

Fenestration Testing Laboratory, Inc.

10235 8th Street, Rancho Cucamonga, CA 91730

Report #: T18-078

REPORT SUMMARY

REPORT #

T18-078

TESTED FOR

International Window Corporation
1551 Orangethorpe Ave.
Fullerton, CA 92831

SERIES & PRODUCT TYPE

6223 - ALUMINUM SINGLE HUNG WINDOW

CONFIGURATION

O/X

FRAME SIZE

1219.20 mm x 2133.60 mm (48.00" x 84.00")

SPECIFICATION

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

PRIMARY DESIGNATOR

CLASS LC-PG30 1219.20 x 2133.60 mm (48.00 x 84.00 in) Type: H

TEST COMPLETION DATE

March 6, 2019

REPORT DATE

March 21, 2019

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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) ALUMINUM SINGLE HUNG 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/I.S.2/A440-17

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-PG30 1219.20 x 2133.60 mm (48.00 x 84.00 in) Type: H

5.0 Sample Submitted:

5.1 Product Type: ALUMINUM SINGLE HUNG WINDOW

5.2 Series: 6223

5.3 Configuration: O/X

5.4 Product Dimensions:	Millimeters	Inches
Total Frame:	1219.20 x 2133.60	48.00 x 84.00
Fixed DLO:	1143.00 x 1003.30	45.00 x 39.50
Active Sash:	1181.10 x 1066.80	46.50 x 42.00

5.5 Glass and Glazing:

<i>IGU Thickness</i>	<i>Spacer Type</i>	<i>Interior Lite</i>	<i>Exterior Lite</i>	<i>Glazing method</i>
0.74" overall wide	Metal "U" shaped	3 mm Annealed	3 mm Annealed	The active and fixed IGUs were channel glazed with vinyl wrap around gasket. The active IGU was glazed to the rails and stiles and the fixed IGU to the frame and fixed interlock.

5.6 Weepage:

<i>Drainage Method</i>	<i>Size</i>	<i>Quantity</i>	<i>Location</i>
Rectangular weep	1.75" x 0.25"	One (1) at each end	Sill outside face. Each weep contained a gated weep cover.
The fixed interlock drained out at the end of the glazing pocket where it fit into the jamb.			

5.7 Pressure balancing: None

5.8 Weather-stripping:

<i>Type</i>	<i>Quantity</i>	<i>Location</i>
0.270" overall high polypile with center fin	See "Location"	Active Sash: Bottom rail and lock rail – one strip facing out. Each stile – one strip facing out and one strip to its respective jamb.

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5.9 Sealants:

Sealant was applied at the following locations:

- The frame corners were all sealed full profile.
- The fixed interlock to the jamb was sealed on the inside and outside facing sides.

5.10 Hardware:

<i>Type</i>	<i>Quantity</i>	<i>Location</i>
Metal cam lock	One (1)	Lock rail - at midspan. The lock was fastened with a pair of #8 x 0.5" square drive pan head screws. When locked, the tongue of the lock engaged an integral leg on the fixed interlock extrusion.
Tilt Block and tackle balance and metal pins	Two (2) of each	One balance in each jamb active channel. The active sash bottom rail contained a pivot pin fastened with a pair of #6 x 0.59" PPH screws at each end. Each pivot pin engaged its respective balance shoe at the bottom of the balance.
PVC spring loaded pivot latch/sash guide	Two (2)	Lock rail - A pivot latch/sash guide was fastened with a pair of #8 x 0.75" PFH screws.

5.11 Construction:

<i>Location</i>	<i>Joinery Type</i>	<i>Number of Fasteners</i>	<i>Fastener Size</i>
Frame corners	Mechanically joined	Two (2) per corner	#6 x 1.25" PPH
Active sash corners	Mechanically joined	One (1) per corner	#6 x 1.25" PPH

The fixed interlock was coped at each end and an aluminum shear block was inserted into the hollow of the fixed interlock at each end. The ends of the fixed interlock each fit into their respective jamb. The fixed interlock was fastened from the outside through each jamb and into the shear block with a pair of #8 x 0.5" square drive pan head screws.

5.12 Reinforcement: None

5.13 Installation:

<i>Location on frame</i>	<i>Anchor type</i>	<i>Spacing</i>
Full perimeter through the nail-on fin and into a 2" x 6" lumber rough opening.	#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.

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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	216.6 N (48.70 lbf)	230 N (51.71 lbf)	
Maximum force to maintain motion	167.6 N (37.70 lbf)	180 N (40.47 lbf)	
Latching device force	4.44 N (1.00 lbf)	100 N (22.48 lbf)	

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

Test Description	Results	Allowed	Comments
75 Pa differential pressure	1.05 L/s*m ²	1.5 L/s*m ²	
1.57 psf differential pressure	0.21 cfm/ft ²	0.30 cfm/ft ²	
The tested specimen meets/exceeds the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440 for air leakage resistance.			

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

Test Description	Results	Allowed	Comments
DP30 - 220 Pa (4.59 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
DP30 - 1440 Pa (30.08 psf) Pos	2.03 mm (0.08")	Report only	2
DP30 - 1440 Pa (30.08 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 DP30 - 2160 Pa (45.11 psf) Pos	3.30 mm (0.13")	4.57 mm (0.18")	2
OL for DP30 - 2160 Pa (45.11 psf) Neg	2.79 mm (0.11")	4.57 mm (0.18")	2

9.3.5 - Forced Entry Resistance (ASTM F588-17 & CAWM 301-90(1995))

Test Description	Results	Allowed	Comments
ASTM F588 Type A and CAWM 301 Type I	No Entry	No Entry	3

9.3.6.3 - Deglazing Test (ASTM E987-88(2017))

Test Description	Results	Allowed	Comments
Active Sash Pull Rail - 320 N (71.94 lbf)	15%	Less than 90% of glazing bite	
Active Sash Stile - 230 N (51.71 lbf)	18%	Less than 90% of glazing bite	

Comment #1 - Tested with and without insect screen in place.

Comment #2 - Deflection measurements were taken from the interlock.

Comment #3 - ASTM F588 grade 10 was achieved.

Testing was witnessed by: Jim Cruz and Daniel Orosco with FTL and by Abe Peralta and Bill Tancordo with IWC.

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For a complete description of the tested sample, refer to the attached twelve (12) 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.

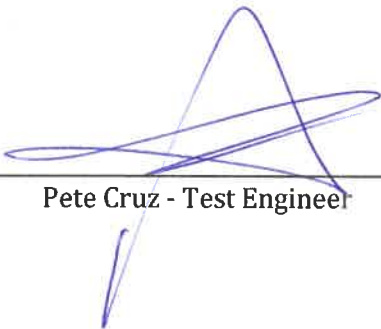
The bill of materials, cross section drawings, and die drawings of frame and sash members are on file and have been compared to the sample submitted. Test sample sections, bill of materials, drawings and a copy of this report will be retained at the test laboratory for four years.

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

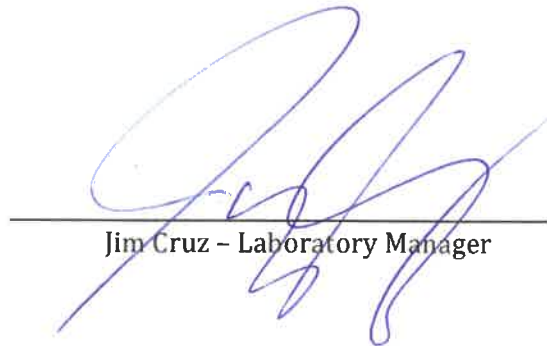
The preceding test results relate only to the tested specimen and were obtained by using the applicable test methods listed in section 3.0 and 6.0 above. This report does not constitute certification of this product or an endorsement by this laboratory. It is the property of the client named in section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

Test Completion Date: March 6, 2019

Report Completion Date: March 21, 2019



Pete Cruz - Test Engineer



Jim Cruz - Laboratory Manager