



Test Report No: WTH1901#2-2

Date: 09/04/2019

Testing of: Single side hung flush casement window

Tested to: BS 6375-1:2015+A1:2016

Prepared for: Nico Manufacturing Ltd

This report shall not be reproduced except in full, (and then only as permitted by copyright laws), without written approval from The Window Test House.
Signatures used in this report are held on file.



CONTENTS

	Page No.
Authorisation	3
Test requested by	4
Details of test	5
Details of samples	6
Conclusion of tests	7
Test window drawing	8
Air permeability tables (first test)	9
Air permeability graphs (both tests)	10
Watertightness	11
Resistance to wind load	12
Air permeability tables (second test)	13
Deflection & leakage diagrams	14
Picture of test window	15

Test Report No. WTH1901#2-2	Page 3 of 15
Testing of Single side hung flush casement window	
Testing to BS 6375-1:2015+A1:2016	



AUTHORISATION

Test completed by: D.Kury
 Assisted by:
 Test witnessed by: B.Austin & C..Storer - Eurocell Building Plastics Ltd

Report produced by: D.Kury Position: Senior Test Engineer
 Signature: 
 Date: 03/05/2019
 For and on behalf of Nico Manufacturing Ltd Test Laboratory

Report authorised by: Martin Franklin Position: Laboratory Manager
 Signature: 
 Date: 03/05/2019
 For and on behalf of Nico Manufacturing Ltd Test Laboratory

Date of issue of report 03/05/2019

<p>Nico Manufacturing Ltd. Test Laboratory</p> <p>Oxford Road</p> <p>Clacton-on-Sea</p> <p>ESSEX</p> <p>CO15 3TJ</p> <p>Telephone +44 (0) 1255 422333</p> <p>Fax +44 (0) 1255 432909</p>	
---	---

Test Report No. WTH1901#2-2	Page 4 of 15
Testing of Single side hung flush casement window	
Testing to BS 6375-1:2015+A1:2016	



TEST REQUESTED BY

Origin of test request

Company Name	Nico Manufacturing Ltd
Company Address	109 Oxford Road Clacton on Sea Essex CO15 3TJ
Contact	Ian Harrison
Contact position	Sales Director

Quotation Details

Quotation No.	WTH1901
Dated:	25/03/2019

Test Report No. WTH1901#2-2	Page 5 of 15
Testing of Single side hung flush casement window	
Testing to BS 6375-1:2015+A1:2016	



DETAILS OF TEST

Description	Flush casement window
Model / type	Side hung
Make / Brand	Eurocell logic flush
Any special requirements	

Test Specification	BS 6375-1:2015+A1:2016 Performance of windows & doors. Classification for operation and strength characteristics
Date sample received	03/04/2019
Date testing started	09/04/2019
Date testing finished	09/04/2019
Job No.	WTH1901
Any special requirements	

Air permeability tests in accordance with BS EN 1026: 2016 - A series of positive and negative pressures was applied to the test sample and the air leakage through the sample was measured at each pressure step. Pressure steps applied are defined on the air permeability test sheets in this report.

Watertightness test in accordance with BS EN 1027: 2016 - A specified volume of water was constantly sprayed over the external face of the test sample while a positive pressure was applied, the positive pressure was increased at regular intervals. The test pressure, time and location of any water penetration was recorded. Pressure steps applied are defined on the watertightness test sheet in this report.

Resistance to wind load test in accordance with BS EN 12211: 2016 - Positive and negative pressures P1, were applied to the test sample and the deflection under load was measured, a series of 50 cycles of positive and negative pressure P2 were applied and any damage caused was noted and a safety test consisting of a single cycle of positive and negative pressures P3 was applied and any damage caused was noted
 $P2 = 0.5P1$, $P3 = 1.5P1$.
 Values of these loads are defined on the Resistance to wind load test sheet in this report.

The sample was mounted in a timber sub frame (nominal 100mm x 50mm in section) and sealed to the sub frame. The sample was mounted in the test rig without any twists or bends that might influence the test result.

**DETAILS OF SAMPLE**

Sample number	WTH1901C
Sample details	Side hung flush casement window
Fabricator	Eurocell Building Plastics Ltd
Material:	PVC-U Eurocell profile numbers; Frame - EWS7021/7721 Sash - EWS7015 Reinforcement; Frame - EWS821P Sash - EWS7615S
Finish	Gloss white
Lock & keeps	Lock - Nico Security espag, part no 921351 Keeps - Nico steel security keep, part number 9209
Hinges & protectors	Hinges - Nico Atlas 12" Egress easy Clean S/H sash part no 8561 Hinge protectors - Nico Xtra bolt, part no 8100
Handle	White Inline locking handle, part number LSF1704
Fixings	Lock - TIMco 4.30 x 30mm c'sk head gimlet point Keeps - TIMco 4.3 x 30mm c'sk head gimlet point Friction hinges - TIMco 4.3 x 20mm pan head gimlet point to frame TIMco 4.3 x 25mm pan head gimlet point to sash Hinge protectors - 4.8 x 30mm Pan head gimlet point to frame & sash
Weather sealing	Co extruded gaskets
Glass (or infill)	4-12-4-12-4mm Toughened glass triple glazed unit
Glazing system	Internally bead glazed with co extruded gaskets
Sample dimensions	1500mm (H) x 750mm (W)
Additional information	



CONCLUSIONS OF TEST

Standard	Test Description	Test result
BS EN 1026: 2016	Air permeability of test sample (first test)	Class 3
BS EN 1027: 2016	Watertightness test	Class 9A
BS EN 12211: 2016	7.2 Deflection test	Class B5
BS EN 12211: 2016	7.3 Repeated pressure test	Pass
BS EN 1026: 2016	Air permeability of test sample (second test)	Class 3
BS EN 12211: 2016	Safety test	Incomplete due to test rig limitations

Exposure category classification in accordance with BS 6375-1:2015+a1:2016 (clauses 6, 7 & 8)

Classification achieved:

UK exposure category	Air permeability		Watertightness		Resistance to wind load			
	Class	Maximum test pressure (Pa)	Class	Maximum test pressure	Class	P1	P2	P3
2000	3	600	9A	600	B5	2000	1000	3000

The results contained in this test report relate only to the particular sample/s tested and to the specific tests carried out as detailed within this report.

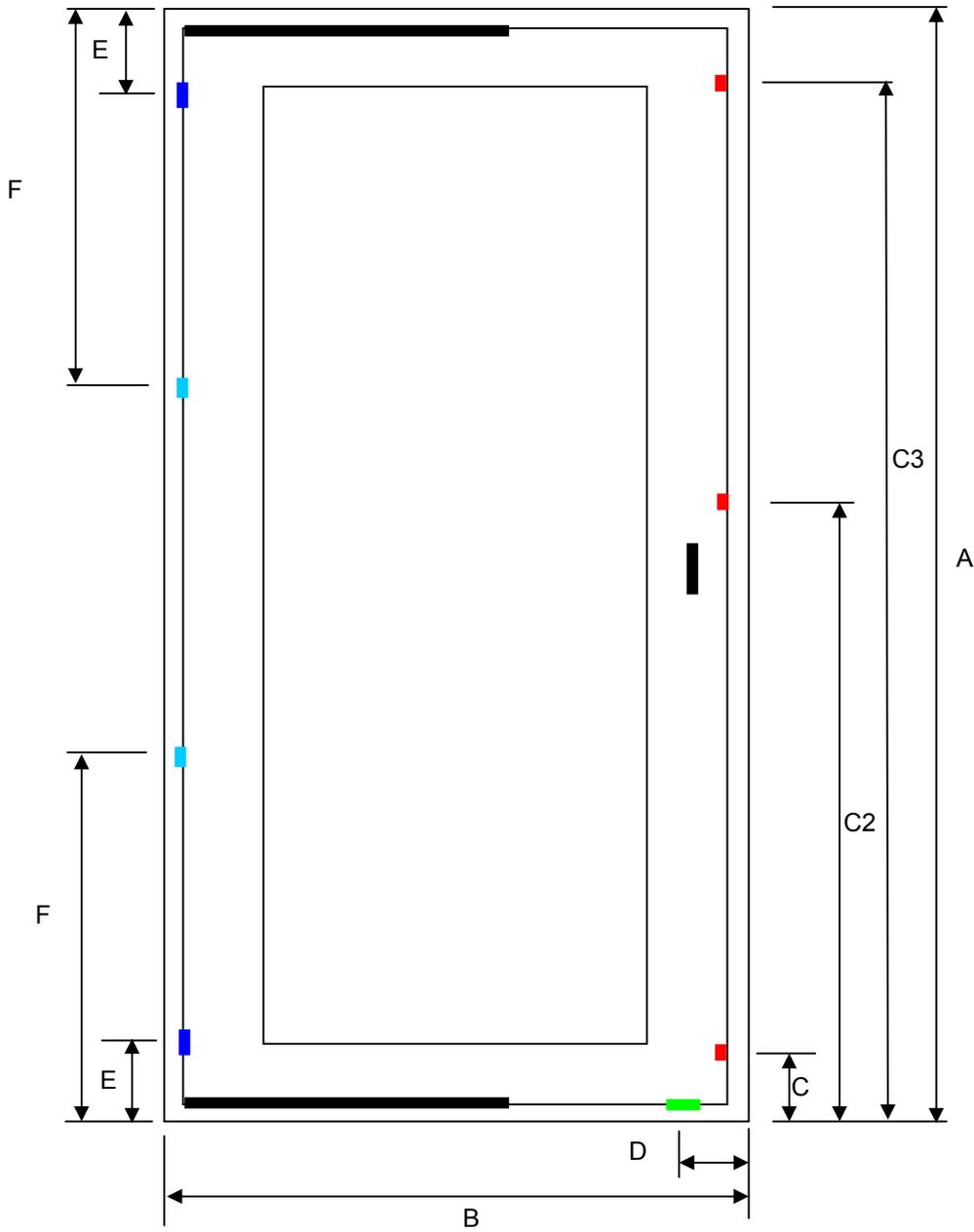
Test specimen details

Details of the samples construction and hardware components is based on information supplied by the test client, while these details have been checked and verified where possible WTH accepts no responsibility for the accuracy of details supplied.

Note : The test specimens were kept in the test laboratory for at least 12 hours at environmental conditions of between 10°C to 30°C, and 25% RH to 75% RH before each test was undertaken



TEST WINDOW DRAWING



- Weather wedges
- Run up block
- Locking points
- Hinge protectors

- A = 1500 mm
- B = 750 mm
- C1 = 110 mm
- C2 = 850 mm
- C3 = 1380 mm
- D = 100 mm
- E = 120 mm
- F = 550 mm



AIR PERMEABILITY: BS EN 1206: 2016

Closing condition of window	Locked
Window surfaces clean and dry	Yes
Window opened and closed before applying pressure pulses	Yes
Three positive pressure pulses applied	Yes

Sample No	WTH1901C	Temperature	19°C	Humidity	58%RH	Date	09/04/2019
-----------	----------	-------------	------	----------	-------	------	------------

Table 1 - Air permeability with positive pressure (adjusted for laboratory conditions)

Pressure differential Pa	Air flow through test sample m ³ /h	Air flow per unit area of test sample m ³ /h/m ²	Air flow per metre of opening joints m ³ /h/m
50	0.00	0.00	0.00
100	0.00	0.00	0.00
150	0.00	0.00	0.00
200	0.00	0.00	0.00
250	0.00	0.00	0.00
300	0.00	0.00	0.00
450	0.20	0.18	0.05
600	0.77	0.69	0.19

Window opened and closed before applying pressure pulses	Yes
Three negative pressure pulses applied	Yes

Table 2 - Air permeability with negative pressure (adjusted for laboratory conditions)

Pressure differential Pa	Air flow through test sample m ³ /h	Air flow per unit area of test sample m ³ /h/m ²	Air flow per metre of opening joints m ³ /h/m
50	0.00	0.00	0.00
100	0.00	0.00	0.00
150	0.00	0.00	0.00
200	0.00	0.00	0.00
250	0.00	0.00	0.00
300	4.21	3.74	1.05
450	21.27	18.91	5.29
600	30.29	26.93	7.54

Table 3 - Air permeability averages with positive and negative pressures

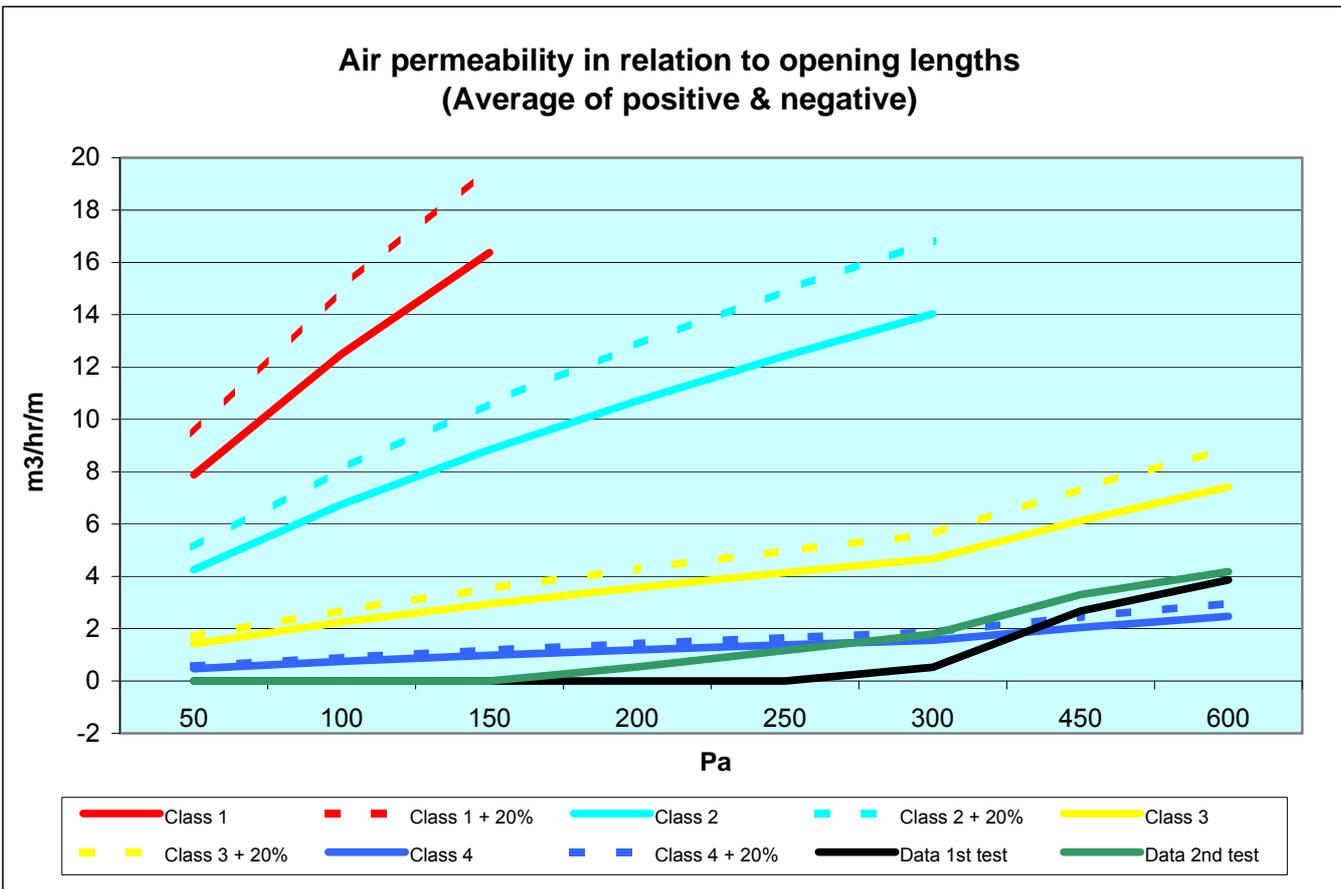
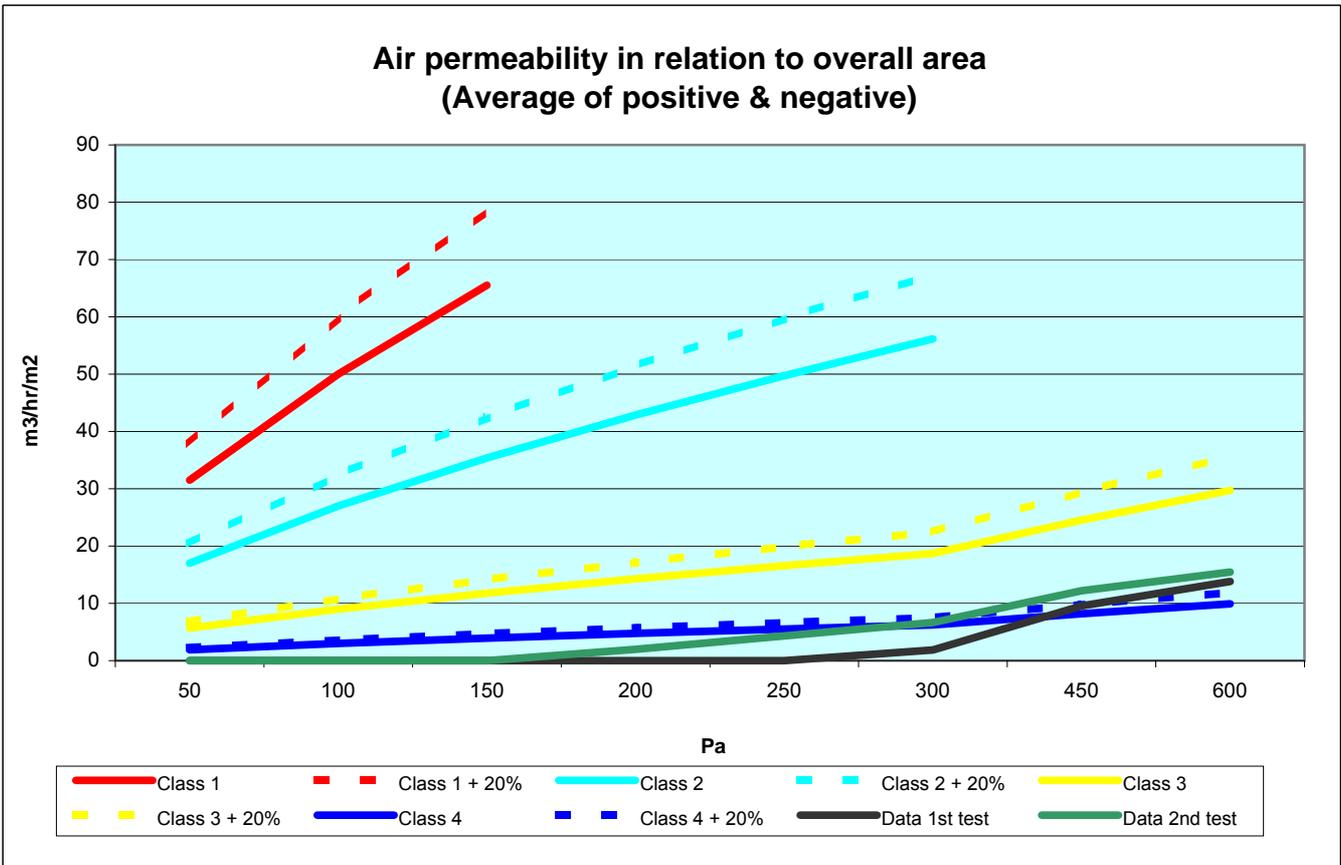
Pressure differential Pa	Air flow per average unit area of test sample m ³ /h/m ²	Air flow average per metre of opening joints m ³ /h/m
50	0.00	0.00
100	0.00	0.00
150	0.00	0.00
200	0.00	0.00
250	0.00	0.00
300	1.87	0.52
450	9.54	2.67
600	13.81	3.86

Total surface area of test sample (m ²)
1.13

Total length of opening joints (m)
4.02



AIR PERMEABILITY GRAPHS



Test Report No. WTH1901#2-2	Page 11 of 15
Testing of Single side hung flush casement window	
Testing to BS 6375-1:2015+A1:2016	



Sample No	WTH1901C	Temperature	19°C	Humidity	57%RH	Date	09/04/2019
-----------	----------	-------------	------	----------	-------	------	------------

WATERTIGHTNESS: BS EN 1027: 2016

Watertightness data (Test method 1A)

Maximum test pressure	600
Pressure pulses	660

(Pressure pulses should be maximum test pressure + 10% or 500Pa whichever is the greater)

Closing condition of window	Locked
Window surfaces clean and dry	Yes
Window opened and closed before applying pressure pulses	Yes
Three positive pressure pulses applied	Yes

Required air pressure (Pa)	Recorded air pressure	Required Spray duration (mins)	Recorded spray duration	Water Leaks	Position of leak (See also leakage diagram)	Time of leak min:sec
0	0	15 +1/-0	15	None		
50 +/-5%	50	5 +1/-0	5	None		
100 +/-5%	100	5 +1/-0	5	None		
150 +/-5%	150	5 +1/-0	6	None		
200 +/-5%	200	5 +1/-0	5	None		
250 +/-5%	250	5 +1/-0	5	None		
300 +/-5%	300	5 +1/-0	5	None		
450 +/-5%	450	5 +1/-0	5	None		
600 +/-5%	600	5 +1/-0	5	None		

Laboratory Conditions

Air pressure (mbar)	1014
Laboratory air temp. (°C)	19
Relative humidity (%)	57

Number of spray nozzles	2
Total flow rate (LPM)	4

Classification

Test pressure (Pa)	Classification		Spec.
	Test method A	Test method B	
0	1A	1B	15 min
50	2A	2B	C1+5 min
100	3A	3B	C2+5 min
150	4A	4B	C3+5 min
200	5A	5B	C4+5 min
250	6A	6B	C5+5 min
300	7A	7B	C6+5 min
450	8A	8B	C7+5 min
600	9A	9B	C8+5 min

Test Report No. WTH1901#2-2	Page 12 of 15
Testing of Single side hung flush casement window	
Testing to Weathertightness test BS 6375: Part 1	

Sample No	WTH1901C	Temperature	19°C	Humidity	58%RH	Date	09/04/2019
-----------	----------	-------------	------	----------	-------	------	------------

RESISTANCE TO WIND LOAD: BS EN 12211: 2016

Closing condition of window	Locked
Window surfaces clean and dry	Yes
Window opened and closed before applying pressure pulses	Yes
Three positive pressure pulses applied	Yes

Deflection test: Positive pressure

P1= 2000 Pa

Section being measured: Hinge side of sash	Deflection gauge readings (mm)				Measured Length	Relative deflection
	1	2	3	Net deflection		
3 pulses of 2200						
Pre-test reading	20.0	20.0	20.0	2.9	1370	1/ 472
Max reading	21.8	24.2	20.8			
Net deflection under load	1.8	4.2	0.8			
Residual reading	20.1	20.0	20.0			

Deflection test: Negative pressure

P1= 2000 Pa

Section being measured: Hinge side of sash	Deflection gauge readings (mm)				Measured Length	Relative deflection
	1	2	3	Net deflection		
3 pulses of 2200						
Pre-test reading	20.0	20.0	20.0	-5.7	1370	1/ -240
Max reading	17.2	11.8	17.7			
Net deflection under load	-2.8	-8.2	-2.3			
Residual reading	19.9	19.8	19.9			

Test conclusion:	Worst case deflection	1/ -240	Classification	B
-------------------------	-----------------------	---------	----------------	---

Cyclic repeated pressure test

P2= 1000 Pa

50 cycles +/- at 1000 Pa	No damage or functioning defects	Pass
--------------------------	----------------------------------	------

Safety test

P3= 3000 Pa

1 cycle +/- at 3000 Pa	2400 pos, 2300 neg	
------------------------	--------------------	--

Laboratory Conditions

Air pressure	1011.0	mbar
Air temperature	22.0	°C
Relative humidity	57.0	%

Classifications

Wind load			
Class	P1	P2	P3
0	Not tested		
1	400	200	600
2	800	400	1200
3	1200	600	1800
4	1600	800	2400
5	2000	1000	3000

Deflection	
Class	Relative frontal deflection
A	≤ 1/150
B	≤ 1/200
C	≤ 1/300

Resistance to wind load			
Wind load class	Relative frontal deflection		
	A	B	C
1	A1	B1	C1
2	A2	B2	C2
3	A3	B3	C3
4	A4	B4	C4
5	A5	B5	C5



AIR PERMEABILITY: BS EN 1206: 2016

Closing condition of window	Locked
Window surfaces clean and dry	Yes
Window opened and closed before applying pressure pulses	Yes
Three positive pressure pulses applied	Yes

Table 1 - Air permeability with positive pressure (adjusted for laboratory conditions)

Pressure differential Pa	Air flow through test sample m ³ /h	Air flow per unit area of test sample m ³ /h/m ²	Air flow per metre of opening joints m ³ /h/m
50	0.00	0.00	0.00
100	0.00	0.00	0.00
150	0.00	0.00	0.00
200	0.00	0.00	0.00
250	0.00	0.00	0.00
300	0.00	0.00	0.00
450	0.00	0.00	0.00
600	0.53	0.47	0.13

Window opened and closed before applying pressure pulses	Yes
Three negative pressure pulses applied	Yes

Table 2 - Air permeability with negative pressure (adjusted for laboratory conditions)

Pressure differential Pa	Air flow through test sample m ³ /h	Air flow per unit area of test sample m ³ /h/m ²	Air flow per metre of opening joints m ³ /h/m
50	0.00	0.00	0.00
100	0.00	0.00	0.00
150	0.00	0.00	0.00
200	4.48	3.98	1.08
250	9.69	8.61	2.33
300	14.95	13.29	3.59
450	27.45	24.40	6.60
600	34.27	30.46	8.24

Table 3 - Air permeability averages with positive and negative pressures

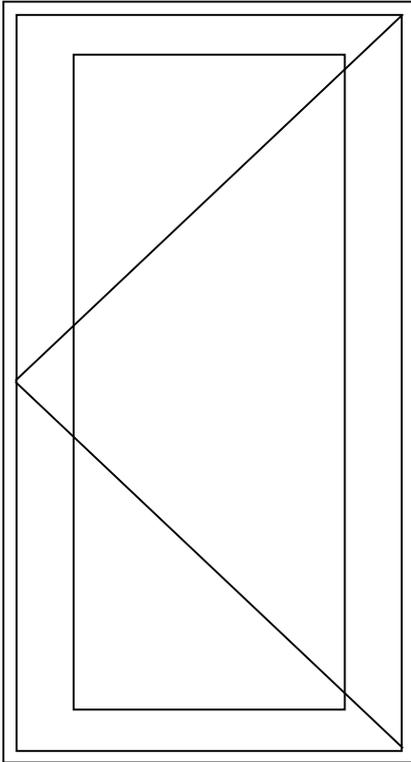
Pressure differential Pa	Air flow per average unit area of test sample m ³ /h/m ²	Air flow average per metre of opening joints m ³ /h/m
50	0.00	0.00
100	0.00	0.00
150	0.00	0.00
200	1.99	0.54
250	4.31	1.16
300	6.64	1.80
450	12.20	3.30
600	15.47	4.18

Total surface area of test sample (m ²)
1.13

Total length of opening joints (m)
4.16

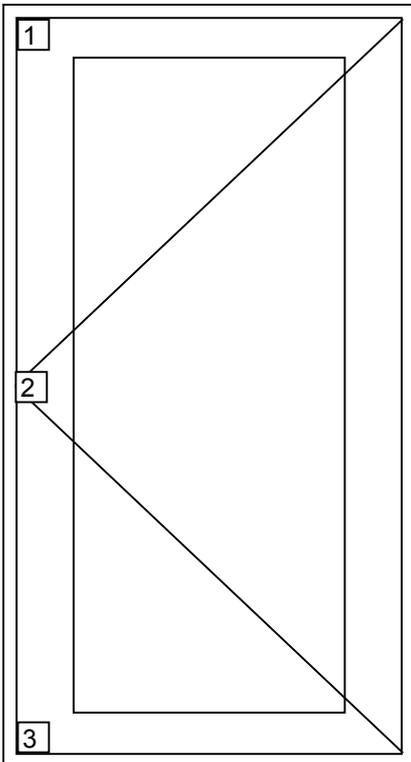


Positions of water leakage and significant air leakage



- No Water leakage
- No significant air leakage

Position of deflection measurement





PICTURE OF TEST WINDOW



END OF REPORT