Test Report

ISSUED BY	Jason Taylor
DATE OF ISSUE	09/08/2018

4052

ERA
i54, Valliant Way,
Wolverhampton,
West Midlands WV9 5GB

Approved Signatory
Name Ben Penson
Signature

Client Name: SmartFrames South West Ltd

Address: Unit 4 Aler Vale Buildings
Kingskerswell
Newton Abbot
TQ12 5AZ

Test Report Number: 1859

System Tested: Double Door With Mid-rail

System Tested By: ERA
i54, Valliant Way
Wolverhampton
West Midlands
WV9 5GB

Test Standard: BS 6375-1:2015 - Performance of Windows and Doors

	Test Method	Classification
Air Permeability	BS EN 1026:2016	BS EN 12207:2000
Watertightness	BS EN 1027:2016	BS EN 12208:2000
Resistance to Wind Load	BS EN 12211:2016	BS EN 12210:2016

Testing Conducted By: Jason Taylor / Adrian Stokes

Date of Test: 06/08/2018

Test Preliminaries: The ambient temperature and humidity close to the sample was within the range 10° to 30° and 25% to 75% RH and the sample was conditioned for at least 4h immediately before testing.

Airflow Measurement Device: Mini Air 60Mini 0,5-40 m/s & Flügelrad 100 Bi

Test Report

UKAS Accredited Testing Laboratory No. 4052

Certificate Number	1859

Contents

Test Results Summary

Test Type	Classification Achieved
Overall Air Permeability (Up to 300 Pa)	3
Watertightness	2A
Resistance to Wind Load	B3
Exposure Category and Classification	1200

Test Conditions:

Temperature °C	**24.4**
Relative Humidity %	**44.0**
Atmospheric Pressure kPa	**100.0**

Sample Specification

System Manufacturer: SmartFrames South West Ltd

Model: Eurologik French Doors

System Type: Double Doors Open Out (Mid Rail)

System Size: W 2000 mm x H 2200 mm

Method of Jointing: Welded

Materials & Surface Treatment: UPVC

Profile Part Number: OVOLO Door Frame EWS7706, Sash EW7718, EWS7719, Midrail EWS 7709
Chamfered Door Frame EWS7021, Sash EWS7018,EWS7019, Midrail EWS7009

Reinforcing Part Number: Frame EWS506A, EWS 622S
Sash EWS6185, EWS6195, EWS5185

Glazing Description: 4-20-4 Toughened

Locking System: ERA – 6635-00-85AA, Keep - 6980-055-13-LH-85
ERA 3* Cylinder - BS-FOR-4050-DC-1

Hinges: ERA Anchorage Heavy Duty (4 Nos on Each Sash)

Fixings: 4.8 X 25mm, 3.9 x 20mm

Handle: ERA Balmoral 1A000

Other Hardware Details: Eurocell Riser blocks
ERA Dog blot and keep - DADBSA0007, DADBBL0008

*Above details are not fully verified by ERA.

Presence of Ventilation: No

Exposed Face: Opening Outwards

Closing Conditions: Locked

This report and the results shown within are based upon the information, drawings, samples and tests referred to in the report. The results are valid only for the conditions under which the test was conducted and for the specific range of doorsets and windows. The results obtained do not necessarily relate to samples from the production line of the above named company.

Air Permeability Test Description & Results

Air Permeability of Test Chamber

The air permeability of the test chamber was measured by sealing all joints in the test specimen. The air permeability of the test chamber with negative test pressures were measured, but without pressure pulses.

Overall Air Permeanbility of Test Specimen and the Test Chamber

All opening parts of the specimen were opened and closed before securing in the closed position in accordance with manufacturer's requirements. To commence testing, three pressure pulses each 10% greater than the maximum test pressure to be used in the test or 500Pa (150 Pa for internal pedestrian doorsets), whichever is greater was applied. The time to reach the maximum test pressure was not less than 1 s and the pressure was sustained for at least 3 s. Positive test pressure was applied in steps of 50 Pa up to 300 Pa and from 300 Pa in steps of 150 Pa. The air permeability at each step was measured and recorded. The duration of each step was sufficient to allow the test pressure to stabilise before the air permeability was measured. The procedure was repeated for negative pressures.

Test Results

The air flow measurements are adjusted at each step to calculate the air flow at normal conditions. The air permeability in terms of the length of the opening joint ($m^3/h.m$) and overall area ($m^3/h.m^2$) are calculated.

Positive Pressures

Pressure in Pascals (Pa)	Air Flow m^3h	Window Area		Seal Length	
		$m^3/h.m^2$	Class	$m^3/h.m$	Class
50	11.25	2.56	3	1.13	3
100	16.64	3.78	3	1.66	3
150	20.60	4.68	3	2.06	3
200	23.97	5.45	3	2.40	3
250	27.01	6.14	3	2.70	3
300	29.62	6.73	3	2.96	3

Negative Pressures

Pressure in Pascals (Pa)	Air Flow m^3h	Window Area		Seal Length	
		$m^3/h.m^2$	Class	$m^3/h.m$	Class
-50	14.61	3.32	3	1.46	2
-100	22.82	5.19	3	2.28	2
-150	31.54	7.17	3	3.15	2
-200	40.84	9.28	3	4.08	2
-250	51.22	11.64	3	5.12	2
-300	62.26	14.15	3	6.23	2

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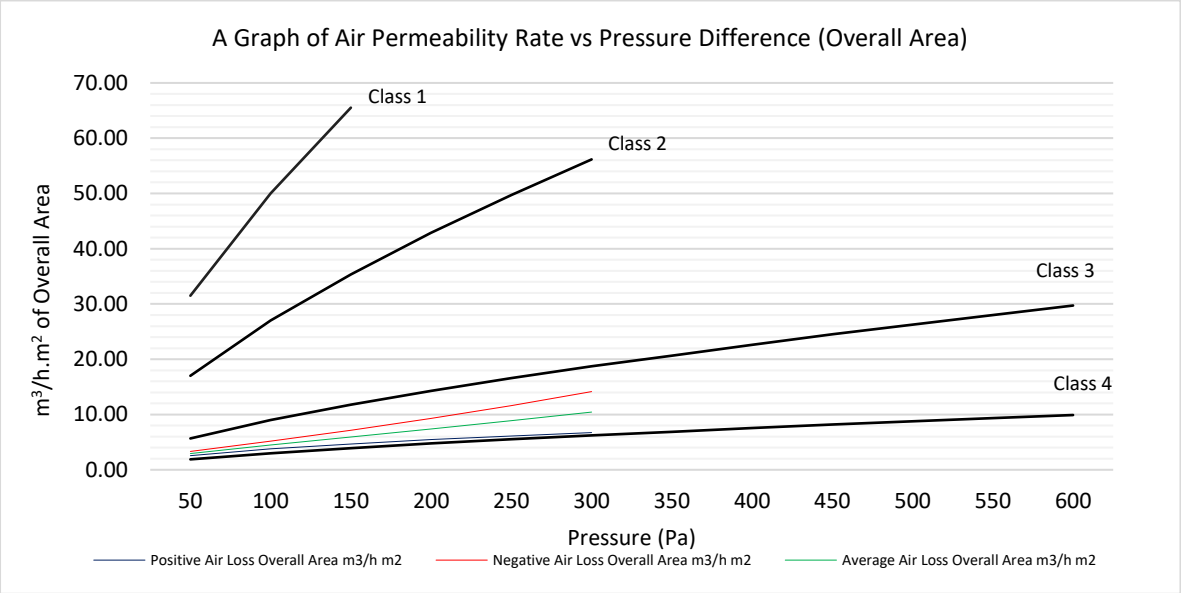
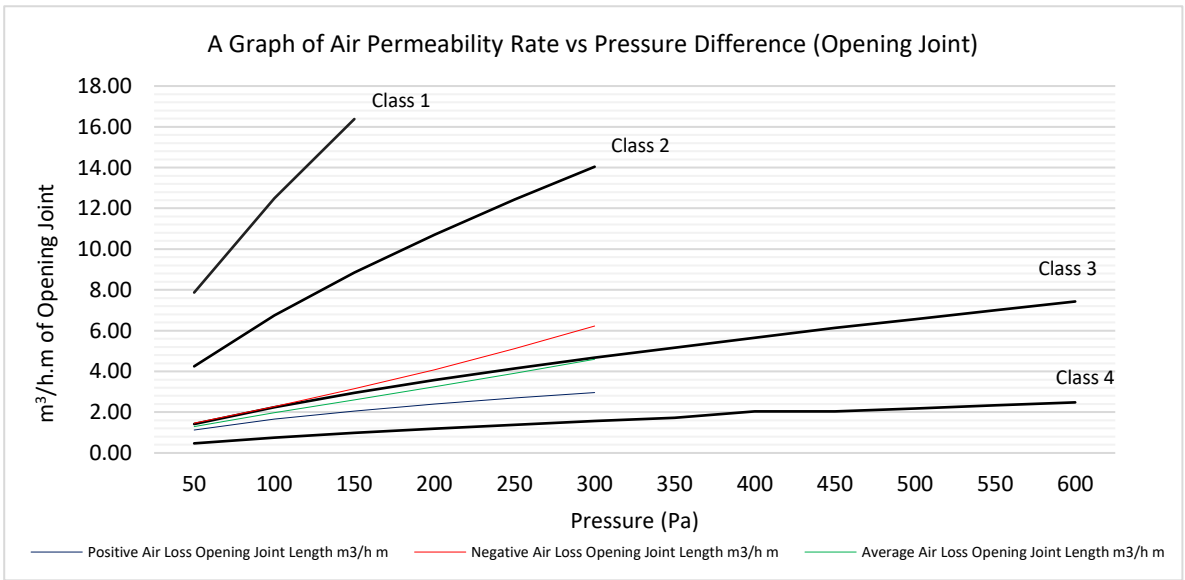
Average Pressures

Pressure in Pascals (Pa)	Air Flow m^3h	Window Area		Seal Length	
		$m^3/h.m^2$	Class	$m^3/h.m$	Class
50	12.93	2.94	3	1.29	3
100	19.73	4.48	3	1.97	3
150	26.07	5.92	3	2.61	3
200	32.41	7.36	3	3.24	3
250	39.11	8.89	3	3.91	3
300	45.94	10.44	3	4.59	3

Graphs





Classification:	Overall Area	3	Length of Opening Joints	3

Watertightness Test Description & Results

Spraying Phase

Spraying was applied first with the test pressure at 0 Pa for 15 min then the test pressure was increased every 5 min. The test pressures was applied in steps of 50 Pa up to 300 Pa and from 300 Pa in steps of 150 Pa. Prior to testing the flow of each row of nozzles were adjusted in accordance with BS EN 1027:2016 clause 5.6.

Test Results

The location and pressure at which any water penetrated the specimen and the time for which the maximum pressure was maintained before water penetrated was record.

The positioning of the spraying system was recorded and shown below.

Specification	Results
Angle of Nozzles (°)	24, 24, 24, 24, 24
Distance Between Outer Edge & Outermost Nozzles (mm)	Left Edge 220, Right Edge 190
Distance Between Nozzles (mm)	400, 400, 400, 400
Nozzle Line from External Face (mm)	250
Nozzle Line from Topmost Joint Line (mm)	80
Spraying Method	1A

Maximum Pressure At Which Any Water Penetrated The Specimen (Pa)	100
Time For Which The Maximum Pressure Was Maintained Before Water Penetrated	02:01
The Location At Which Water Penetrated	Leakage Observed Lockside Top And Bottom

Resistance to Wind Load Test Description & Results

Principles of Test

Application of a defined series of positive and negative test pressures at which measurements and inspections are made to assess relative frontal deflection and resistance to damage from wind loads.

Deflection Test

Measuring devices were fixed in position at each end and at the centre of the frame member to be measured

Test Pressure P1 (Pa)	1200

Three positive pressure pulses were applied, each 10% greater than the test pressure P1. The time to reach the maximum pressure was not less than 1 s and it was sustained for at least 3 s. All the gauges were zeroed.

After the test pressure was applied for 30 s, the required frontal deflection(s) and frontal displacement(s) were recorded.

The test pressure was reduced to 0 Pa, at a rate not greater than 100 Pa/s and the residual frontal deflection(s) and frontal displacement(s) were recorded.

The positive pressure procedure was repeated using negative test pressures.

Measuring Point	Positive Pressure		Negative Pressure	
	At Test Pressure (mm)	Residual (mm)	At Test Pressure (mm)	Residual (mm)
A_0	-4.76	0	4.08	0
M_0	-16.79	-0.12	15.65	0.15
B_0	-3.42	0.16	1.98	0

Relative Frontal Deflections (Positive Pressure)	≤ 1/175

Relative Frontal Deflections (Negative Pressure)	≤ 1/176

Repeated Pressure Test

The test specimen was subjected to 50 cycles including negative and positive pressures with the following features:

Test Pressure P2 (Pa)	600

- test pressure equal P2
- first step was negative, next was positive as is the last of the sequence of 50 impulses;
- variation from -P2 to +P2 and the reverse took (7 ± 3) s;
- value P2 was maintained at least for (7 ± 3) s

After completion of the 50 cycles, the moving parts of the specimen were opened and closed and any damage or functioning defects were noted

Any damage or functioning Defects	None

The test for air permeability was repeated in accordance with BS EN 1026:2016.

Positive Pressures

Pressure in Pascals (Pa)	Air Flow m^3h	Window Area		Seal Length	
		$m^3/h.m^2$	Class	$m^3/h.m$	Class
50	10.91	2.48	3	1.09	3
100	15.26	3.47	3	1.53	3
150	18.64	4.24	3	1.86	3
200	21.36	4.85	3	2.14	3
250	23.36	5.31	4	2.34	3
300	24.42	5.55	4	2.44	3

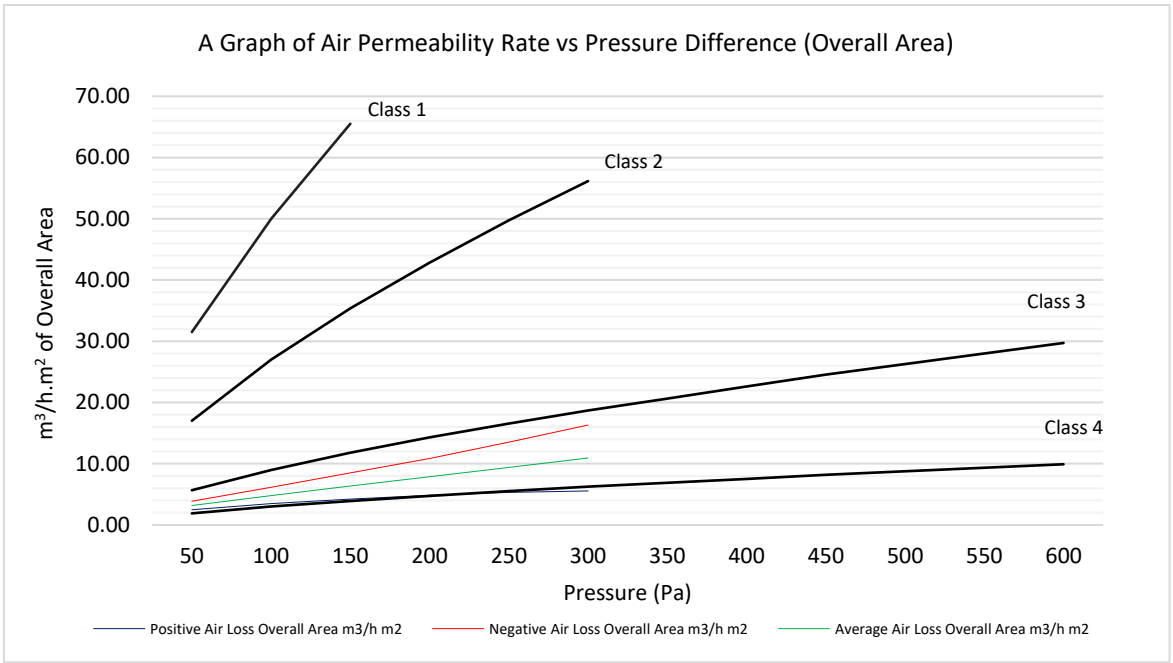
Negative Pressures

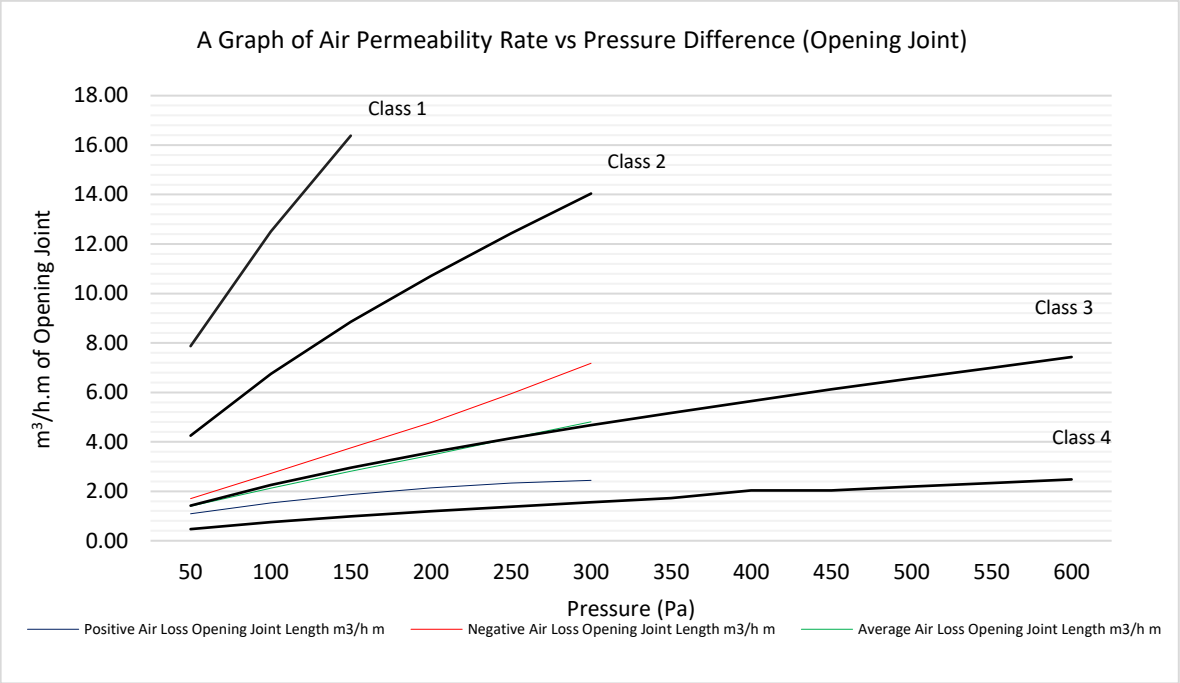
Pressure in Pascals (Pa)	Air Flow m^3h	Window Area		Seal Length	
		$m^3/h.m^2$	Class	$m^3/h.m$	Class
-50	17.03	3.87	3	1.70	2
-100	27.14	6.17	3	2.71	2
-150	37.52	8.53	3	3.75	2
-200	47.83	10.87	3	4.78	2
-250	59.39	13.50	3	5.94	2
-300	71.78	16.31	3	7.18	2

Average Pressures

Pressure in Pascals (Pa)	Air Flow m^3h	Window Area		Seal Length	
		$m^3/h.m^2$	Class	$m^3/h.m$	Class
50	13.97	3.18	3	1.40	3
100	21.20	4.82	3	2.12	3
150	28.08	6.38	3	2.81	3
200	34.59	7.86	3	3.46	3
250	41.38	9.40	3	4.14	3
300	48.10	10.93	3	4.81	2

Graphs





Classification:	Overall Area	3	Length of Opening Joints	2

Safety Test

The specimen was subjected to one cycle including negative and positive test pressure with the following features:

Test Pressure P3 (Pa)	1800

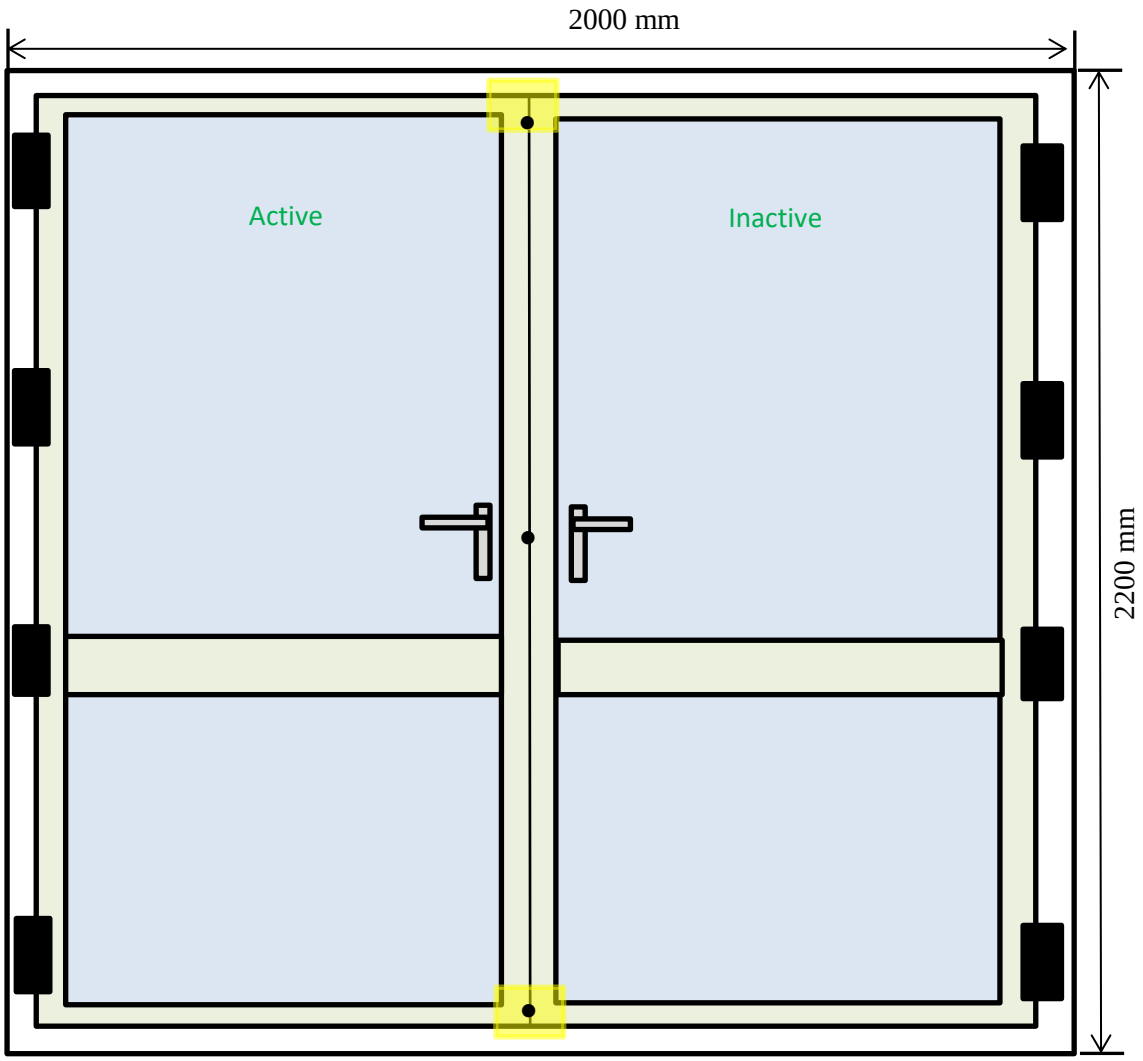
- test pressure equal P3
- negative test pressure was applied first;
- variation from 0 Pa to -P3 and back form -P3 to 0 took (7 ± 3) s, the maximum test pressure P3 was maintained for (7 ± 3) s;
- positive test pressure was applied after (7 ± 3) s rest at 0 Pa;
- variation from 0 Pa to +P3 and back to 0 Pa was the same duration as for the negative test pressure -P3.

Any Damage and Failure or Operating Difficulties	None

Total Uncertainty of Measurement ± **5.31** $m^3/h.m$

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%.

Drawing of Test Sample



● Transducer Probes

Water Leakage

*View from Inside.