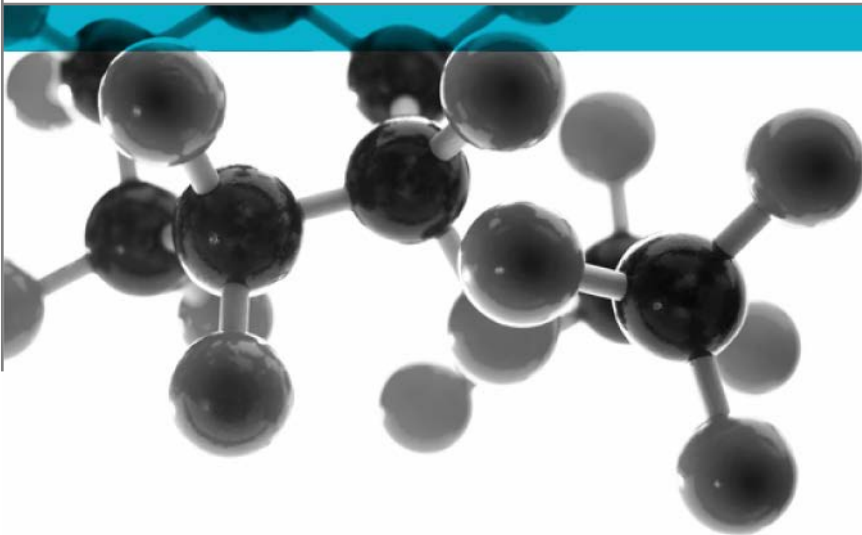




# BS 6375-1:2015



**Test of: Ultra Single doorset**

**Performance of windows & doors - Part 1: Weathertightness**

A Report To:  
Latham's Security Doorsets  
35-37 Hainge Road  
Tividale  
Birmingham B69 2NY

Document Reference:  
WIL388516

**Date:** 01/05/2018

**Copy:** 1

**Issue No.:** 1

Page 1

**Testing  
Advising  
Assuring**



## TEST CONCLUSIONS

Samples of:  
 Manufacturer Latham's Security Doorsets  
 Product Single leaf doorset  
 Model Ultra Single doorset

have been tested in accordance with: BS6375-1:2015  
 By Exova Wednesbury, a UKAS accredited Testing Laboratory (No. 0621)

At Unit 3 Wednesbury One, Black Country New Road, Wednesbury, WS10 7NZ.  
 Results and comments as detailed below:

Clause No.	Description	Classification
<b>4</b>	<b>Exposure category and classification</b>	<b>800U</b>
6	Test for air permeability (to EN1026)	CLASS 0
7	Test for watertightness (to EN1027)	CLASS 1A
8	Test for resistance to wind (to EN12211)	CLASS C3

No inferences can be made regarding performance against other requirements of this standard

Tests marked "N/A" are not applicable to the sample under test.  
 Tests marked "N/T" were not applied to the sample under test

## AUTHORISATION

Tests performed by: Chris Bryan, Senior Test Engineer  
Rehan Qureshi, Thermal Test Engineer

Report issued by: Chris Bryan, Senior Test Engineer



Signed

Date 30<sup>th</sup> April 2018

For and on behalf of Exova (UK) Ltd

Report authorised by: Mark West, Door & Window Laboratory Manager



Signed

Date 30<sup>th</sup> April 2018

For and on behalf of Exova (UK) Ltd

Report issued: 01 May 2018



0621

**NOTE.**

Tests marked "Not UKAS Accredited" are not covered by the Laboratory UKAS accreditation schedule.

The laboratory has tested the product supplied by the client as sampled in accordance with their own requirements

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## TEST DETAILS

### CLIENT DETAILS

Company name Latham's Security Doorsets  
 Address 35-37 Hainge Road  
 Tividale, Birmingham  
 B69 2NY

Contact Chris Hardy

### ORDER DETAILS

Order name CHRIS  
 Dated 30/08/2017

### SAMPLE DETAILS

Outer frame 1000 x 2020mm  
 Opening joint 915 x 1965mm  
 Configuration Single doorset/open-out  
 Material Steel Doorset  
 Details of Hardware  
 Hinges 5no. Yongkang Bosslong Industrial & Trading Co Ltd Z-304 lift off Z-shape hinges  
 Hinge protection 6no. Zhejiang Shenjiang Doors Industry Co., Ltd DB14/15 Solid screw in dog bolt  
 Lock Zhejiang Hongli Locks Co. ST33#-MB sash lock, solid large bolt and #26-15 side locks

Cylinder Eurospec MPX6+ 3\* cylinder  
 Handles Hongli Lock HL#6101 Lever Handles

### TEST DETAILS

Test specification BS 6375-1:2015 Performance of windows & doors  
 Full test Yes  
 Test to clauses N/a  
 Test methods BS EN 1026:2016 Windows & Doors - Air Permeability  
 BS EN 1027:2016 Windows & Doors – Watertightness  
 BS EN 12211:2016 Windows & Doors - Resistance to wind

Sample received 19/09/2017  
 Test started 21/09/2017  
 Test completed 21/09/2017

Special Test requirements None  
 Other reports to be used in conjunction with this report None

Airflow measurement device used 1691 Air and water permeability test rig

## TEST PROCEDURE

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<b>Introduction</b>	<p>This test report should be read in conjunction with the Standard BS 6375-1:2015, Performance of Windows &amp; Doors – Part 1: Classification for weathertightness and guidance on selection and specification.</p> <p>The specimens were judged on their ability to comply with the performance criteria as required in BS EN 1026:2016, classified in accordance with BS EN 12207:2000, BS EN 1027:2016, classified in accordance with BS EN 12208:2000 and BS EN 12211:2016, classified in accordance with BS EN 12210:2016.</p>
<b>Instruction To Test</b>	<p>Initial requirement was for a performance of Class 2 (300 Pa) for air permeability, Class 3A (100 Pa) for watertightness, and Class A3 (1200 Pa) for wind resistance, appropriate to a UK exposure category of 1200Pa.</p>
<b>Test Specimen Construction</b>	<p>A description of the test construction is given in the Schedule of Components. The description is based on a survey of the specimens and information supplied by the sponsor of the test.</p>
<b>Installation</b>	<p>The doorset was supplied mounted within a timber sub-frame of nominal section 75 x 100mm fitted flush with the exterior face, in accordance with the clients fitting instructions. The sample was set to the locked condition as defined by the manufacturer.</p>
<b>Sampling</b>	<p>The samples were not independently witnessed or selected and were provided direct from the test sponsor.</p>
<b>Test Climate</b>	<p>The sample was conditioned in the laboratory in the range 15-30°C and 25-75% humidity.</p> <p>The temperature and humidity in the lab was maintained in the range 21.1 - 21.6°C and 56-62.1% humidity for the duration of the test.</p> <p>The air pressure was 99.4kPa.</p>

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## INITIAL OBSERVATIONS

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**The internal face  
of the sample**



**Sample threshold**



**Sample Handle**



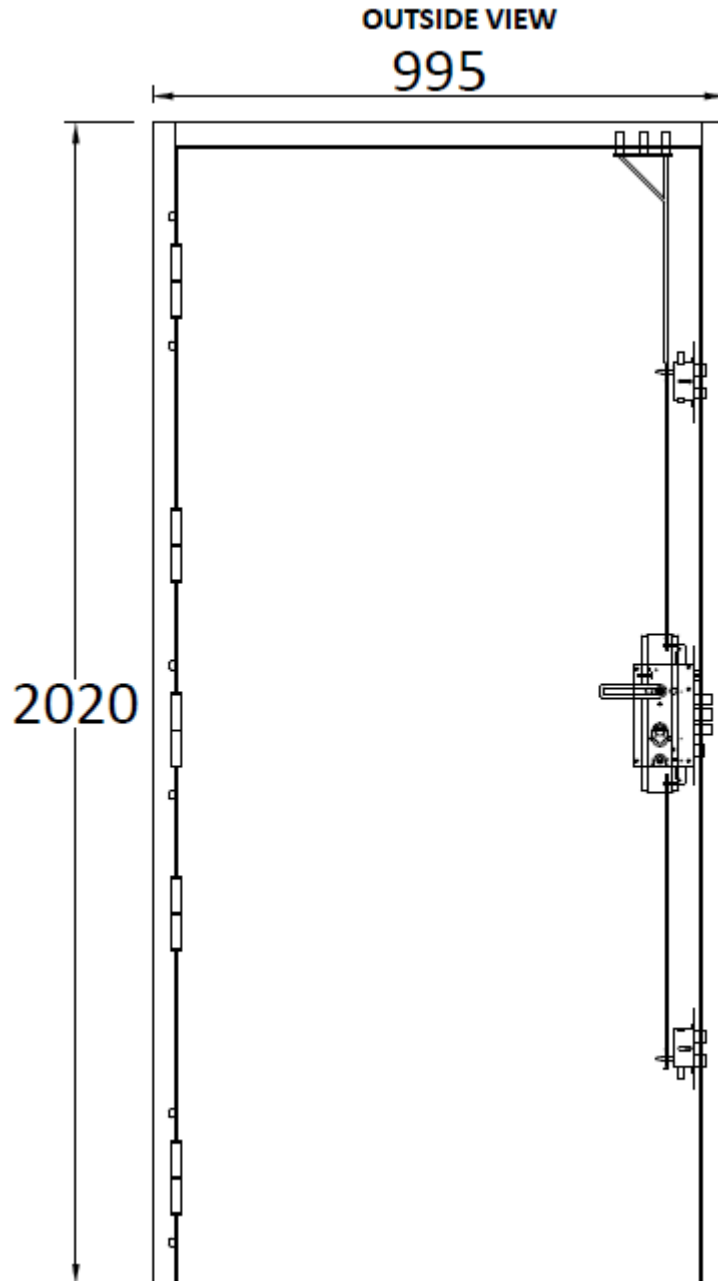


**Sample hinges**



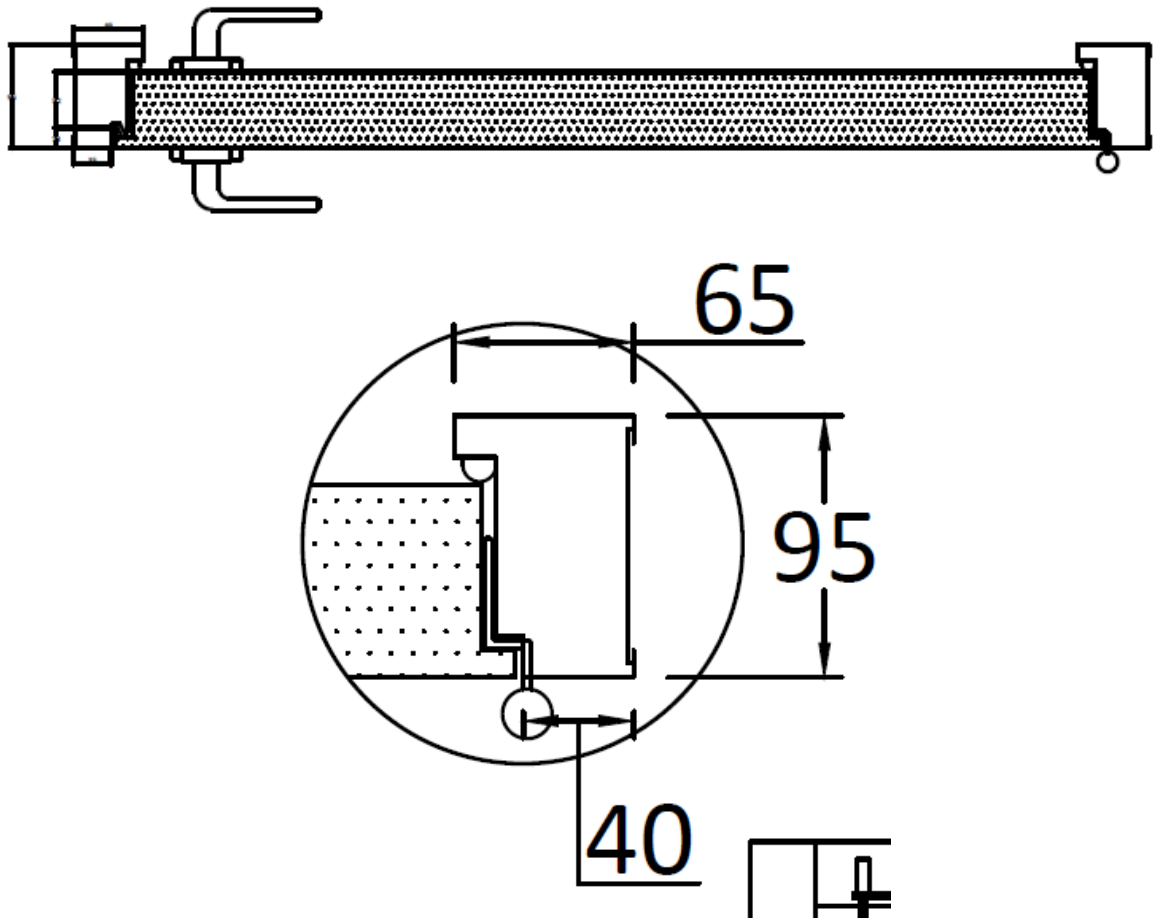
## TEST SPECIMEN

Figure 1- General Elevation of Test Specimen (External Face)



Do not scale. All dimensions are in mm

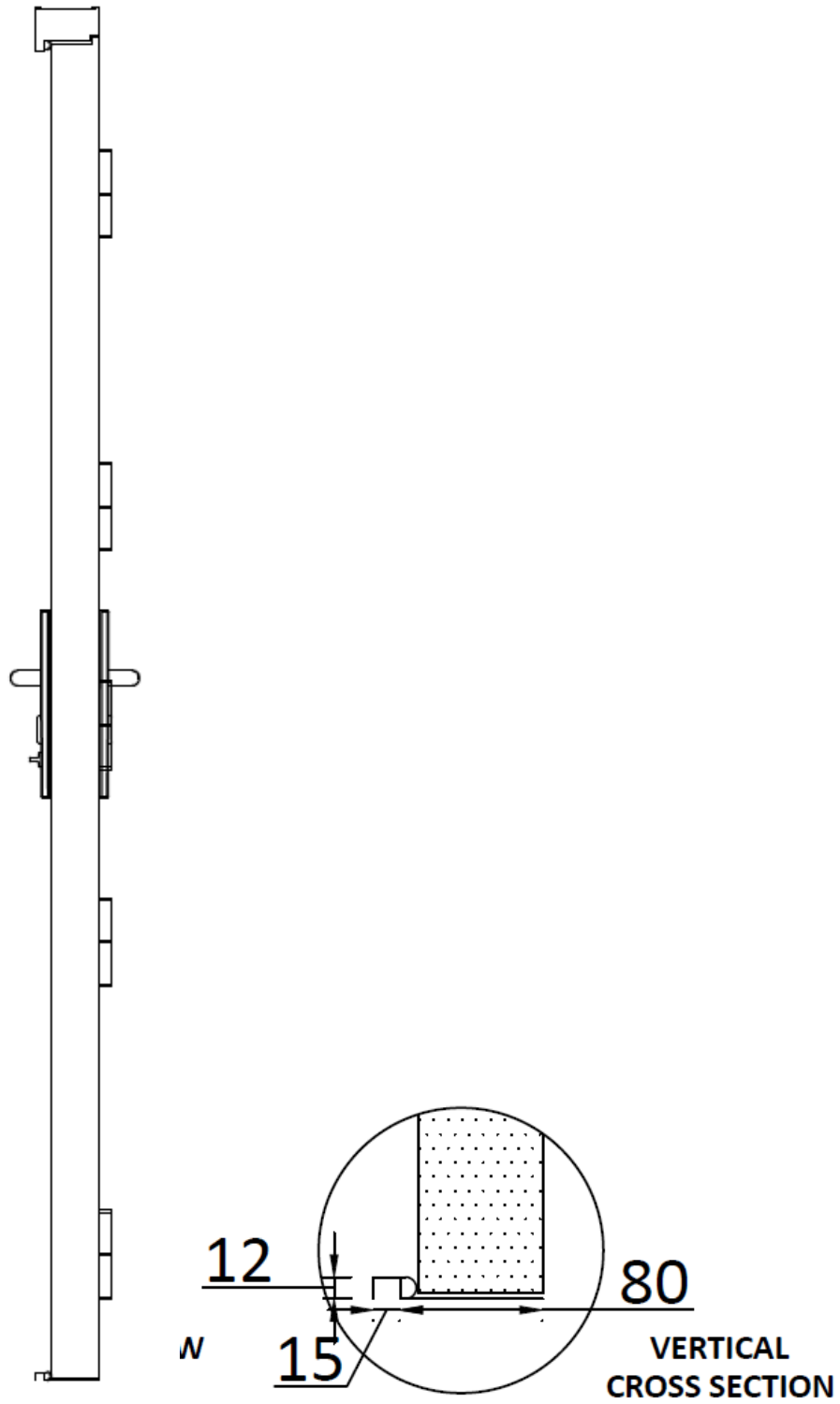
Figure 2 – Horizontal section



Do not scale. All dimensions are in mm



**Figure 3 – Vertical section**



Do not scale. All dimensions are in mm



## SCHEDULE OF COMPONENTS

(Refer to Figures 1 to 3)  
 (All values are nominal unless stated otherwise)  
 (All other details are as stated by the sponsor)

### Variants

None

<u>Item</u>	<u>Description</u>
<b>1. Door frame head</b>	
Supplier	: Zhejiang Shenjiang Doors Industry Co., Ltd
Profile code	: B332/70mm
Material	: Steel
Grade	: Galvanised cold rolled steel
Gauge	: 2.0mm
Overall section size	: 93mm frame depth
Rebate	: ??
Fixing jamb to head joints	: Weld
i. type	: Continuous weld
ii. size	: 45mm internal, 35mm top, 25mm external
iii. quantity	: 3 on either side
<b>2. Door frame jamb</b>	
Supplier	: Zhejiang Shenjiang Doors Industry Co., Ltd
Profile code	: B332/70mm
Material	: Steel
Grade	: Galvanised cold rolled steel
Gauge	: 2.0mm
Overall size	: 93mm frame depth
<b>3. Door frame threshold</b>	
Supplier	: Zhejiang Shenjiang Doors Industry Co., Ltd
Profile code	: B332/70mm
Material	: Steel
Grade	: Galvanised cold rolled steel
Gauge	: 2mm
Overall size	: 93mm frame depth
Fixing method	: Weld
i. type	: Continuous weld
ii. material	: Weld
iii. quantity	: 3 on either side
<b>4. Door frame weather seal</b>	
Supplier	: Yongkang Bosslong Industrial & Trading Co. Ltd
Reference	: #306-11x2 & #305-15x2
Material	: Flame Retardent PU + Expanded graphite
Fixing method	: Self-Adhesive
Position	: All four edges



<u>Item</u>	<u>Description</u>
Continuity	: Uninterrupted by hardware
<b>5. Door leaf Facings</b>	
Leaf supplied by	: Zhejiang Shenjiang Doors Industry Co., Ltd
Overall leaf size	: 70mm thick
Material	: Galvanised Steel
Thickness	: 1mm, formed in to trays and welded together.
Density	: 7850kg/m <sup>3</sup> (stated)
Core section size	: 68mm
Corner fixing method	: Welded
i. type	: Spot Weld
ii. size	: 3mm on average
iii. quantity	: 12 hinge side, 12 latching side, 6 top, 5 bottom.
<b>6. Door leaf core</b>	
Material	: Wuyi NiuNiu Fireproof Board Material Co., Ltd
Density	: 260kg/m <sup>3</sup> (stated)
Thickness	: 68mm
Fixing into rebate	: Bonded to door leaf facings with adhesive
<b>7. Door edge lippings</b>	
Position	: Folded into door leaf interlocking trays
Material	: Steel
Density	: ?? kg/m <sup>3</sup> (stated)
Overall size	: 10mm x 15mm interlocking jemmy lip
<b>8. Door leaf weather seals</b>	
Description	: Intumescent seal
Manufacturer	: Yongkang Bosslong Industrial & Trading Co. Ltd
Reference	: #306-11x2 & #305-15x2
Fixing method	: Self-Adhesive
Position	: All four edges
Continuity	: Uninterrupted by hardware
<b>9. Hinges</b>	
Supplier	: Yongkang Bosslong Industrial & Trading Co Ltd
Description	: Lift off Z Shape
Reference	: Z-304
Primary material	: Grade #304 Stainless Steel
Quantity	: 5
Size of knuckle	: 18mm * 130mm
Size of blades	: 60mm * 55mm
Fixing hinge to doorleaf	
i. type	: Machine Screw
ii. size	: M 6 x12mm
iii. quantity	: 4
Fixing hinge to frame	
i. type	: Machine Screw
ii. size	: M 6 x12mm
iii. quantity	: 5
Position of hinge	



<u>Item</u>	<u>Description</u>
i. top hinge	: 170mm from top of door to top of hinge
ii. middle hinges	: 630mm from top of door to top of hinge 905mm from top of door to top of hinge 1270mm from top of door to top of hinge
iii. bottom hinge	: 1730mm from top of door to top of hinge
<b>10. Dog bolts</b>	
Supplier	: Zhejiang Shenjiang Doors Industry Co., Ltd
Description	: Solid screw in dog bolt
Reference	: DB14/15
Material	: Steel
Quantity & position	: 1 above and below top hinge and 1 above and below bottom hinge equalling 4 total.
Overall size	
i. dog bolt	: 14mm x 15mm
ii. retaining ring / keeper	: 24mm
<b>11. Sash Lock</b>	
	: Multipoint locking system
Supplier	: Zhejiang Hongli Locks Co.
Description	: Sash lock, solid large bolt
Reference	:
Position	: 1045mm from bottom of door to centre of spindle/lock
Fixings	
i. type	: Machine Screw
ii. size	: M4 x 10mm
iii. quantity	: 4
<b>12. Side Locks and Shoot Bolts</b>	
Supplier	: Zhejiang Shenjiang Doors Industry Co., Ltd
Description	: Internal rods and spring side locks
Reference	: #26-15mm
Position	: 320mm from top of door to top of lock 1480mm from top of door to top of lock
Fixings	
i. Type	: Machine Screw
ii. Size	: M4 x 10mm
iii. Quantity	: 2
<b>13. Cylinder</b>	
Supplier	: Carlisle Brass
Description	: Eurospec 3* Cylinder
Kitemark	: 597142
Reference	: MPX6+
Fixings	
i. type	: Machine Screw
ii. size	: M 5 x 65mm
iii. quantity	: 1

**Item****Description****14. Lever handles**

Supplier	:	Hongli Lock
Description	:	Lever Handles
Reference	:	HL#6101
Material	:	Stainless Steel
Fixings		
i. type	:	Machine Screw + Thread Extension
ii. size	:	M5x50mm + 50mm double female extension
iii. quantity	:	2





## PERFORMANCE CRITERIA & TEST RESULTS

### Clause 4 Exposure category and classification

Exposure Category Required:	1200
<b>Atmospheric Conditions</b>	
Air Temp	22°C
Humidity	56%RH
Air Pressure	99.4kPa
<b>Test Sample</b>	
Overall Size of Sample	995 x 2024mm
Overall Area	2.01m <sup>2</sup>
Joint length leaf/casement	915 x 1966mm
Opening Joint Length (m)	5.76m

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**Clause 6 Air Permeability**


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Test Pressure	Calculated Air Permeability per unit length		
	Positive m <sup>3</sup> / h.m	Negative m <sup>3</sup> / h.m	Average m <sup>3</sup> / h.m
50 Pa	10.31	15.27	12.79
100 Pa	14.05	22.81	18.43
150 Pa	15.91	28.75	22.33
200 Pa	16.69	33.97	25.33
250 Pa	17.62	38.93	28.28
300 Pa (if required)	18.45	44.53	31.49
450 Pa (if required)	21.82	61.66 #	41.74 #
600 Pa (if required)	24.37	*	*

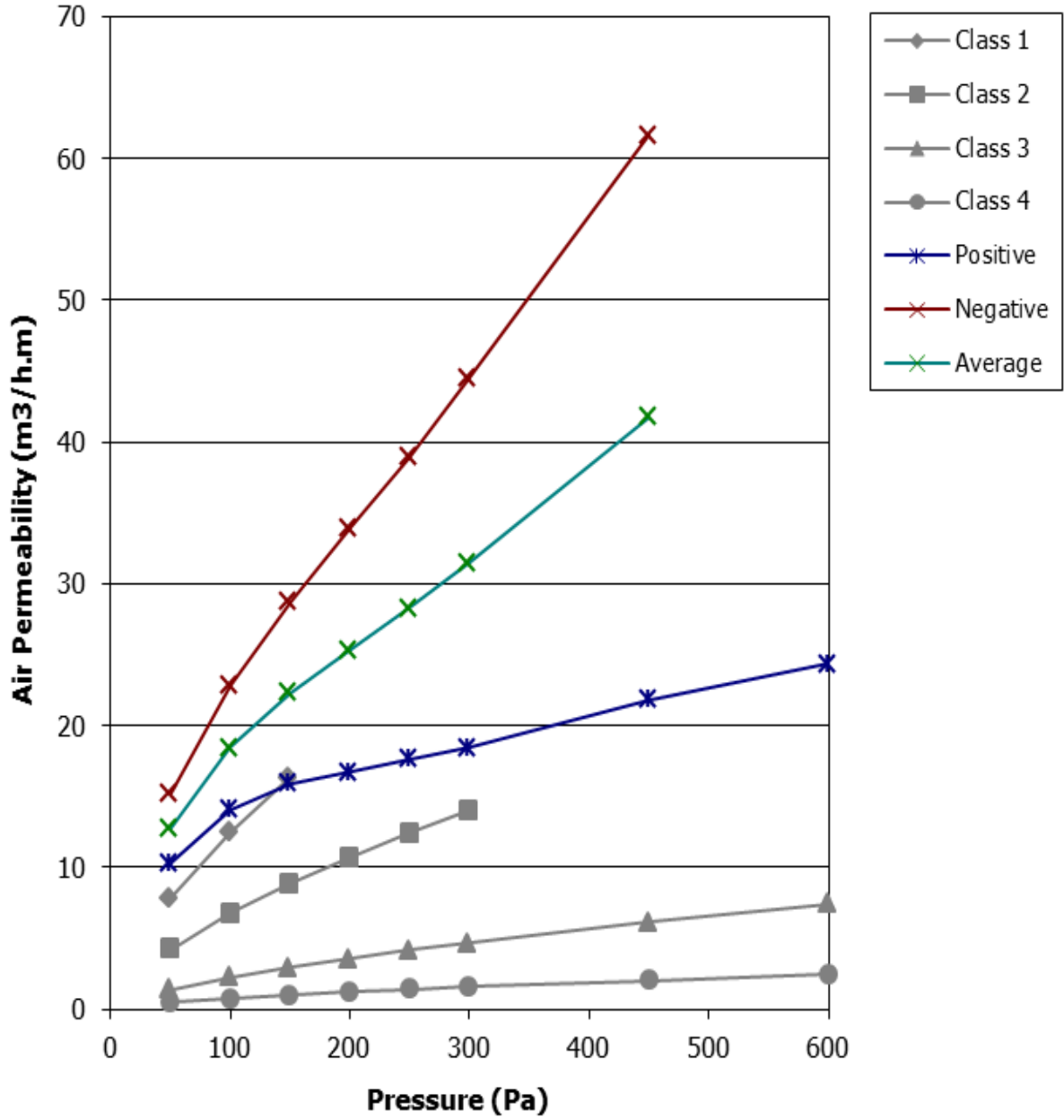
Test Pressure	Calculated Air Permeability per unit area		
	Positive m <sup>3</sup> / h.m	Negative m <sup>3</sup> / h.m	Average m <sup>3</sup> / h.m
50 Pa	29.51	43.68	36.59
100 Pa	40.21	65.25	52.73
150 Pa	45.51	82.25	63.88
200 Pa	47.76	97.20	72.48
250 Pa	50.41	111.40	80.90
300 Pa (if required)	52.79	127.40	90.10
450 Pa (if required)	62.44	176.42 #	119.43 #
600 Pa (if required)	69.74	*	*

**Note:**

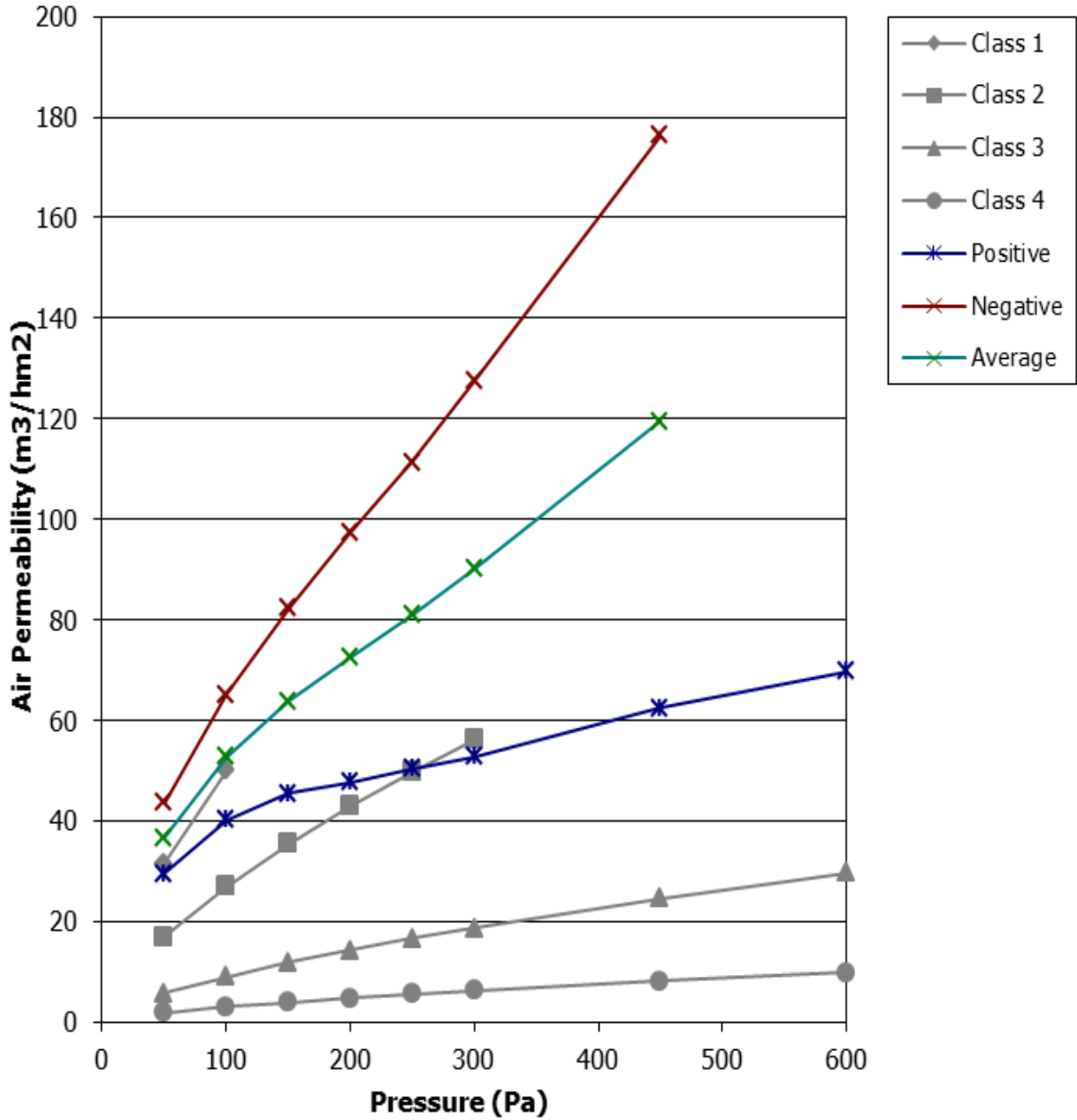
The instrument used for measuring air permeability is only calibrated in the range 0-300m<sup>3</sup>/h. Measurements above 300m<sup>3</sup>/h are therefore outside of the calibrated range for the instrument. Affected results are marked with a #.

\*The weather rig failed to achieve required test pressure due to sample leakage.

Graph of air permeability per unit length



Graph of air permeability per unit area



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**Clause 7 Watertightness**


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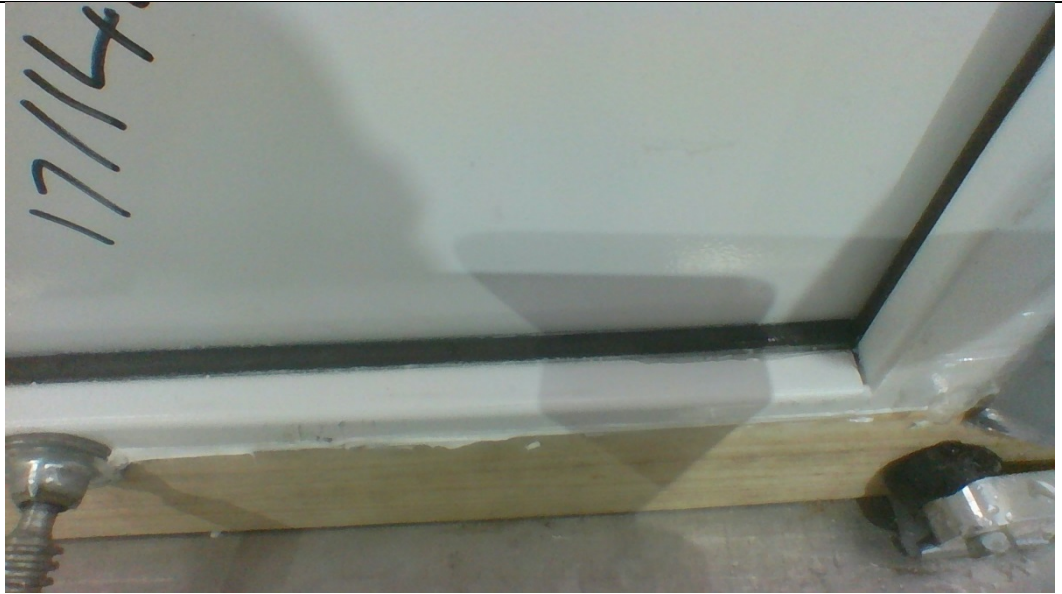
Quantity of 2 l/min nozzles (row 1)	3
Total water quantity	6 L/min
Distance of nozzles from sample (250mm +10 –0mm)	250mm
Angle of nozzles (24° +2° - 0°)	23°
Height of nozzle above joint (0 – 150mm)	115mm

---

Pressure (Pa)	Duration (m:s)	Observations	
0 Pa	15mins	No leakage	CLASS 1A ACHIEVED
50 Pa	1min 10 seconds	Water leaked over the threshold between the weather seal and leaf.	FAILED CLASS 2A
100 Pa	5mins	-	-
150 Pa	5mins	-	-
200 Pa	5mins	-	-
250 Pa	5mins	-	-
300 Pa	5mins	-	-
450 Pa	5mins	-	-
600 Pa	5mins	-	-
750 Pa	5mins	-	-
900 Pa	5mins	-	-
1050 Pa	5mins	-	-
1200 Pa	5mins	-	-

## Clause 7 Watertightness test observations

Water has come through the weather seal after 1 minute 10 seconds with a test pressure of 50 Pa.



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**Clause 8 Wind Resistance**


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**Members  
chosen for  
deflection  
measurement**




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**Positive wind pressure**

Member tested	Pressure applied	Member Length	Deflection	Fraction
Between top left hinge and top right locking point	1205 Pa	1280 mm	0.4 mm	$\frac{1}{3200}$
				3200

**Negative wind pressure**

Member tested	Pressure applied	Member Length	Deflection	Fraction
Between top left hinge and top right locking point	-1204 Pa	1280 mm	0.54 mm	$\frac{1}{2393}$
				2393

---

**Clause 6 Repeated Air Permeability following wind resistance test**


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Test Pressure	Calculated Air Permeability per unit length		
	Positive m <sup>3</sup> / h.m	Negative m <sup>3</sup> / h.m	Average m <sup>3</sup> / h.m
50 Pa	29.74	16.48	23.11
100 Pa	41.28	24.61	32.94
150 Pa	14.82	30.93	22.87
200 Pa	16.60	36.88	26.74
250 Pa	17.46	42.66	30.06
300 Pa (if required)	18.40	48.20	33.30
450 Pa (if required)	21.68	63.70 #	42.69 #
600 Pa (if required)	24.50	*	*

Test Pressure	Calculated Air Permeability per unit area		
	Positive m <sup>3</sup> / h.m <sup>2</sup>	Negative m <sup>3</sup> / h.m <sup>2</sup>	Average m <sup>3</sup> / h.m
50 Pa	85.10	47.15	66.12
100 Pa	118.10	70.41	94.25
150 Pa	42.39	88.50	65.44
200 Pa	47.51	105.51	76.51
250 Pa	49.94	122.04	85.99
300 Pa (if required)	52.65	137.91	95.28
450 Pa (if required)	62.04	182.26 #	122.15 #
600 Pa (if required)	70.10	*	*

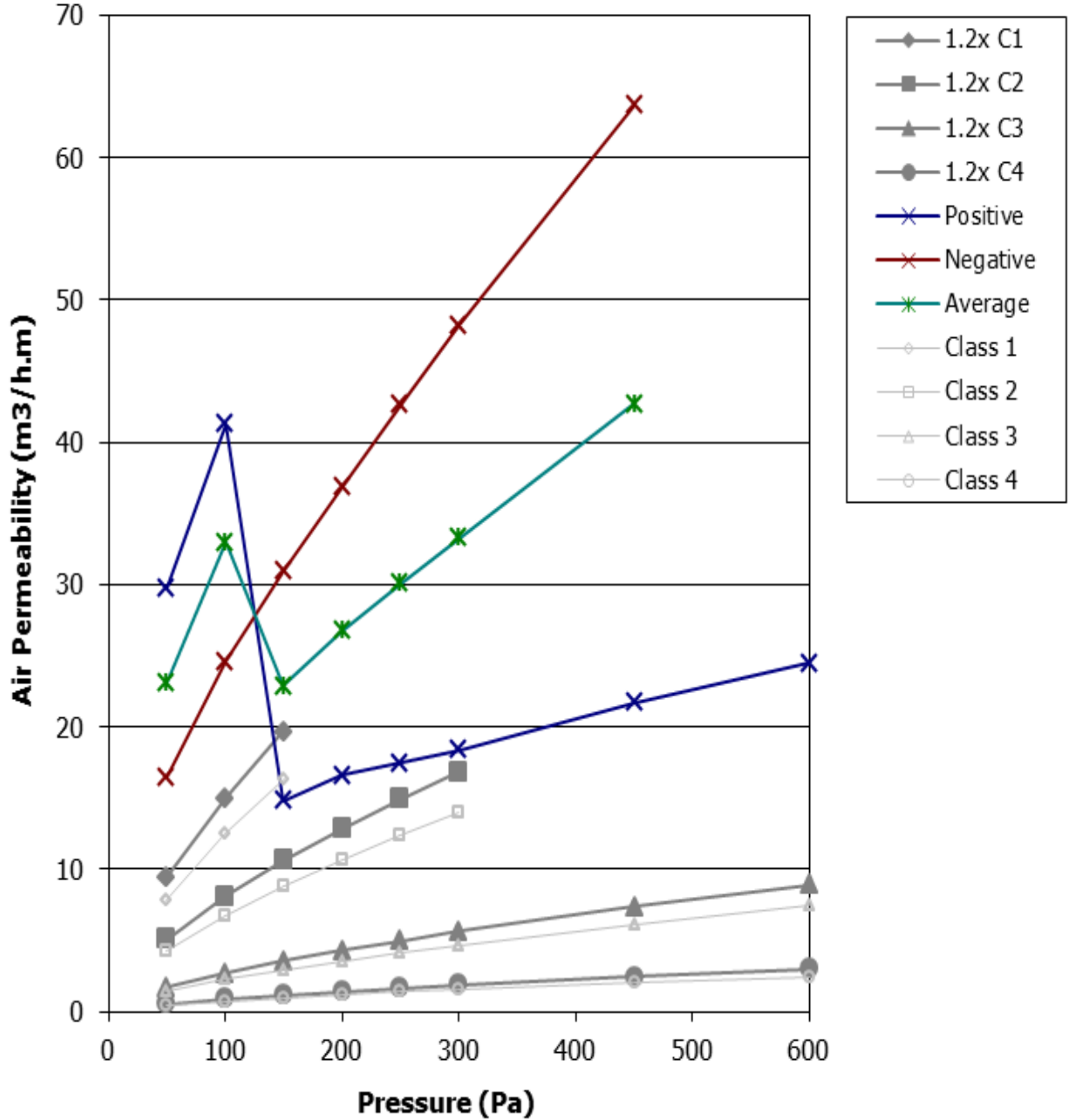
**Note:**

The instrument used for measuring air permeability is only calibrated in the range 0-300m<sup>3</sup>/h. Measurements above 300m<sup>3</sup>/h are therefore outside of the calibrated range for the instrument. Affected results are marked with a #.

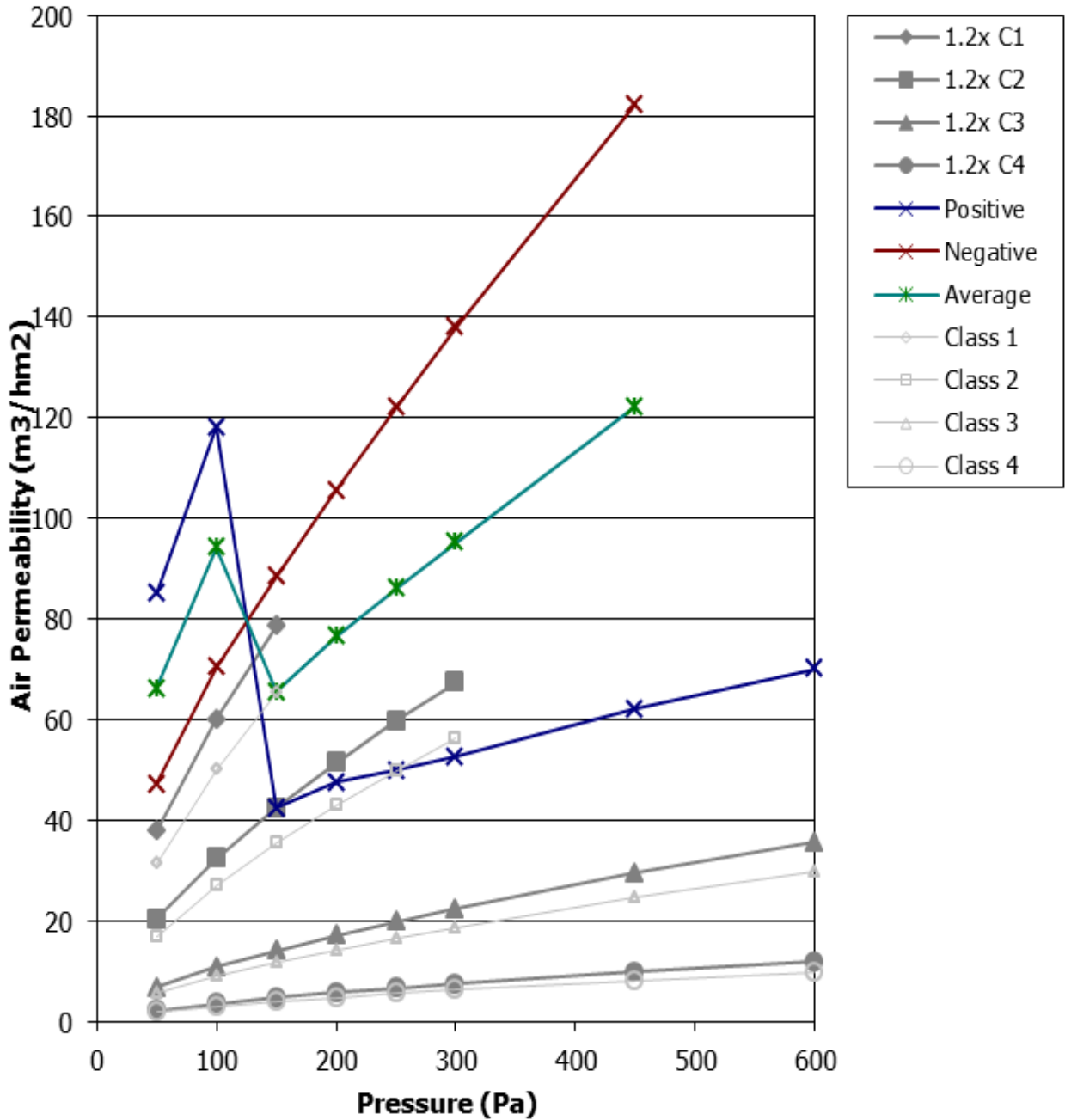
\*The weather rig failed to achieve required test pressure due to sample leakage.



Graph of air permeability per unit length following wind resistance test



Graph of air permeability per unit area following wind resistance test



Clause	Result	Pass/Fail
<b>6 Test for air permeability</b>	<p>BS6375-1 requires a performance of Class 2 defined in BS EN 12207 for UK exposure category 1200. The client's initial requirement was for Class 2.</p> <p>The sample was tested in accordance with BS EN 1026. The air leakage per unit area and per unit joint length should be less than those for the required class.</p> <p>When positive and negative pressure was applied the average air leakage per unit joint length met the requirements of Class 0, and per unit area met the requirements of Class 0.</p> <p>During the repeat air permeability test the average air leakage continued to meet the requirements of Class 0.</p> <p><b>The sample could therefore be classified as Class 0 for the air permeability test.</b></p>	<b>PASS CLASS 0</b>
<b>7 Test for water tightness</b>	<p>BS6375-1 requires a performance of Class 3A, defined in BS EN 12208 for UK exposure category 1200. The client's initial requirement was for Class 3A.</p> <p>These requirements were satisfied up to a point 1min and 10sec into a test pressure of 50 Pa when water penetration was observed leaking over the threshold between the weather seal and door leaf.</p> <p><b>The sample could therefore be classified as Class 1A for the watertightness test.</b></p>	<b>PASS CLASS 1A</b>
<b>8 Test for resistance to wind - Deformation test</b>	<p>BS6375-1 requires a performance of Class A3, defined in BS EN 12210, for UK exposure category 1200. The client's initial requirement was for Class A3.</p> <p>The sample was tested in accordance with BS EN 12211. For Class A3 the test pressure P1 to be applied is 1200Pa, and the frontal displacement following the positive and negative pressure test should be less than 1/150th of the length of the member tested.</p> <p>For positive pressure the member tested was between the top left hinge and top right locking point it was 1280mm long, and was subject to a maximum deflection of 0.4mm (1/3200) for positive wind pressure.</p> <p>For negative pressure the member tested was between the top left hinge and top right locking point, it was 1280mm long, and was subject to a maximum deflection of 0.54mm (1/2393) for negative wind pressure.</p> <p><b>The sample met the requirements for Class C3 for the deflection test.</b></p>	<b>PASS</b>

Clause	Result	Pass/Fail
<b>Repeated pressure test</b>	<p>No visible failures should occur during the repeated air test, and the resultant air permeability should not exceed the upper limits of the claimed class by 20%.</p> <p>Following a test pressure P2 of -600Pa and 600Pa repeated 50 times there were no visible failures.</p> <p>The air permeability of the sample continued to meet the requirements of Class 0, and the sample met the requirements of Class C3 for the repeated pressure test.</p>	<b>PASS</b>
<b>Safety test</b>	<p>During the safety test under a pressure P3 of -1800Pa &amp; 1800Pa the sample must remain closed and no parts must come detached. On the application of the test pressure the sample remained closed</p> <p>The sample met the requirements for Class C3 for the safety test.</p> <p><b>The sample could therefore be classified as Class C3 for the wind resistance test.</b></p>	<b>PASS CLASS C3</b>

## CONCLUSIONS

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**Evaluation against objective**

The sample as provided by the client was subjected to weather performance testing in accordance with BS 6375-1:2015, and achieved a performance of Class 0 for air permeability, Class 1A for watertightness, and Class C3 for wind resistance. The sample could therefore be classified as 800U in accordance with BS6375-1.

**Observations & comments**

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## LIMITATIONS

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**Limitations**

The results relate only to the behaviour of the specimens of the element of construction under the particular conditions of test. They are not intended to be the sole criteria for assessing the potential performance of the element in use, nor do they reflect the actual behaviour in use.

**Range of assemblies covered by this report**

It is our opinion that the range of assemblies covered by this report are limited to the following

- Assemblies with identical hardware fitted no further apart than in the tested assembly
- Assemblies of the same or smaller overall dimensions to the tested assembly

**Uncertainty of Measurement**

The uncertainties of measurements calculated for a confidence level of 95% throughout these tests are within the limits of these tolerances.

The standard specifies the following tolerances

- Air flow  $\pm 5\%$
  - Air pressure  $\pm 5\%$
  - Water flow  $\pm 10\%$
  - Distance  $\pm 1\text{mm}$  for tape measures  $\pm 0.1\text{mm}$  for displacement transducers
-

## REVISION HISTORY

This issue of the report replaces all previous issues that are now withdrawn.

<b>Issue No :</b>	<b>Re - Issue Date :</b>
<b>Revised By:</b>	<b>Approved By:</b>
<b>Reason for Revision:</b>	

**END OF REPORT**