

Fenestration Testing Laboratory, Inc.

10235 8th Street, Rancho Cucamonga, CA 91730

Report #: T21-062

REPORT SUMMARY

REPORT #

T21-062

TESTED FOR

International Window Corporation
2455 Wardlow Rd.
Corona, CA 92880

SERIES & PRODUCT TYPE

5420 - PVC AWNING COMPOSITE WINDOW

CONFIGURATION

O/X

FRAME SIZE

1219.20 mm x 2438.40 mm (48.00" x 96.00")

SPECIFICATION

NAFS - North American Fenestration Standard/specification for windows, doors, and skylights
AAMA/WDMA/CSA 101/1.S.2/A440-17

PRIMARY DESIGNATOR

CLASS LC-PG40 1219.20 x 2438.40 mm (48.00 x 96.00 in) Type: AP

TEST COMPLETION DATE

October 18, 2021

REPORT DATE

October 22, 2021

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1.0 Tested For: International Window Corporation
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2.0 Purpose:

The purpose of this report is to present the testing methods employed and the test results obtained during the performance testing of one (1) PVC CASEMENT COMPOSITE WINDOW described in paragraph 4.0 of this report.

3.0 Test References:

- 3.1** NAFS - North American Fenestration Standard/specification for windows, doors, and skylights
AAMA/WDMA/CSA 101/1.S.2/A440-17
- 3.2** ASTM F 588-17 Forced Entry Resistance Tests for Windows
- 3.3** CAWM 301-90(1995) Forced Entry Test for Windows (CMBSO 1-79)

4.0 Compliance Statement: The test results in paragraph 6.0 indicate that the test sample described in paragraph 5.0 of this report met the performance requirements of the above specifications for the performance grade shown in 4.1 below.

4.1 CLASS LC-PG40 1219.20 x 2438.40 mm (48.00 x 96.00 in) Type: AP

5.0 Sample Submitted:

5.1 Product Type: PVC CASEMENT COMPOSITE WINDOW

5.2 Series: 5420

5.3 Configuration: O/X

5.4 Product Dimensions:

	Millimeters	Inches
Total Frame:	1219.20 x 2438.40	48.00 x 96.00
Fixed Sash:	1184.40 x 1466.85	46.63 x 57.75
Active Sash:	1184.40 x 914.40	46.63 x 36.00

5.5 Glass and Glazing: Applies to both fixed and active sash

1" overall wide	0.63"	DS Annealed	DS Annealed	Outside glazed with double-sided adhesive foam tape. PVC setting block approximately 1/4" high were set at quarter points on each sash's bottom rail. PVC snap-in glazing stop was applied full perimeter on the outside of the IGU.
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5.6 Weepage:

Drainage Method	Size	Quantity	Location
Weep notch in weather-stripping	1" wide notch	One (1) at each end	The awning vent's coextruded flexible fin was notched 1" at each end of the bottom rail
Weep notch in weather-stripping	1" wide notch	One (1) at each end	The frame sill's coextruded hollow bulb furthest to the exterior plane was notched 1" at each end.
Vertical round weep	¼" diameter	See "Location"	Awning vent – one at each end of the bottom rail. Fixed Sash – One at each end of the bottom rail.

5.7 Pressure balancing: None

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5.8 Weather-stripping:

<i>Type</i>	<i>Quantity</i>	<i>Location</i>
Coextruded hollow bulb	Two (2) strips	The frame opening for the awning vent and the frame opening for the fixed sash each contained two strips full perimeter.
Coextruded fin	One (1) strip	Awning vent – top rail and stiles; the bottom rail did not have the flap vinyl. Fixed sash – full perimeter.

5.9 Sealants:

<p>Sealant was applied at the following locations:</p> <ul style="list-style-type: none"> - Operator fasteners to frame sill were all sealed over and operator housing to fabricated hole in sill inside leg was sealed. - Each lock was sealed to its respective hole in the jamb with gasket. - The mullion to jamb fasteners were sealed. - From the inside, the mullion to jamb joint on the bottom side of mullion was sealed over the weld joint. - From inside, the sill to jamb joints on the top end of the joint was sealed over the weld.

5.10 Hardware:

<i>Type</i>	<i>Quantity</i>	<i>Location</i>
Roto scissor operator system	One (1)	The sill contained a roto scissor operator system that fit through a fabricated slot in the sill inside leg. The operator was fastened to the midspan of the sill with eight (8) #8 x 0.75" PFH screws to the horizontal surface of sill. The roto arms each contained a PVC slide shoe that slid along a metal channel fastened to the vent sash bottom rail with four screws.
Metal cam lock	Two (2)	One lock in each jamb located 6" up from the sill. Each lock fit into a fabricated slot in its respective jamb. The lock was retained with a pair of #8 x 0.5" PPH screws applied from the outside through a metal retainer clip and into the screw races in the lock. When locked, each lock engaged its respective metal strike fastened to the active sash stile with a pair of #8 x 1" PPH screws.
Metal two leaf butt hinges	Three (3)	The sash top rail was attached to the horizontal mullion with three two-leaf butt hinges; one hinge 6.5" from each end and one at mid-span. For each hinge, one leaf attached to the sash with three #8 x 1" PFH screws and the other leaf was fastened to the mullion with three #8 x 1" PFH screws.

5.11 Construction:

<i>Location</i>	<i>Joinery Type</i>	<i>Number of Fasteners</i>	<i>Fastener Size</i>
Mullion to frame	Mechanically joined	Three (3) each end	#8 x 3" PPH
Frame corners, vent corners and active sash corners	Mitered and fusion welded	N/A	N/A
<p>The fixed sash was fastened the frame as follows: 3" long pieces of metal extrusion spacers were attached to the frame; four spacers per side. Each spacer was fastened to the frame or mullion with a pair of #8 x 0.5" PFH screws. The fixed sash was fastened to the frame opening through the glazing pocket prior to glazing with one (1) #8 x 1.5" screw at each spacer location.</p>			
<p>A metal "L" angle with 3" x 1" legs and 1/8" walls was fastened at each corner of the fixed and vent sashes in the glazing pocket and fastened with a #6 x 1" PFH screw per leg.</p>			

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5.12 Reinforcement:

<i>Material</i>	<i>Part #</i>	<i>Location</i>
Aluminum extrusion	H50473	Vent full perimeter
Aluminum Extrusion	50476	Mullion full length for hinge backing
Aluminum Extrusion	50475	Mullion full length
Aluminum Extrusion	LMH	At sill for operator backing and at jambs for lock reinforcement

5.13 Installation:

<i>Location on frame</i>	<i>Anchor type</i>	<i>Spacing</i>
Full perimeter through the nail-on fin	#8 x 1.5" PFH	3" from each end and 10" on center. Wood furring applied over the nail-on fins and fastened with screws to the rough opening.

6.0 - Test procedures and results: All testing procedures were performed in accordance with the performance requirements of the test specifications referenced in paragraph 3.0 of this report. The number preceding each test listed below refer to the corresponding sections in the NAFS.

9.3.1 - Operation Force (ASTM E2068-00(2016))

Test Description	Results	Allowed	Comments
Maximum force to initiate motion	34.11 N (7.67 lbf)	60 N (13.49 lbf)	
Maximum force to maintain motion	29.22 N (6.57 lbf)	30 N (6.74 lbf)	
Latching device force	48.93 N (11.00 lbf)	100 N (22.48 lbf)	

9.3.2 - Air Infiltration (ASTM E283-04(2012))

Test Description	Results	Allowed	Comments
75 Pa differential pressure	1.25 L/s*m ²	1.5 L/s*m ²	
1.57 psf differential pressure	0.25 cfm/ft ²	0.30 cfm/ft ²	
The tested specimen meets the performance levels specified in AAMA/WDMA/CSA 101/1.S.2/A440 for air leakage resistance.			

9.3.3 - Water Penetration (ASTM E547-00(2016))

Test Description	Results	Allowed	Comments
DP40 - 290 Pa (6.06 psf)	No water penetration	No water penetration	1

9.3.4.2 - Uniform Load Deflection at Design Pressure (ASTM E330-14)

Test Description	Results	Allowed	Comments
DP40 - 1920 Pa (40.10 psf)Pos	1.78 mm (0.07")	Report only	2
DP40 - 1920 Pa (40.10 psf)Neg	2.54 mm (0.10")	Report only	2

9.3.4.3 - Uniform Load Structural Overload (OL) at 1.5 x Design Pressure (ASTM E330-14)

Test Description	Results	Allowed	Comments
OL for DP40 - 2880 Pa (60.15 psf)Pos	0.25 mm (0.01")	4.57 mm (0.18")	2
OL for DP40 - 2880 Pa (60.15 psf)Neg	0.00 mm (0.00")	4.57 mm (0.18")	2

9.3.6.5.5 - Hardware Load Test - Refer to FTL report T21-061 for test on identical window with the only difference being it was wider; 60" wide instead of 48" wide.

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9.3.5 – Forced Entry Resistance (ASTM F588-14 & CAWM 301-90(1995))

Refer to FTL report T21-061 for test on identical window with the only difference being it was 12 inches wider. It was 60" wide instead of 48" wide.

Comment #1 - Internal screen not a factor in test.

Comment #2 – Deflection measurement taken from the horizontal mullion.

Testing was witnessed by: Jim Cruz with FTL.

For a complete description of the tested sample, refer to the attached fourteen (14) pages consisting of bill of materials, cross section drawings, and die drawings. This report is complete only when all the above referenced bill of materials and drawings are attached.


The bill of materials, cross section drawings, and die drawings of frame and sash members are on file and have been compared to the sample submitted. Test sample sections, bill of materials, drawings and a copy of this report will be retained at the test laboratory for four years.

This test report may not be modified in any way without the written consent of Fenestration Testing Laboratory, Inc (FTL).


The preceding test results relate only to the tested specimen and were obtained by using the applicable test methods listed in section 3.0 and 6.0 above. This report does not constitute certification of this product or an endorsement by this laboratory. It is the property of the client named in section 1.0 above. Certification can only be granted by an approved administrator and/or validator.

Test Completion Date: October 18, 2018

Report Completion Date: October 22, 2018



Pete Cruz - Test Engineer



Jim Cruz - Laboratory Testing Manager