



TEST REPORT

Report No.: D5238.01-301-44

Rendered to:

INTERNATIONAL WINDOW
Fullerton, California

PRODUCT TYPE: Polyvinyl Chloride (PVC) XO Casement Window
SERIES/MODEL: 5420

SPECIFICATION(S): 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/A440-08 and -11	Class R – PG40: Size Tested 2420 x 1505 (95 x 59) – Casement
Design Pressure	±1920 Pa (±40.10 psf)
Air Infiltration	1.1 L/s/m ² (0.22 cfm/ft ²)
Water Penetration Resistance Test Pressure	360 Pa (7.52 psf)

Test Completion Date: 03/12/15

Reference must be made to Report No. D5238.01-301-44, dated 06/07/16 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) XO Casement Window

3.2 Series/Model: 5420

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 R – PG40: Size Tested 2420 x 1505 (95 x 59) – Casement

3.4 Test Dates: 02/04/14 - 03/12/15

3.5 Test Record Retention End Date: All test records for this report will be retained until March 12, 2019.

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 specimens 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:

<u>Name</u>	<u>Company</u>
Jay Ratliff	Intertek-ATI
Dennis Janzen	Intertek-ATI
David Douglass	Intertek-ATI

4.0 Test Specification:

AAMA/WDMA/CSA 101/IS.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: 3.6 m ² (39.2 ft ²)	Width		Height	
	millimeters	inches	millimeters	inches
Overall Frame	2420	95-1/4	1505	59-1/4
Active Panel	914	36	1474	58
Fixed Panel	1456	57-5/16	1473	58

5.2 Frame Construction:

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

Joint	Joinery Type	Detail
All Corners	Mitered	Fully welded.
Vertical Mullion	Coped	Sealed and attached to frame with Phillips flat head screws through the frame with heads sealed in place: one #8 x 1-1/2" into exterior mullion reinforcement, two #10 x 2-1/2" into the mullion, and two #10 x 2-1/2" into interior reinforcement.

5.3 Vent and Panel Construction:

Member	Material	Description
All Rails, Stiles	PVC	Extruded; white

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

5.0 Test Specimen Description: (Continued)

5.4 Weatherstripping:

Description	Quantity	Location
Hollow Bulb Gasket	2 Rows	Coextruded with frame.
Hollow Bulb Gasket	4 Rows	Coextruded with vertical mullion.
Single Leaf Gasket	1 Row	Coextruded with fixed and active rails and stiles.

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.*

Type	Spacer	Glazing Method
7/8" IG	Steel intercept	Set against 3/8" wide x 1/16" thick glazing tape; secured with snap-fit PVC bead.

Location	Interior/ Exterior Glass	Daylight Opening		Bite
		millimeters	inches	
Active Panel	3/32" annealed	788 x 1347	31 x 53-1/16	3/8"
Fixed Panel	1/8" annealed	1330 x 1345	52-3/8 x 52-15/16	3/8"

5.6 Drainage:

Drainage Method	Size	Quantity	Location
Weatherstripping Notch	1" wide	4	Bottom rail exterior bulb gasket; 1-5/8" from fixed and active jamb and mullion corners

5.0 Test Specimen Description: (Continued)

5.7 Hardware:

Description	Quantity	Location
Rotary Operator (Truth SP5533)	1	Fastened to sill 8-1/4" from jamb with six #6 x 1" Phillips flat head self-drilling screws into reinforcement; to bottom rail with two #6 x 1/2" Phillips pan head screws and five #6 x 1" Phillips flat head self-drilling screws into reinforcement.
Multi-Point Lock with Handle (Acer AC 24-909)	1	Mullion, handle attached with two #6 x 1/2" Phillips pan head screws at 9-1/2" from the sill; five lock guides spaced 7" - 10" apart; each attached with two #10 x 1" Phillips flat head screws into reinforcement.
Plastic Keeper (J&J Plastic)	3	Lock stile; 4-3/8" from each end and midspan; each attached with three #8 x 1" Phillips oval head screws.
Butt Hinges (Advantage)	3	Hinge stile, 3-1/2" from each end and midspan; attached with Phillips flat head self-drilling screws: three #6 x 1" into stile reinforcement; three #6 x 1" through jamb and reinforcement into 3/4" x 3/4" x 1/8" thick x 6" long aluminum angles.
Fixed Panel Anchor with Aluminum Spacer	12	Panels fastened through glazing track and aluminum spacer using Phillips flat head screws: to frames with #10 x 2-1/2" screws at midspan and 6" - 8" from corners; to mullion and its reinforcement with #8 x 1-1/2" screws at midspan and 4" - 6" from ends.

5.8 Reinforcement:

Drawing Number	Location	Material
H50602	Hinge Jamb	Extruded aluminum
H50475	Mullion interior hollow	Extruded aluminum
50476	Mullion exterior hollow	Extruded aluminum
H50598	Rails and stiles	Extruded aluminum

5.9 Screen Construction: No screen was utilized.

6.0 Installation:

The specimen was installed into a test buck fabricated from Douglas fir nominal 2x10 lumber. The rough opening allowed for a 1/4" shim space. The exterior perimeter of the frame was sealed with silicone between the mounting fin and the test buck.

Location	Anchor	Spacing
Through 2x2 wood blocking and mounting fin into test buck	#8 x 3" Phillips flat head screws	4" - 6" from corners; 15" - 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) Maintain motion: 13 N (3 lbf) Latches: 56 N (12.5 lbf)	Report Only 45 N (10 lbf) max. 100 N (22 lbf) max.	
Air Leakage, Infiltration per ASTM E 283 at 75 Pa (1.57 psf)	1.1 L/s/m ² (0.22 cfm/ft ²)	1.5 L/s/m ² (0.3 cfm/ft ²) max.	1
Water Penetration, per ASTM E 547	N/A	N/A	3
Uniform Load Deflection, per ASTM E 330	N/A	N/A	3
Uniform Load Structural, per ASTM E 330	N/A	N/A	3
Forced Entry Resistance, per ASTM F 588, Type B	Grade 10	No entry	
Thermoplastic Corner Weld	Pass	Meets as stated	
Sash Vertical Deflection 200 N (45 lbf)	2.3 mm (0.09")	18.3 mm (0.72") max.	
Distributed Load 240 Pa (5.01 psf)	Pass	No damage	

7.0 Test Results: (Continued)

Title of Test	Results	Allowed	Note
Optional Performance			
Water Penetration, per ASTM E 547 360 Pa (7.52 psf) – Cyclic	Pass	No leakage	2, 3
Uniform Load Deflection, per ASTM E 330 <u>Vertical Mullion</u> +1920 Pa (+40.10 psf) -1920 Pa (-40.10 psf)	<u>Deflections</u> 6.9 mm (0.27") 6.9 mm (0.27")	Report Only	3, 4, 5, 6
Uniform Load Structural, per ASTM E 330 <u>Vertical Mullion</u> +2880 Pa (+60.15 psf) -2880 Pa (-60.15 psf)	<u>Permanent Sets</u> <0.3 mm (<0.01") 0.3 mm (0.01")	5.8 mm (0.23") max. 5.8 mm (0.23") max.	3, 5, 6
Sash Vertical Deflection 270 N (60 lbf)	2.3 mm (0.09")	18.3 mm (0.72") max.	

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

Note 2: Without insect screen.

Note 3: The client opted to start at a pressure higher than the minimum required. Test results are reported under Optional Performance.

Note 4: The deflections reported are not limited by AAMA/WDMA/CSA 101/1.S.2/A440 for this product designation. The deflection data is recorded in this report for special code compliance and information only.

Note 5: Loads were held for 10 seconds.

Note 6: Tape and film were used to seal against air leakage during structural testing. In our opinion, the tape and film did not influence the results of the test.

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

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Attachments (pages): This report is complete only when all attachments listed are included.

Appendix-A: Alteration Addendum (1)

Appendix-B: Drawings (14)