BS 6375-1:2015+A1:2016- Performance of Windows & Doors, Classification and Guidance for Weather Tightness

Aanco (UK) Ltd t/a Made for Trade Limited

Test Report No. R4791738076-3

24 June 2025

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1. Introduction

Test Details	
Customer:	Aanco (UK) Ltd t/a Made for Trade Limited Wellington House, Wynyard Avenue Billingham, TS22 5TB GB
Product tested:	Rooflight
Date(s) sample(s) received:	10th April 2025
Date of test:	11th April 2025
Test conducted at:	UL International (UK) Limited Halesfield 2 Telford Shropshire TF7 4QH
Test conducted by:	D Adams *Senior Engineering Technician* S Ward *Engineering Technician*

Report Authorisation	
Report compiled by:	*E Round* *Laboratory Engineer*
Authorised by:	J Ratcliffe *Laboratory Engineer*

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2. Summary of Results

The following summarises the results of testing carried out in accordance with the relevant testing and classification standards:

	Test Method & Classification Standard	***Achieved Max. Test Pressure***	***Classification***
Air Permeability	BS EN 1026:2016 BS EN 12207:2000	600 Pa	4
Water Tightness	BS EN 1027:2000 BS EN 12208:2000	600 Pa	9A
Wind Resistance	BS EN 12211:2016 BS EN 12210:2016	1600 Pa	C4
Classification according to Table 1 of BS 6375-1:2015+A1:2016			1600

More comprehensive details are reported in Section 6.

Note: *These results are valid only for the conditions under which the test was conducted All measurement devices, instruments and other relevant equipment were calibrated and traceable to National Standards.*

2.1 Deviations from BS 6375-1:2015+A1:2016

***** The sample was not conditioned for a minimum of four hours as required by the standard. All testing was completed outside, so temperature and humidity were outside the allowable. Air leakage range (10.0°C, 67.6% RH)

The water penetration test was completed outside of the laboratory, so the temperature and humidity were recorded immediately before the test were found to be outside the allowable ranges; (18.0°C, 41.9% RH)

****** The spraybar set up deviated from clause 6.2 of BS EN 1027:2016 due to the orientation of a roof light sample as:

i. The spray bar was set up along the centre of the rooflight, at a height of 250mm from the face of the uppermost edge.
ii. The nozzles were set at 90° (perpendicular) from the face of the sample as this simulated rain in typical conditions.

2.1 Decision Rule

Classifications reported in Section 5 indicate that the product conforms with the relevant accuracy requirements of the testing standards (as summarised below) and the expanded measurement uncertainty (k= 2 for approximately 95% coverage probability) is no greater in magnitude than the accuracy requirements defined in Section 4 of BS EN 12207:2000 and Section 4 and Section 5 of BS EN 12210:2016.If the measured value is on the limit, the result is defined as a pass. This means that the risk of a false positive is 50%. For further information regarding risk assessment refer to ILAC G8: 2019.

2.2 Measurement Uncertainty

The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor k = 2, providing a level of confidence of approximately 95%, and for the air leakage measurements is +/- 1.9 % whereas for the wind resistance measurements is +/- 1.8 %.

3. Description of Test Sample

The description of the test sample in this section has been supplied by Aanco (UK) Ltd t/a Made For Trade and has not been verified by UL International (UK) Limited.

See Section 7 for test sample drawings as provided by the customer.

General Information	
Project number:	4791738076-2 4791738076-3
Product range name:	Rooflight
Project name to appear on front page of the test report:	Korniche FlatLite
Configuration:	
Opening direction:	
Product manufacturer:	Made for Trade
The sample is typical of normal production:	Yes
Please define the closing condition of the sample: **I.e. Closed, fastened, latched, locked and secured etc.**	
Weight of Sample including subframe (kg):	60kg

Outer Frame			
Height:	850MM	**Outer frame gasket**	
Width:	1300mm	Gasket type:	Silicone
Outer frame material:	Aluminium 6063-T6	Manufacturer:	Ideal Sealants
Surface finish		Product name:	Idealseal polymer sealant
Outer frame Part Numbers		Product code:	MS290
Top:	A-07837	**Threshold**	
Bottom:		Manufacturer:	
Lock side:		Product name:	
Hinge side:		Product code:	
Outer frame section size		Material:	
Width:	38mm	**Outer frame joint method**	
Depth:	30mm	Head:	
Reinforcing:		Foot:	
Manufacturer:			
Product name:			
Product code:			
Material:			

Glazing			
Glass unit		**Glazing gasket**	
Manufacturer:	Claytons	Gasket type:	
Inner thickness:	4	Manufacturer:	
Spacer material:	18	Product name:	
Outer thickness:	6.8	Product code:	
Unit sizes:	28.8	**Glazing clip**	
Bead		Manufacturer:	
Manufacturer:		Product name:	
Product name:		Product code:	
Product code:		**Glazing tape details**	
Bead size:		Manufacturer:	Reddiseals
Bead material:		Product name:	Security Glazing Tape
		Product code:	SGT122

Confirmation

Customer is to confirm that the samples provided for testing are representative of standard production. Please note: the details given above, as well as the drawings supplied by the customer as confirmed as typical of normal production are not verified by UL International (UK) Limited.	
Company:	Aanco Made for Trade
Name:	Harley Bidwell
Position:	Design Engineer
Date:	27/05/25

4. Test Arrangement

4.1 Test Chamber

A window specimen, supplied for testing in accordance with the relevant British and European Standards, was mounted into a rigid test chamber. The pressure within the chamber was controlled by means of a centrifugal fan and a system of ducting and valves. The static pressure difference between the outside and inside of the chamber being measured by means of a pressure transmitter.

4.2 Instrumentation

4.2.1 Static Pressure

A pressure measurement device capable of measuring rapid changes in pressure to an accuracy within 5%, was used to measure the pressure differential across the sample.

4.2.2 Air Flow

An air flow meter mounted in the air system ducting was used to measure the airflow required to obtain pressures within the test chamber. The system has the capability of measuring airflow through the sample to an accuracy of ±5%.

4.2.3 Water Flow

A flow meter(s), mounted in the spray frame water supply system, was used to measure water flow to the test sample to an accuracy of ± 10%.

4.2.4 Deflection

Deflection measurement devices with an accuracy of ±5% were used to measure deflection of principle framing members. These measurement devices were mounted at mid span and as near to the supports of the members and located in such a way that any measurement was not influenced by the application of any loading to the sample. The gauges were mounted as shown in Figure 2.

4.2.5 Temperature & Humidity

A digital data logger capable of measuring temperature with an accuracy of ±3°C and humidity with an accuracy of ±5 %RH was used.

4.2.6 Barometric Pressure

A digital barometer capable of measuring barometric pressure with an accuracy of ±1 kPa was used.

4.3 Pressure Generation

4.3.1 Static Air Pressure

The air supply system comprised of a centrifugal fan assembly and associated ducting and control valves and was used to create both positive and negative static pressure differentials. The fan provided a constant airflow at the required pressure and period required for the tests.

Note: *References are made to both positive and negative pressures in this document, it should be noted that in these instances, positive pressure is when pressure on the weather face of the sample is greater than that on the inside face and vice versa.*

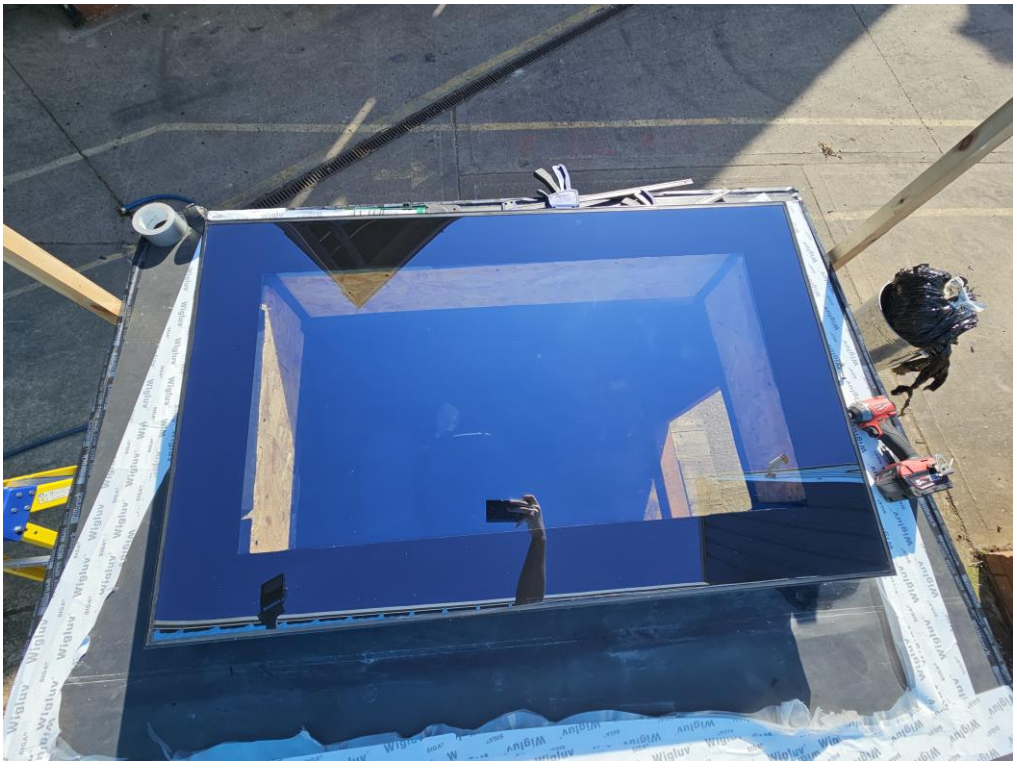
4.4 Water Spray System

The spray nozzles produced a circular full cone spray pattern and a spray angle of 120° (+0°/–10°) at working pressure of 2 – 3 bar and a flow rate of 2 litres/min (± 0.2 litres/min) per nozzle. The nozzles were spaced at 400 mm (± 10mm) along the axis of the spray bar and the nozzles were arranged so that the lateral distance between the outer edge of the surround and the outermost nozzles shall be greater than 50mm but not exceeding 250mm.

The nozzles were set at 90° (perpendicular) from the face of the top edge of the sample.

The nozzle line was located at 250mm (+10mm/- 0mm) from the face of the topmost edge of the rooflight, in order to provide complete wetting of the adjacent horizontal frame member(s) and glazing. The spray bar was arranged lengthways above the centre of the rooflight.

Figure 1 – Test arrangement



5. Test Procedures

Testing was carried out in accordance with the following standards:

-Performance of windows and doors BS 6375-1:2015+A1:2016
Part 1: Classification for weathertightness and guidance on selection and specification

-Windows and doors - Air Permeability - Test method	BS EN 1026:2016
-Windows and doors - Air Permeability - Classification	BS EN 12207:2000
-Windows and doors - Watertightness - Test method	BS EN 1027:2000
-Windows and doors - Watertightness - Classification	BS EN 12208:2000
-Windows and doors - Resistance to wind load - Test method	BS EN 12211:2016
-Windows and doors - Resistance to wind load – Classification	BS EN 12210:2016

5.1 Sequence of Testing

1. Air Permeability – Infiltration
2. Air Permeability – Exfiltration
3. Watertightness
4. Wind Resistance - P1
5. Wind Resistance - P2
6. Repeat Air Permeability – Infiltration
7. Repeat Air Permeability – Exfiltration
8. Wind Resistance - P3

Note: *Testing was completed outside, so temperature and humidity were outside the allowable for testing, thus is a deviation from BS 6375-1:2015+A1:2016.*

5.2 Air Permeability - Infiltration

The air leakage of the test chamber and joints between the chamber and test sample was determined by sealing the sample with adhesive tape and polythene sheeting and measuring the air flows at positive pressure differentials of: 50, 100, 150, 200, 250, 300, 450 and 600 Pa, each step being held for at least 10 seconds.

The sample was unsealed, and any opening lights were opened and closed at least once before being brought into the closing condition defined by the manufacturer as listed in Section 3. Three pressure pulses of 660 Pa positive pressure were then applied to the test sample.

Air flows measurements were then repeated with the sample unsealed and the difference between readings being the air leakage through the test sample which was then adjusted to normal conditions as defined in BS EN 1026:2016.

5.3 Air Permeability - Exfiltration

The air permeability test was repeated using negative pressures as described in Section 5.2.

5.4 Watertightness

Any opening lights were opened and closed at least once before being brought into the closing condition defined by the manufacturer as listed in Section 3.

Water was then sprayed on to the sample as per section 4.4, for 15 minutes at 0 Pa. The water spray continued, and the pressure was increased in the following increments: 50, 100, 150, 200, 250, 300, 450, 600 Pa (each stage being held for 5 minutes). The interior face of the sample was continuously monitored for water ingress throughout the test.

5.5 Wind Resistance

5.5.1 Wind Resistance – P1

Three pressure pulses were applied to the test sample equal to 1760 Pa positive pressure (Pressure P1 + 10%) and each peak held for at least 3 seconds. After returning to zero pressure, all sensors were then zeroed.

A peak test pressure of 1600 Pa was applied at a rate not exceeding 100 Pa/s, either incrementally or continuously. Once the peak pressure was reached, it was maintained for a period of 30 seconds, and the required frontal deflections were recorded. The pressure was then reduced to 0 Pa, at a rate not greater than 100 Pa/s, and the residual deformation was recorded 60 ± 5 secs of returning to 0 Pa. The test was then repeated at negative pressures.

5.5.2 Wind Resistance – P2

The sample was subjected to 50 cycles including negative & positive pressures.

The first step was at a test pressure of 800 Pa negative pressure and followed by 800 Pa positive pressure, as was the last of the sequence of 50 cycles. The time in which the variation from –800 Pa and +800 Pa and the reverse was 7 ± 3 s, with each peak being maintained for 7 ± 3 s.

Following completion of the required 50 cycles, all moving parts of the test sample were opened and closed, and note was taken of any damage or functional defects.

5.5.3 Wind Resistance – P3

The safety test consisted of one cycle of a negative and positive test pressures, with the peak test pressure being 2400 Pa and negative test pressure applied first.

The time in which the variation from 0 Pa to – 2400 Pa and back to 0 Pa was 7 ± 3 s between each stage, with the peak being maintained for 7 ± 3 s.

Positive test pressure was applied following a 7 ± 3 s rest at 0 Pa. Variation from 0 Pa to + 2400 Pa and back to 0 Pa was the same duration as for the negative test pressure P3.

Following completion of the test, the sample was checked to ensure it stayed closed and any parts of the sample which had come detached were recorded.

6. Test Results

6.1 Lab Conditions

The conditions measured inside the laboratory were as follows:

Temperature (°C)	Humidity (%RH)	Atmospheric Pressure (kPa)
10	67.6	101.03

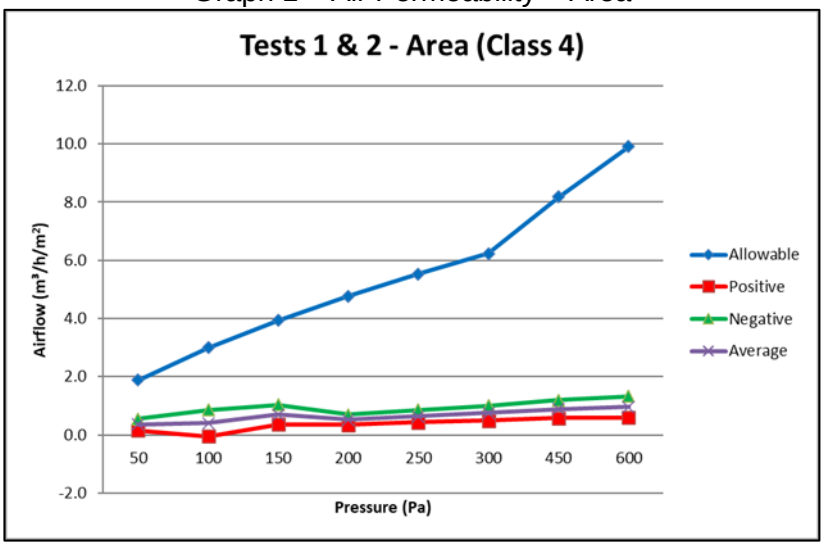
6.2 Air Permeability

Calculated area of test sample 1.09 m^2

6.2.1 Initial Air Permeability Tests 1 & 2

Pressure Differential Pa	Air Permeability Rate Infiltration & Exfiltration Tests **$m^3/hr/m^2$ - Area**		
	Test No. 1 (Positive)	**Test No. 2** (Negative)	**Average**
50	0.16	0.55	0.35
100	0.00	0.85	0.40
150	0.36	1.04	0.70
200	0.35	0.69	0.52
250	0.43	0.85	0.64
300	0.49	1.01	0.75
450	0.59	1.19	0.89
600	0.60	1.33	0.96

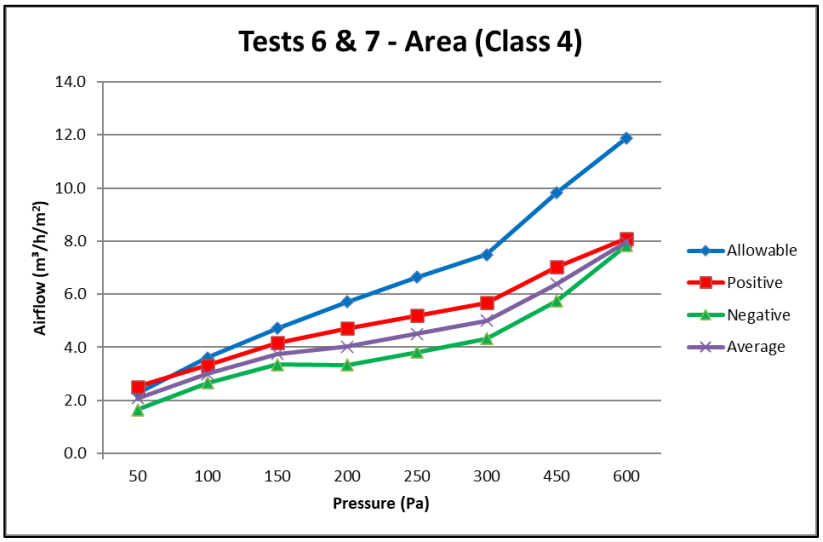
Graph 1 – Air Permeability – Area



6.2.2 Repeat Air Permeability Tests 6 & 7

Pressure Differential Pa	Air Permeability Rate Infiltration & Exfiltration Tests **$m^3/hr/m^2$ - Area**		
	Test No. 6 (Positive)	**Test No. 7** (Negative)	**Average**
50	2.51	1.64	2.08
100	3.31	2.66	2.99
150	4.16	3.34	3.75
200	4.72	3.33	4.02
250	5.20	3.81	4.50
300	5.67	4.33	5.00
450	7.02	5.75	6.38
600	8.10	7.84	7.97

Graph 2 – Air Permeability – Area



6.2.4 Air Permeability – Classification

Based on Area
4
Overall Class
4

Note: *Due to the high performance of the test specimen, the chamber leakage exceeded the maximum 30% rule and as such is a deviation from the test standard.*

6.3 Watertightness Testing

6.3.1 Watertightness – Results

Water Temperature (°C)		18	
Spray method used		1A	
Observations			
Air Pressure (Pa)	**Time Stage Held (minutes)**	**Comments**	**Classification**
0	15	No leakage observed	1A
50	5	No leakage observed	2A
100	5	No leakage observed	3A
150	5	No leakage observed	4A
200	5	No leakage observed	5A
250	5	No leakage observed	6A
300	5	No leakage observed	7A
450	5	No leakage observed	8A
600	5	No leakage observed	9A

6.3.2 Watertightness – Classification

Overall Classification
9A

6.4 Wind Resistance

6.4.1 Test 4 – Wind Resistance – P1 Results

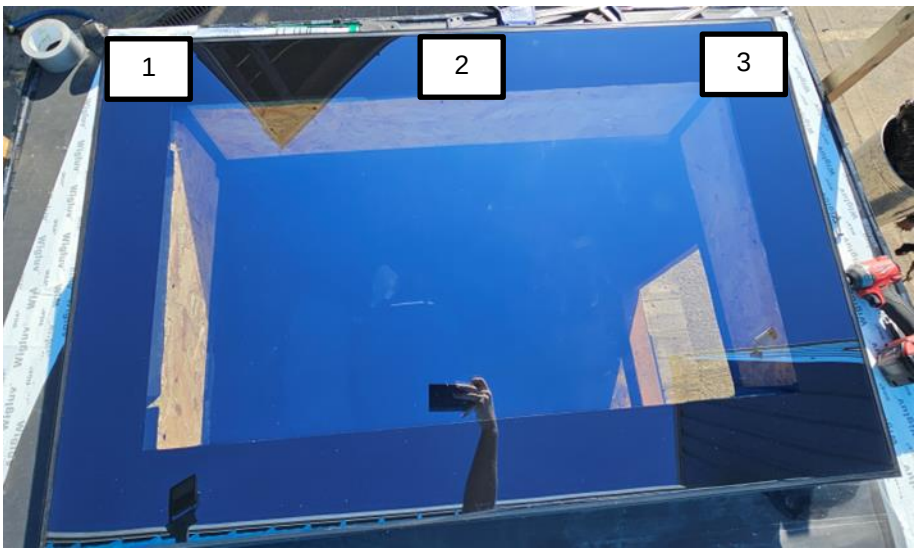
Deflection was calculated using the following formula:

$$Deflection = [measurement\ recorded\ by\ probe\ at\ location\ 'lx'] \ l2 - \left(\frac{l3-l1}{2}\right)$$

Member Under Test	Test Pressure Pa	Maximum Deflection mm	Residual Deformation mm	Deflection Class	Relative Frontal Deflection
Member A	1600	-0.2	0.0	Class C	1/-8766.7
	-1600	0.1	0.0	Class C	1/13150.0

An inspection carried out following Test 4 – Wind Resistance, P1, after both positive and negative pressure testing at 1600 Pa, showed no evidence of any permanent deformation or damage to the test sample.

Figure 2 – Position of deflection measurement sensors



6.4.2 Test 5 – Wind Resistance – P2 Results

An inspection carried out following Test 5 – Wind Resistance, P2, after 50 cycles at both positive and negative pressure testing at 800 Pa, showed no evidence of any permanent deformation or damage to the test sample.

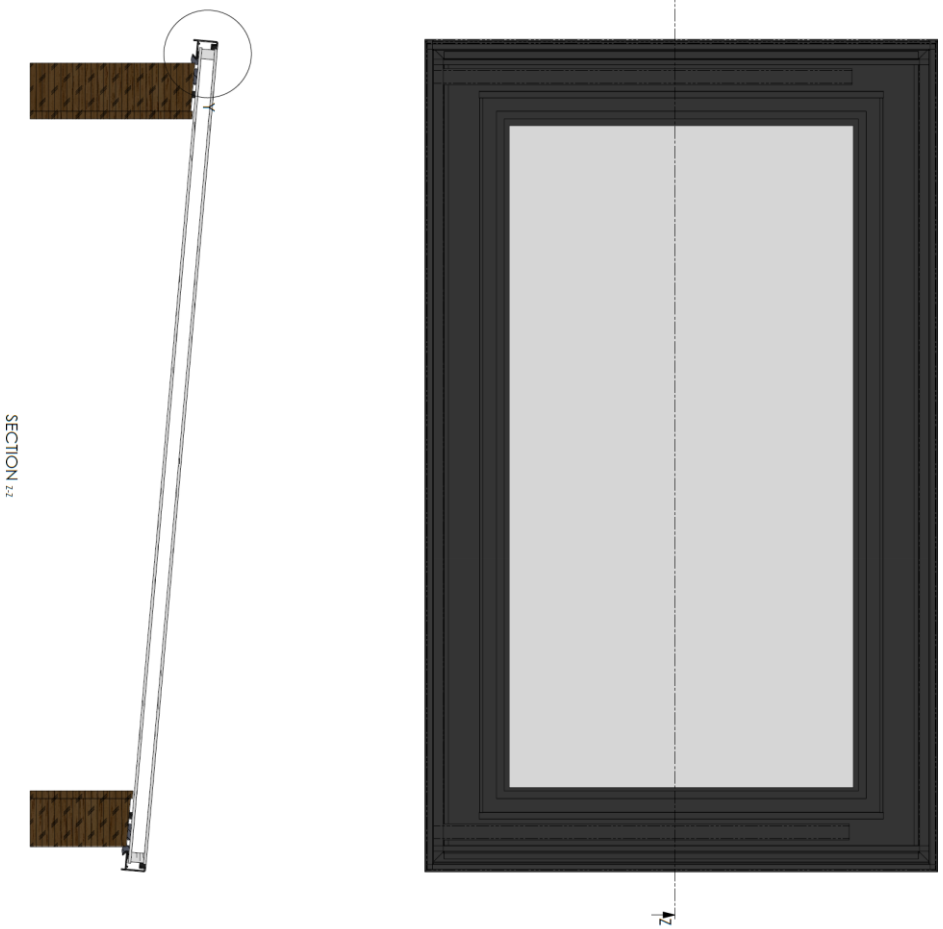
6.4.3 Test 8 – Wind Resistance – P3 Results

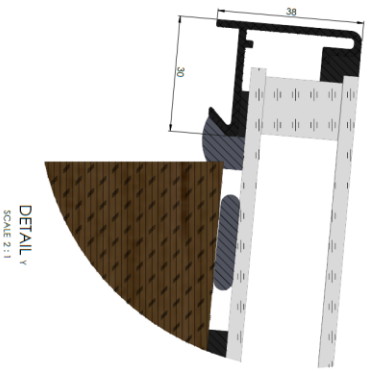
An inspection carried out following Test 8 – Wind Resistance, P3, after both positive and negative pressure testing at 2400 Pa, showed no evidence of any permanent deformation or damage to the test sample.

6.4.4 Wind Resistance - Classification

Overall Classification
C4

7. System Drawings





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