Fenestration Testing Laboratory, Inc.
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REPORT SUMMARY

REPORT SPECIFICATION
North American Fenestration Standard/specification for windows, doors, and skylights AAMA/WDMA/CSA 101/I.S.2/A440-11, AAMA 450-10 Voluntary Performance Rating Method of Mulled Fenestration Assemblies & Canadian Supplement A440S1-09

REPORT #
T15-085

TESTED FOR
Fleetwood Windows and Doors
1 Fleetwood Way
Corona, CA 92879

PRODUCT TYPE
Fixed Window (Aluminum Thermally Broken)

SERIES
250-T

CONFIGURATION
O/O/O

PERFORMANCE GRADE
PG 35
Individual Rating: FW - CW 35
Mulled Fenestration Rating: CW 35
Applied Rating: CW 35

PRIMARY DESIGNATOR
Class CW - PG35: Size tested 4603.75 mm x 2438.40 mm (~181 1/4" x 96") - Type FW

Secondary Designator
Canadian Air Infiltration / Exfiltration = Fixed Level

TEST COMPLETION DATE
11/2/15

REPORT DATE
11/25/2015

Reference should be made to Report No. T15-085 for complete test specimen description and data.

1.0 Tested For: Fleetwood Windows and Doors
1 Fleetwood Way
Corona, CA 92879

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 fixed window described in paragraph 5.0 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/A440-11

3.1 AAMA 450-10 Voluntary Performance Rating Method of Mulled Fenestration Assemblies

3.3 Canadian Supplement A440S1-09

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 Primary Designator:
Class CW - PG35: Size tested 4603.75 mm x 2438.40 mm (~181 1/4" x 96") - Type FW

5.0 Sample Submitted

5.1 Product Type: Fixed Window (Aluminum Thermally Broken)

5.2 Series/Model: 250-T

5.3 Configuration O/O/O

5.4 Test Sample Provider: Fleetwood Windows and Doors

5.5

Product Size:	Millimeters	Inches
Frame:	4603.75 mm x 2438.40 mm	~181 1/4" x 96"
Window DLO	1426.64 mm x 2340.86 mm	~56.16" x 92.16"
Individual window size	1524 mm x 2438.4 mm	~60" x 96"

5.0 Sample Submitted (Continued)

5.6 Glass and Glazing

Glass Type	Spacer Type	Interior Lite	Exterior Lite	Glazing Method
1.0" Overall	.5" wide Spacer	.250" clear tempered	.250" clear tempered	Each glass lite rested on (2) 3"x1"x1/4" rubber setting blocks, centered ~3" in from each end. The glass was outside glazed onto a bulb vinyl and secured with glass stop containing bulb vinyl. Silicone 6" each direction of glazing corner.

5.7 Weepage

Draining Method	Size	Quantity	Location
Weep slot	1.00" x 0.18"	2	Sill ~4.5" from each end of each lite.

5.8 Weatherstripping

Type:	Quantity	Location
Hollow bulb vinyl	1 strip	On the glazing stops facing in.
Hollow bulb vinyl	1 strip	Frame, full perimeter, facing out.
Hollow bulb vinyl	1 strip	The mullion inside and out contained a bulb vinyl where it contacts each jamb.

5.9 Hardware

Type:	Quantity	Location
N/A	N/A	N/A

5.0 Sample Submitted (Continued)

5.10 Construction

Location	Joinery Type	Number of Fasteners
All frame corners	The jambs are mitered to the head and sill, crimped over a corner key and welded	N/A
Frame	T.B. 1/4" debriged	N/A
Sill	Window sits over a sill pan	N/A
Mullion	T.B. 1/4" debridged	N/A
Jambs and mullion	Jambs were captured by the mullion and the jambs and mullions were mechanically connected with PFH screws	8 Total (4 per mating jamb; on one side starting at 6" and then 24" O.C.; on the other side starting at 18" and then 24" O.C.)

5.11 Reinforcement

Location	Material
N/A	N/A

5.12 Sealant

Location
All frame corner joints.
Full perimeter of the sill pan vertical leg to the frame
The mullion at each end is sealed from the nail fin across to the front fully encapsulating any and all voids
The interior of the mullion is sealed to each jamb full length.

5.13 Installation

The test specimen was installed into a 2" x 8" wooden rough opening.

Location on frame	Anchor type	Spacing
Head, jambs, and sill	Nail fin, secured with #8 x 1.25" PFH screws	6" from each corner and 12" in the field

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6.0 Test Procedures and Results: All testing procedures were conducted in accordance with the performance requirements of the test specifications referenced in paragraph 3.0 of this report. (Laboratory conditions during test were 23.8 degrees Celsius (75 degrees Fahrenheit))

9.3.2 - Air Leakage (ASTM E 283-04)(2012) **Infiltration**

Test Pressure	Results	Allowed
75 Pa	0.0 L/s*sq.m	1.5 L/s*sq.m
1.57 psf	0.0 cfm/sq.ft.	0.30 cfm/sq.ft.

The tested specimen meets (or exceeds) the performance levels specified in AAMA/WDMA/CSA 101/I.S.2/A440-11 and Canadian Supplement A440S1-09 for air leakage resistance.

Optional Performance Testing (Air)

Canadian (only) Air Infiltration/exfiltration levels

9.3.2 - Air Leakage (ASTM E 283-04)(2012) **Infiltration - Canada**

75 Pa	0.00 L/s*sq.m	0.20 L/s*sq.m
1.57 psf	0.00 cfm/sq.ft.	0.04 cfm/sq.ft.

9.3.2 - Air Leakage (ASTM E 283-04)(2012) **Exfiltration - Canada**

75 Pa	0.00 L/s*sq.m	0.20 L/s*sq.m
1.57 psf	0.00 cfm/sq.ft.	0.04 cfm/sq.ft.

Note: Canadian air infiltration/exfiltration = Fixed Level

Additional air testing at 300 Pa (6.27 psf) {Canadian AW Class at Fixed level}

9.3.2 - Air Leakage (ASTM E 283-04)(2012) **Infiltration**

300 Pa	0.0 L/s*sq.m	0.20 L/s*sq.m
6.27 psf	0.0 cfm/sq.ft.	0.04 cfm/sq.ft.

9.3.2 - Air Leakage (ASTM E 283-04)(2012) **ex-filtration**

300 Pa	0.0 L/s*sq.m	0.20 L/s*sq.m
6.27 psf	0.0 cfm/sq.ft.	0.04 cfm/sq.ft.

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9.3.3 **Water Penetration** (ASTM E 547-00) (2009)

Test Pressure	Results	Allowed	Comments
580 Pa (8.35 psf)	Pass	No Leakage	

Optional Performance Testing (Water Penetration)

9.3.3 **Water Penetration** (ASTM E 547-00) (2009)

Test Pressure	Results	Allowed	Comments
580 Pa (12.11 psf)	Pass	No Leakage	

9.3.4.2 **Uniform Load Deflection at Design Pressure** (ASTM E 330-14)

Test Pressure & Direction	Results	Allowed	Comments
1680 Pa (35.09 psf) Pos	12.32 mm (~0.455 In.)	13.97 mm (~0.55 In.)	L/175
-1680 Pa (-35.09 psf) Neg	12.32 mm (~0.485 In.)	13.97 mm (~0.55 In.)	L/175

9.3.4.3 **Uniform load Structural Performance (Overload/Proof Load)** (ASTM E 330-14)

Test Pressure & Direction	Results	Allowed	Comments
2520 Pa (52.63 psf) Pos	0.51 mm (~0.02 In.)	7.32 mm (~0.288 In.)	0.3%
-2520 Pa (-52.63 psf) Neg	0.76 mm (~0.03 In.)	7.32 mm (~0.288 In.)	0.3%

9.3.5 **ASTM F 588 - Forced Entry Resistance Test for Windows**

Test	Results	Allowed	Comments
1.2.4 Type 'D' Fixed Window Assemblies			
A2.7.1	A2.1	Passed	No Entry
A2.7.3	A2.1	Passed	No Entry

9.3.5 **CAWM 301 - 90 Forced Entry Resistance Test for Windows**

Test	Results	Allowed	Comments
2.4.5 Type 'V' Fixed Window Assemblies			
5.4.1	A	Passed	No Entry
5.4.2	B	Passed	No Entry

For a complete description of the tested sample refer to the attached 6 pages consisting of the bill of materials, cross section drawings, and individual die drawings. This report is complete only when all of the above referenced drawings and bill of materials are attached.

Cross section drawings and die drawings of frame members are on file and have been compared to the sample submitted. Test sample sections, 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.

The preceding test results relate only to the tested specimen and were obtained by using the applicable test methods listed in sections 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.

Date Testing Completed: October 22, 2015

Date Report Completed: November 25, 2015

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