 (48 x 95) – Type AP**

**3.4 Test Dates:** 11/10/15 - 04/15/16

**3.5 Test Record Retention End Date:** All test records for this report will be retained until April 15, 2020.

**3.6 Test Location:** Intertek-ATI test facility in Fresno, California.

**3.7 Test Specimen Source:** The test specimen was provided by the client. Representative samples of the test specimen will be retained by Intertek-ATI for a minimum of four years from the test completion date.

**3.8 Drawing Reference:** The test specimen drawings have been reviewed by Intertek-ATI and are representative of the test specimen(s) reported herein. Test specimen construction was verified by Intertek-ATI per the drawings located in Appendix B. Any deviations are documented herein or on the drawings.

**3.9 List of Official Observers:**

| Name | Company |
|---|---|
| Gino Vitali | Intertek-ATI |
| Dennis Janzen | Intertek-ATI |
| David Douglass | Intertek-ATI |

## 4.0 Test Specification:

AAMA/WDMA/CSA 101/I.S.2/A440-11, *NAFS 2011 - North American Fenestration Standard/Specification for Windows, Doors, and Skylights*

## 5.0 Test Specimen Description:

### 5.1 Product Sizes:

| **Overall Area:** 2.93 $m^2$ (31.5 $ft^2$) | **Width** | | **Height** | |
|---|---|---|---|---|
| | **millimeters** | **inches** | **millimeters** | **inches** |
| Overall Frame | 1219 | 48 | 2404 | 94-5/8 |
| Active and Fixed Panels | 1183 | 46-9/16 | 1163 | 45-13/16 |

### 5.2 Frame Construction:

| **Frame Member** | **Material** | **Description** |
|---|---|---|
| Head, Sill, Jambs, Mullion | PVC | Extruded; white |

| **Joint** | **Joinery Type** | **Detail** |
|---|---|---|
| All Corners | Mitered | Fully welded. |
| Horizontal Mullion | Notched and coped | Attached to frame using three #10 x 2-1/2" Phillips flat head screws through the frame with heads sealed in place. |

**5.0 Test Specimen Description**: (Continued)

**5.3 Vent and Panel Construction**:

| Member | Material | Description |
|---|---|---|
| Rails, Stiles | PVC | Extruded; white |

| Joint | Joinery Type | Detail |
|---|---|---|
| Rails and Stiles | Mitered | Fully welded |
| Active Panel | Mitered | Additional corner bracket attached to glazing track corners with two #6 x 3/4" Phillips flat head self-drilling screws into each reinforcement. |

**5.4 Weatherstripping**:

| Description | Quantity | Location |
|---|---|---|
| Hollow Bulb Gasket | 2 Rows | Coextruded with jambs, head, sill. |
| Hollow Bulb Gasket | 4 Rows | Coextruded with mullion. |
| Single Leaf Gasket | 1 Row | Coextruded with stiles, rails. |

**5.5 Glazing**: *No conclusions of any kind regarding the adequacy or inadequacy of the glass in any glazed test specimen(s) can be made.*

| Glass Type | Spacer Type | Glazing Method |
|---|---|---|
| 3/4" IG | Steel Intercept | Set against 3/8" wide x 1/16" thick glazing tape; sealed at butted corner; secured with snap-fit exterior PVC bead. |

| Location | Interior/ Exterior Glass | Daylight Opening | | Bite |
|---|---|---|---|---|
| | | millimeters | inches | |
| Active Panel | 3/32" annealed | 1107 x 1087 | 43-9/16 x 42-13/16 | 3/8" |
| Fixed Panel | 1/8" annealed | 1107 x 1087 | 43-9/16 x 42-13/16 | 3/8" |

**5.0 Test Specimen Description**: (Continued)

**5.6 Drainage**:

| Drainage Method | Size | Quantity | Location |
|---|---|---|---|
| Weatherstripping Notch | 1" wide | 2 | The exterior bulb gasket at the sill was notched 1-5/8" from jambs. |

**5.7 Hardware**:

| Description | Quantity | Location |
|---|---|---|
| Rotary Operator | 1 | Assembled through sill and reinforcement at midspan using two Phillips head screws; operator clip attached to bottom rail with two #6 x 1/2" Phillips flat head self-drilling screws into reinforcement. |
| Locking Handle | 2 | Jambs; 9-1/4" from sill; assembled through backing plate with two Phillips head screws. |
| Keeper | 2 | Active stiles; attached opposite locks using two #8 x 1" Phillips truss head screws into reinforcement. |
| Hinges | 3 | Fastened to hinge stile with four #6 x 1" Phillips flat head self-drilling screws into reinforcement; to horizontal mullion and sill with three #6 x 1/2" Phillips flat head. |
| Fixed Panel Anchor Spacer, 3" Long | 9 | Jambs, at 6" – 8" from corners and midspan; horizontal mullion, at 4" – 6" from ends and midspan. |
| #6 X 1/2" Phillips Flat Head Screw | Each spacer | Attached to frame and mullion with two screws through aluminum spacer. |
| #9 X 2" Phillips Truss Head Screw | Per spacer | Attached to frame and mullion with one screw through glazing track and aluminum spacer. |

**5.0 Test Specimen Description**: (Continued)

**5.8 Reinforcement**:

| Drawing Number | Location | Material |
|---|---|---|
| 50201 | Horizontal Mullion | Extruded aluminum |
| 50218 | Active Stiles and Rails Exterior Hollow | Extruded aluminum |
| Allmetal Air Spacer | Active Stiles and Rails Exterior Hollow | Roll-formed aluminum |

**5.9 Screen Construction**: No screen was utilized.

**6.0 Installation**:

The specimen was installed into a nominal 2x8 Douglas fir wood test buck. The rough opening allowed for a 3/8" shim space. A continuous nominal 1x2 wood furring strip was placed over the mounting fin on all sides. The exterior perimeter of the window was sealed with silicone between the mounting fin and test buck.

| Location | Anchor Description | Anchor Spacing |
|---|---|---|
| Head, Sill, Jambs | #6 x 1-5/8" Phillips flat head screws through furring strip and mounting fin into test buck. | 4" from corners; 16" on center. |

**7.0 Test Results**: The temperature during testing was 23°C (73°F). The results are tabulated as follows:

| Title of Test | Results | Allowed | Note |
|---|---|---|---|
| **Operating Force** per ASTM E 2068 | | | |
| Initiate motion | 7 N (1.5 lbf) | Report Only | |
| Maintain motion | 13 N (3 lbf) | 30 N (6.7 lbf) max. | |
| Latches | 56 N (12.5 lbf) | 100 N (22 lbf) max. | |
| **Air Leakage** per ASTM E 283 | | | |
| 75 Pa (1.57 psf) Infiltration | 0.6 L/s/m$^2$ (0.12 cfm/ft$^2$) | Maximum | |
| 75 Pa (1.57 psf) Exfiltration | 0.6 L/s/m$^2$ (0.12 cfm/ft$^2$) | 1.5 L/s/m$^2$(0.3 cfm/ft$^2$) | 1 |
| **Water Penetration** per ASTM E 547 | N/A | N/A | 2 |
| **Uniform Load Deflection** per ASTM E 330 | | | |
| Horizontal Mullion | Deflections | | |
| +1200 Pa (+25.06 psf) | 4.1 mm (0.16") | | |
| −1200 Pa (−25.06 psf) | 4.1 mm (0.16") | | |
| Active Bottom Rail | | | |
| +1200 Pa (+25.06 psf) | 1.1 mm (0.05") | | |
| −1200 Pa (−25.06 psf) | 17.1 mm (0.68") | Report Only | 3, 4, 5 |
| **Uniform Load Structural** per ASTM E 330 | | | |
| Horizontal Mullion | Permanent Sets | Maximum | |
| +1800 Pa (+37.59 psf) | 0.3 mm (0.01") | 4.8 mm (0.19") | |
| −1800 Pa (−37.59 psf) | 0.1 mm (0.01") | 4.8 mm (0.19") | |
| Active Bottom Rail | | | |
| +1800 Pa (+37.59 psf) | 0.1 mm (0.01") | 4.7 mm (0.19") | |
| −1800 Pa (−37.59 psf) | 0.4 mm (0.02") | 4.7 mm (0.19") | 4, 5 |
| **Thermoplastic Corner Weld** | Pass | Meets as stated | |
| **Awning, Hopper, Projected Hardware Load** 70 N (15 lbf) | 19.8 mm (0.78") | Report Only | |
| **Forced Entry Resistance** per ASTM F 588, Type B | Grade 10 | No entry | |

**7.0 Test Results**: (Continued)

| Title of Test | Results | Allowed | Note |
|---|---|---|---|
| **Optional Results** | | | |
| **Water Penetration** per ASTM E 547 220 Pa (4.59 psf) – Cyclic | Pass | No leakage | |
| **Uniform Load Deflection** per ASTM E 330 | | | |
| Horizontal Mullion | Deflections | | |
| +1440 Pa (+30.08 psf) | 5.1 mm (0.20") | | |
| −1440 Pa (−30.08 psf) | 5.5 mm (0.22") | | |
| Active Bottom Rail | | | |
| +1440 Pa (+30.08 psf) | 1.5 mm (0.06") | | |
| −1440 Pa (−30.08 psf) | 21.0 mm (0.83") | Report Only | 3, 4, 5 |
| **Uniform Load Structural** per ASTM E 330 | | | |
| Horizontal Mullion | Permanent Sets | Maximum | |
| +2160 Pa (+45.11 psf) | 0.3 mm (0.01") | 4.8 mm (0.19") | |
| −2160 Pa (−45.11 psf) | 0.1 mm (0.01") | 4.8 mm (0.19") | |
| Active Bottom Rail | | | |
| +2160 Pa (+45.11 psf) | <0.1 mm (<0.01") | 4.7 mm (0.19") | |
| −2160 Pa (−45.11 psf) | 2.2 mm (0.09") | 4.7 mm (0.19") | 4, 5 |
| **Awning, Hopper, Projected Hardware Load** 140 N (30 lbf) | Deflection 22.4 mm (0.88") | Report Only | |

***Note 1:*** *The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.*

***Note 2:*** *The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance*

***Note 3:*** *The deflections reported are not limited by AAMA/WDMA/CSA 101/I.S.2/A440 for this product designation. The results are reported for special code compliance and information only.*

***Note 4:*** *Loads were held for 10 seconds.*

***Note 5:*** *The use of tape and film to seal against air leakage during uniform load testing did not, in the opinion of the Intertek – ATI witness, influence the test results.*

Intertek-ATI will service this report for the entire test record retention period. Test records such as detailed drawings, datasheets, representative samples of test specimens, or other pertinent project documentation, will be retained by Intertek-ATI for the entire test record retention period.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory. It is the exclusive property of the client so named herein and relates only to the specimen(s) tested. This report may not be reproduced, except in full, without the written approval of Intertek-ATI

For Intertek-ATI

Digitally Signed by: David Douglass

David Douglass
Project Manager

Digitally Signed by:Leaton Kirk

Leaton Kirk
Director – Regional Operations

KCW/DD:ms

Attachments (pages): This report is complete only when all attachments listed are included.
Appendix-A: Alteration Addendum (1)
Appendix-B: Drawings (17)

## Revision Log

| Rev. # | Date | Page(s) | Revision(s) |
|---|---|---|---|
| 0 | 06/02/16 | N/A | Original Report Issue. |
| 1 | 06/21/16 | 2 | Corrected Panel Dimensions. |
| | | 3 | Corrected DLO Dimensions. |

## Appendix A

## Alteration Addendum

**Alteration #1**: Date – 11/10/2015
Cause for alteration – water leakage
Remedial action taken – sealed fixed glazing corners and operator cover

**Alteration #2**: Date – 12/21/2015
Cause for alteration – water leakage
Remedial action taken – trimmed vinyl and gasket at sill corner welds

**Alteration #3**: Date – 3/11/2016
Cause for alteration – water leakage
Remedial action taken – added weeps to fixed bottom rail