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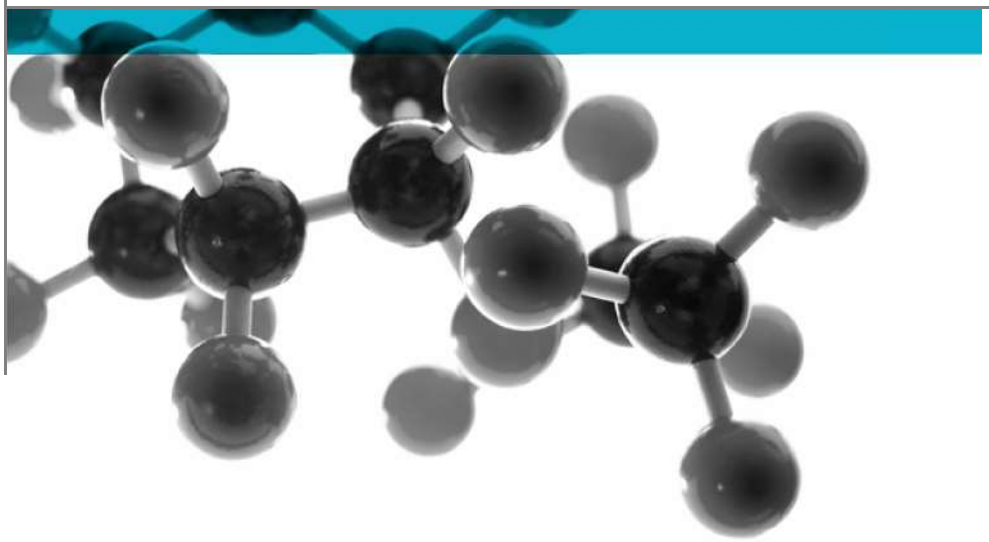
BS 6375-1:2015



Test of: Heavy 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:
WIL 388517

Date: 23/01/2018

Copy: 1

Issue No.: 2

Testing
Advising
Assuring

UKAS TESTING
0621

TEST CONCLUSIONS

Samples of:
Manufacturer Latham's Security Doorsets
Product Single doorset
Model Heavy 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
4	**Exposure category and classification**	**800U**
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: Simon Lewis, Trainee Test Engineer

Report issued by: Mark West, Doors & Window Laboratory Manager

Signed 

Date 22nd January 2018

For and on behalf of Exova (UK) Ltd

Report authorised by: Chris Bryan, Senior Test Engineer

Signed

Date 22nd January 2018

For and on behalf of Exova (UK) Ltd

Report issued: 23 January 2018

UKAS TESTING
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

CONTENTS **PAGE NO.**

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 number	CHRIS
Dated	30/08/2017

SAMPLE DETAILS

Outer frame	1145 x 2030mm
Opening joint	1020 x 1940mm
Configuration	Single doorset open-out
Material	Steel
Details of Hardware	
Hinges	4no. Yongkang Bosslong Industrial & Trading Co Ltd Z-304 lift off Z-shape hings
Hinge protection	4no. Zhejiang Shenjiang Doors Industry Co., Ltd DB14/15 Solid screw in dog bolt
Lock	Zhejiang Hongli Locks Co. HL#ST11 sash lock and #16-15 side locks
Cylinder	Eurospec MPX6+ 3* cylinder
Handles	Hongli Lock HL#6198 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	20/09/2017
Test started	22/09/2017
Test completed	22/09/2017
Special Test requirements	
Other reports to be used in conjunction with this report	
Airflow measurement device used	1691 Air and water permeability test rig

TEST PROCEDURE

Introduction	This test report should be read in conjunction with the Standard BS 6375-1:2015, Performance of Windows & Doors – Part 1: Classification for weathertightness and guidance on selection and specification. 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.
Instruction To Test	Initial requirement was for a performance of Class 2 (300 Pa) for air permeability, Class 3A (100 Pa) for watertightness, and Class A3 (1800 Pa) for wind resistance, appropriate to a UK exposure category of 1200.
Test Specimen Construction	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.
Installation	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.
Sampling	The samples were not independently witnessed or selected and were provided direct from the test sponsor.
Test Climate	The sample was conditioned in the laboratory in the range 15-30°C and 25-75% humidity. The temperature and humidity in the lab was maintained in the range 18.6 – 24.7°C and 44.1-69.6% humidity for the duration of the test. The air pressure was 100.2kPa.

INITIAL OBSERVATIONS

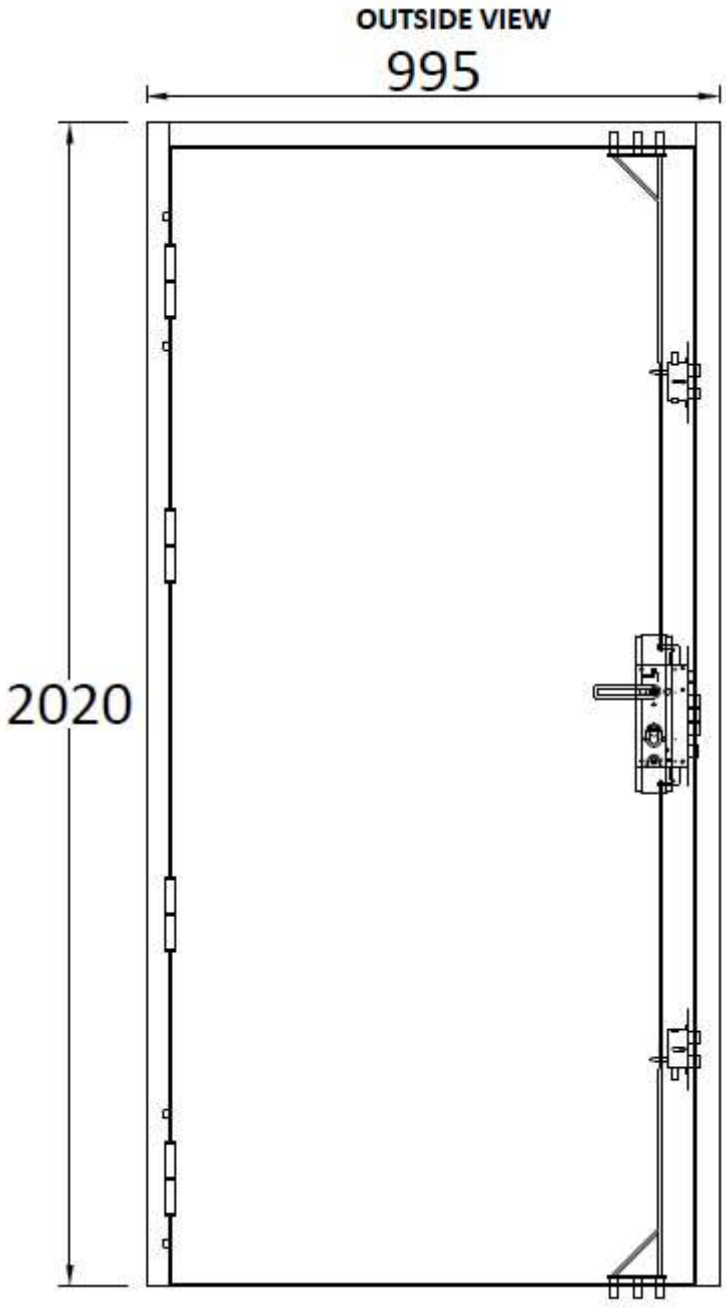
The internal face of the sample

Sample Handle	
Sample forend plate	

Sample hinge

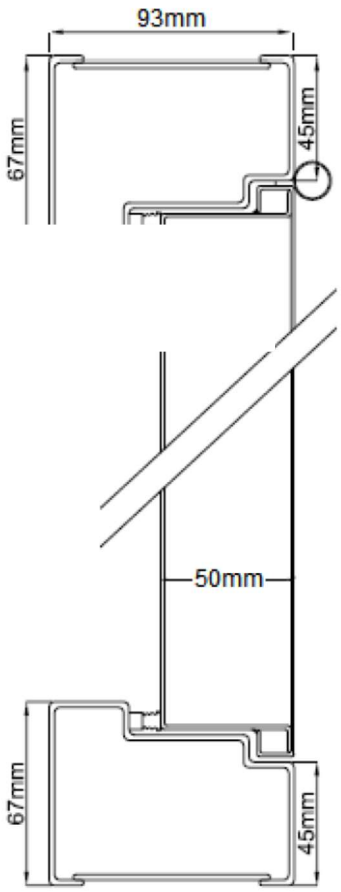
TEST SPECIMEN

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



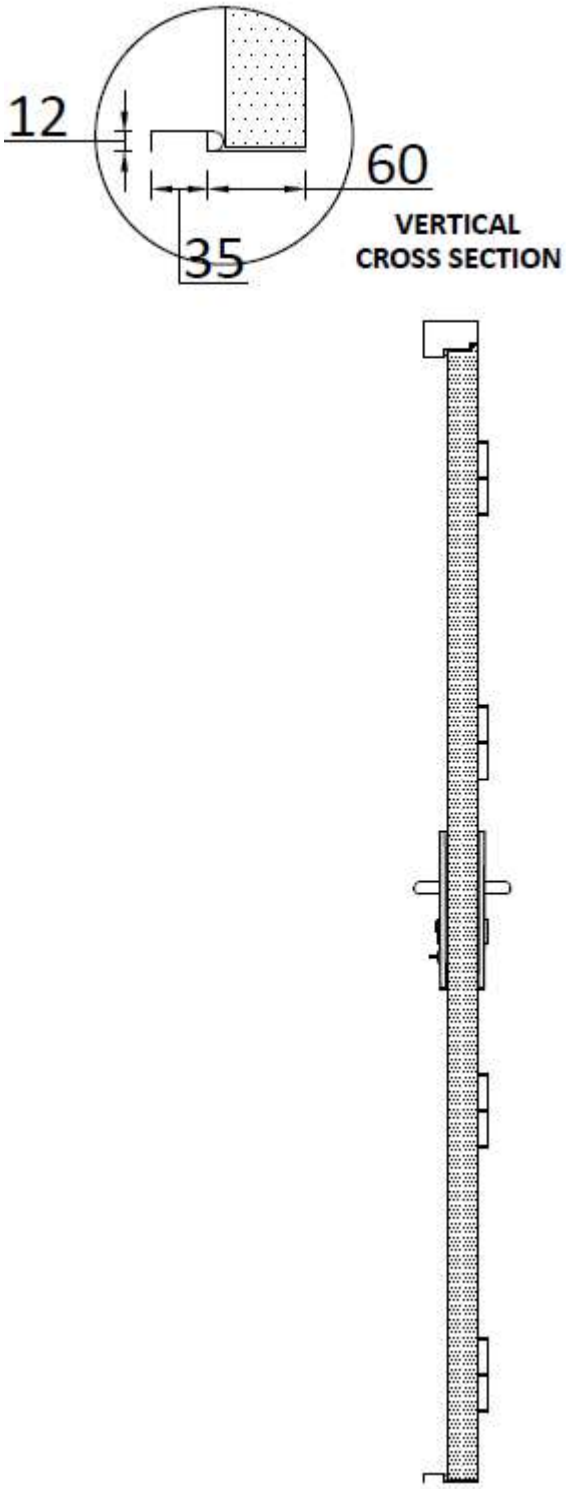
Do not scale. All dimensions are in mm

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

Item		Description
1. Door frame head		
Supplier	:	Zhejiang Shenjiang Doors Industry Co., Ltd
Profile code	:	B332/50mm
Material	:	Steel
Grade	:	Galvanised cold rolled steel
Gauge	:	2.0mm
Overall section size	:	67 x 93mm
Rebate	:	60mm
Fixing jamb to head joints	:	Continuous weld 45mm internal, 35mm top, 25mm external
2. Door frame jamb		
Supplier	:	Zhejiang Shenjiang Doors Industry Co., Ltd
Profile code	:	B332/50mm
Material	:	Steel
Grade	:	Galvanised cold rolled steel
Gauge	:	2.0mm
Overall section size	:	67 x 93mm
Rebate	:	60mm
3. Door frame threshold		
Supplier	:	Zhejiang Shenjiang Doors Industry Co., Ltd
Profile code	:	B332/50mm
Material	:	Steel
Grade	:	Galvanised cold rolled steel
Gauge	:	2mm
Overall size	:	12 x 93mm frame depth
Fixing method	:	Continuous weld 3 on either side
4. Door frame weather seal		
Supplier	:	Yongkang Bosslong Industrial & Trading Co. Ltd
Reference	:	#306-11 x 2 & #305-15 x 2
Material	:	Flame Retardent PU + Expended graphite
Fixing method	:	Self-Adhesive
Position	:	All four edges
Continuity	:	Uninterrupted by hardware

Item		Description
5. Door leaf Facings		
Leaf supplied by	:	Zhejiang Shenjiang Doors Industry Co., Ltd
Overall leaf size	:	50mm thick
Material	:	Galvanised Steel
Thickness	:	1mm, formed in to trays and welded together.
Density	:	7850kg/m^3 (stated)
Core section size	:	48mm
Corner fixing method	:	Weld
i. type	:	Spot Weld
ii. size	:	3mm on average
iii. quantity	:	12 hinge side, 12 latching side, 6 top, 5 bottom.
6. Door leaf core		
Material	:	Wuyi NiuNiu Fireproof Board Material Co., Ltd
Density	:	260kg/m^3 (stated)
Thickness	:	48mm
Fixing into rebate	:	Bonded to door leaf facings with adhesive
7. Door edge lippings		
Position	:	Folded into door leaf interlocking trays
Material	:	As 1
Density	:	kg/m^3 (stated)
Thickness	:	As 1
Overall size	:	10mm x 15mm jemmy bar lip.
8. Door leaf weather seals		
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
9. Hinges		
Supplier	:	Yongkang Bosslong Industrial & Trading Co Ltd
Description	:	Lift off Z Shape
Reference	:	Z-304
Primary material	:	Grade #304 Stainless Steel
Quantity	:	4
Size of knuckle	:	18 x 130mm
Size of blades	:	60 x 55mm
Fixing hinge to doorleaf		
i. type	:	Machine Screw
ii. size	:	M6 x 12mm
iii. quantity	:	4
Fixing hinge to frame		
i. type	:	Machine Screw
ii. size	:	M6 x 12mm
iii. quantity	:	5

Item		Description
Position of hinge		
i. top hinge	:	207mm from top of door to top of hinge
ii. 2nd hinges	:	667mm from top of door to top of hinge
iii. 3rd hinge		1307mm from top of door to top of hinge
iv. bottom hinge	:	1767mm from top of door to top of hinge
10. Dog bolts		
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 * 15mm
ii. retaining ring / keeper	:	24mm
11. Sash Lock		Multipoint locking system
Supplier	:	Zhejiang Hongli Locks Co.
Description	:	Sash lock, solid large bolt
Reference	:	HL#ST11
Position	:	1045mm from bottom of door to centre of spindle/lock
Fixings		
i. type	:	Machine Screw
ii. size	:	M4 x 10mm
iii. quantity	:	4
12. Side Locks and Shoot Bolts		
Supplier	:	Zhejiang Shenjiang Doors Industry Co., Ltd
Description	:	Internal rods and spring side locks
Reference	:	#16-15mm
Position	:	400mm from top of the door 1562mm from top of the door
Fixings	:	
i. Type	:	Machine Screw
ii. Size	:	M4 x 10mm
iii. Quantity		2
13. Cylinder		
Supplier	:	Carlisle Brass
Description	:	Eurospec 3* Cylinder
Kitemark	:	597142
Reference	:	MPX6+
Fixings		
i. type	:	Machine Screw
ii. size	:	M5x65mm
iii. quantity	:	1

Item		Description
14. Lever handles		
Supplier	:	Hongli Lock
Description	:	Lever Handles
Reference	:	HL#6198
Material	:	Stainless Steel
Fixings		
i. type	:	Machine Screw + Thread Extension
ii. size	:	M5 x 50mm + 50mm double female extension
iii. quantity	:	2

PERFORMANCE CRITERIA & TEST RESULTS

Clause 4 Exposure category and classification

Exposure Category Required:	1200
Atmospheric Conditions	
Air Temp	20°C
Humidity	48%RH
Air Pressure	100.2kPa
Test Sample	
Overall Size of Sample	1145 x 2030mm
Overall Area	2.32m2
Joint length leaf/casement	1020 x 1940mm
Opening Joint Length (m)	5.92m

Clause 6 Air Permeability

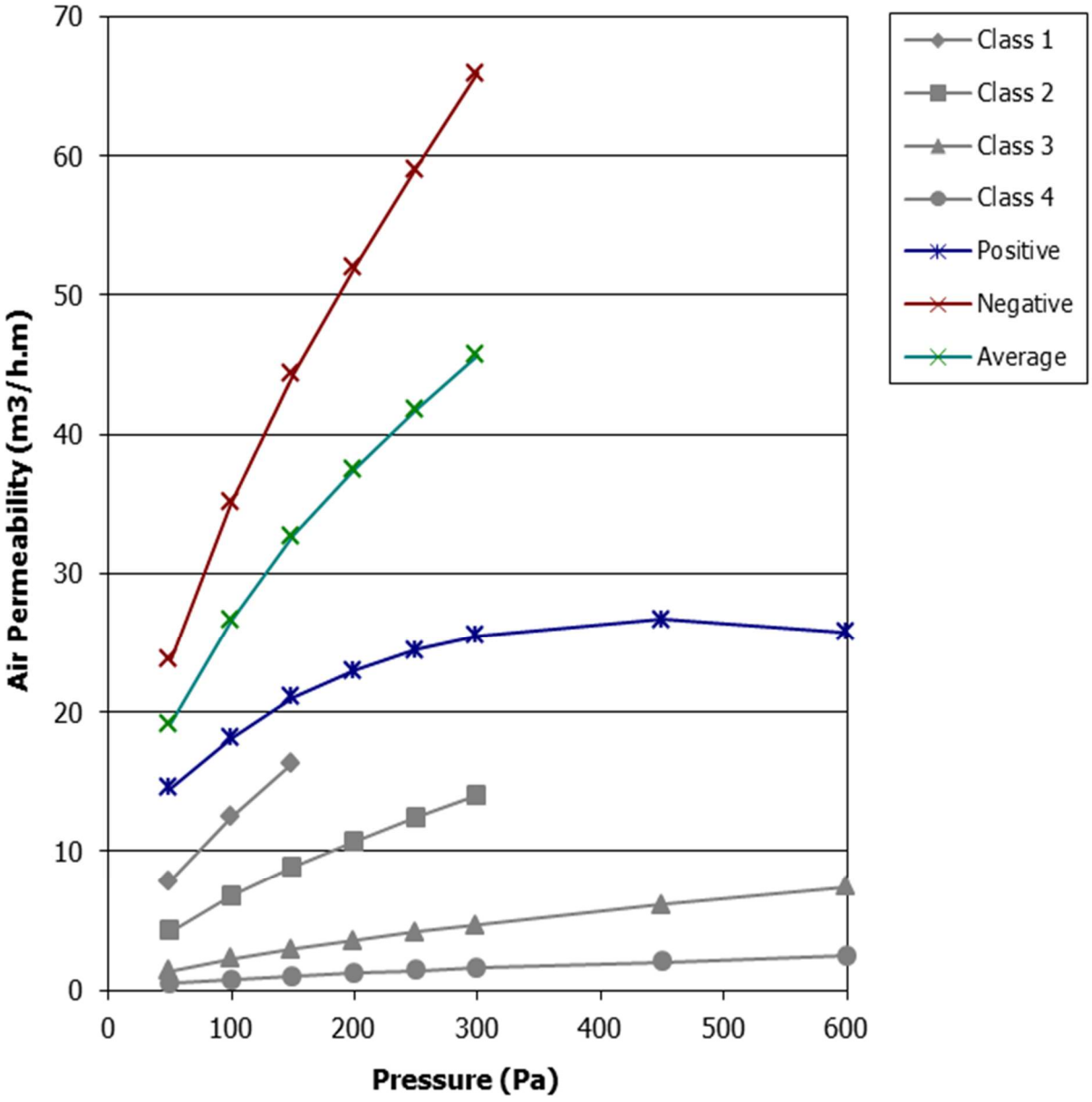
Test Pressure	Calculated Air Permeability per unit length		
	Positive m^3 / h.m	Negative m^3 / h.m	Average m^3 / h.m
50 Pa	14.56	23.81	19.19
100 Pa	18.11	35.11	26.61
150 Pa	21.10	44.36	32.73
200 Pa	23.02	52.04	37.53
250 Pa	24.48	59.08	41.78
300 Pa (if required)	25.50	65.96	45.73
450 Pa (if required)	26.71	-	-
600 Pa (if required)	25.78	-	-

Test Pressure	Calculated Air Permeability per unit area		
	Positive m^3 / h.m	Negative m^3 / h.m	Average m^3 / h.m
50 Pa	37.09	60.64	48.86
100 Pa	46.12	89.41	67.77
150 Pa	53.75	112.98	83.37
200 Pa	58.64	132.54	95.59
250 Pa	62.35	150.48	106.41
300 Pa (if required)	64.95	167.99	116.47
450 Pa (if required)	68.03	-	-
600 Pa (if required)	65.66	-	-

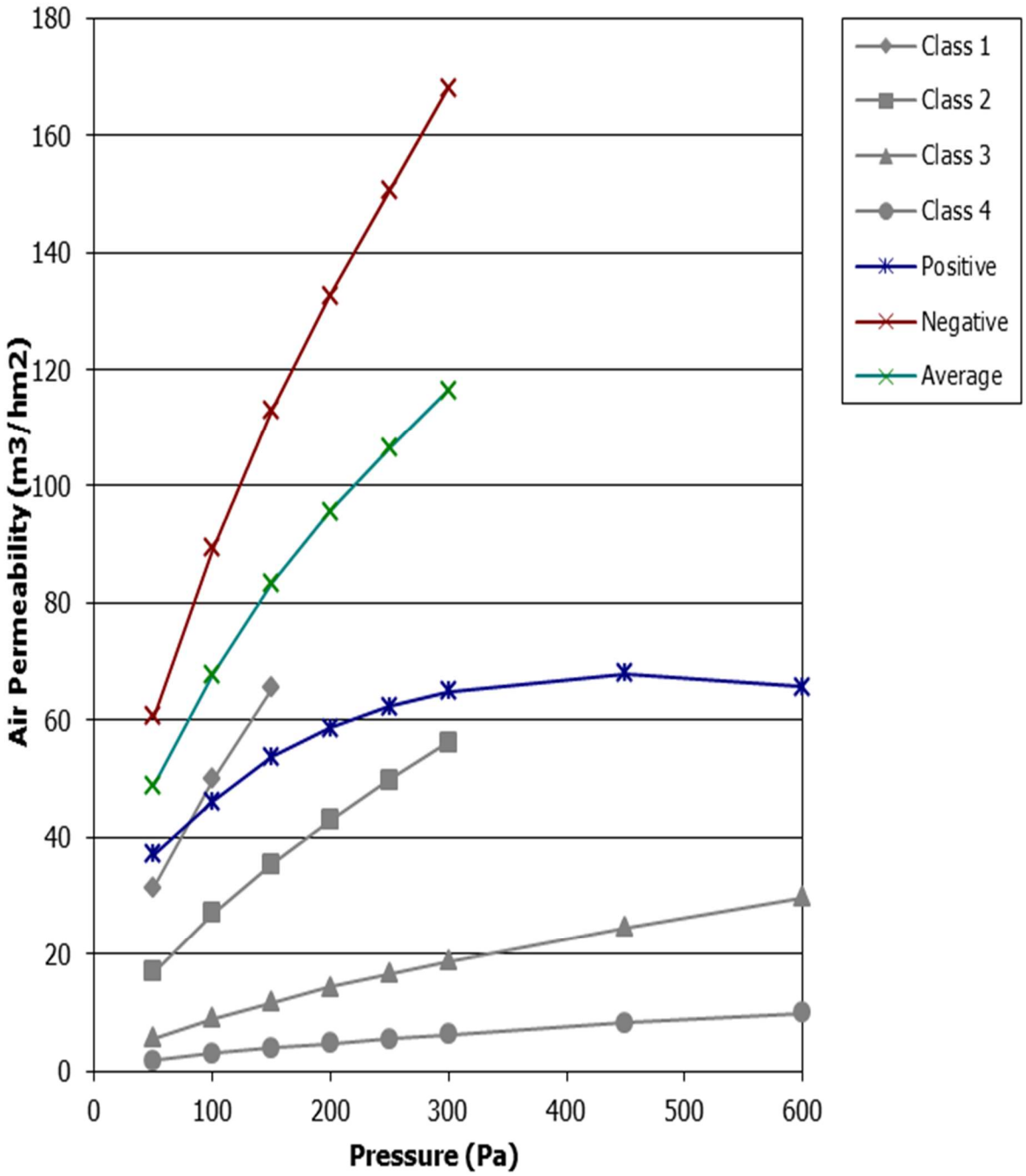
Note:

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

Graph of air permeability per unit length



Graph of air permeability per unit area



Clause 7 Watertightness

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°)	24°
Height of nozzle above joint (0 – 150mm)	115 mm

Pressure (Pa)	Duration (m:s)	Observations	
0 Pa	15mins	No leakage	CLASS 1A ACHIEVED
50 Pa	5mins	Leakage occurred at 1 min into 50Pa	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 from the top of the door leaf and over the threshold weather seal at 1 minute 0 seconds with 50 Pa.

Clause 8 Wind Resistance

Positive wind pressure

Member tested	Pressure applied	Member Length	Deflection	Fraction
Top rail	1207 Pa	990 mm	0.55 mm	1/1800

Negative wind pressure

Member tested	Pressure applied	Member Length	Deflection	Fraction
Top rail	-1206 Pa	990 mm	0.5 mm	1/1980

Clause 6 Repeated Air Permeability following wind resistance test

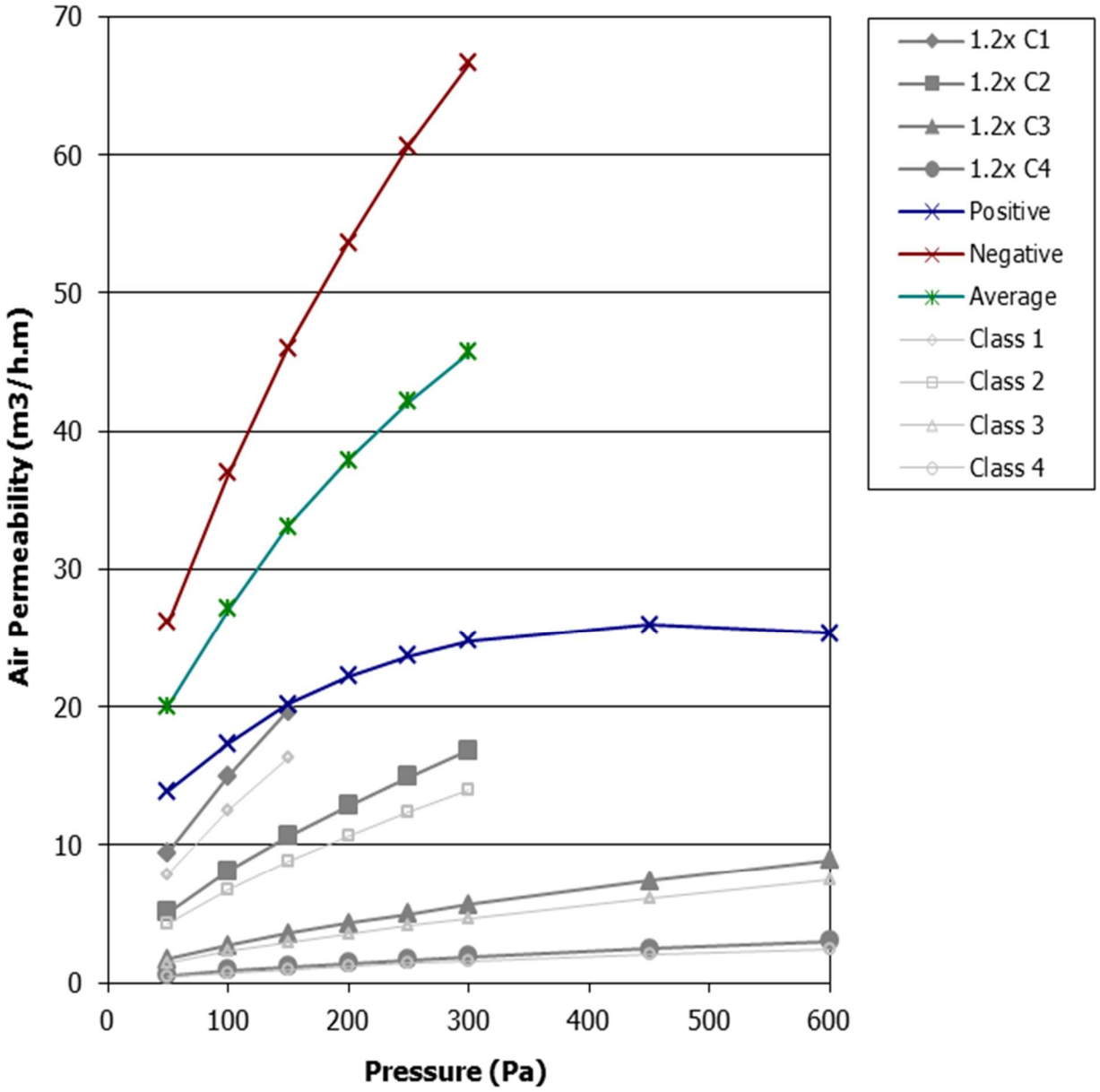
Test Pressure	Calculated Air Permeability per unit length		
	Positive m^3 / h.m	Negative m^3 / h.m	Average m^3 / h.m
50 Pa	13.87	26.16	20.02
100 Pa	17.34	36.97	27.15
150 Pa	20.17	46.00	33.08
200 Pa	22.19	53.64	37.91
250 Pa	23.68	60.65	42.17
300 Pa (if required)	24.77	66.66	45.71
450 Pa (if required)	25.95	-	-
600 Pa (if required)	25.34	-	-

Test Pressure	Calculated Air Permeability per unit area		
	Positive m^3 / h.m^2	Negative m^3 / h.m^2	Average m^3 / h.m
50 Pa	35.33	66.64	50.98
100 Pa	44.15	94.17	69.16
150 Pa	51.37	117.15	84.26
200 Pa	56.51	136.61	96.56
250 Pa	60.32	154.47	107.40
300 Pa (if required)	63.08	169.77	116.43
450 Pa (if required)	66.08	-	-
600 Pa (if required)	64.53	-	-

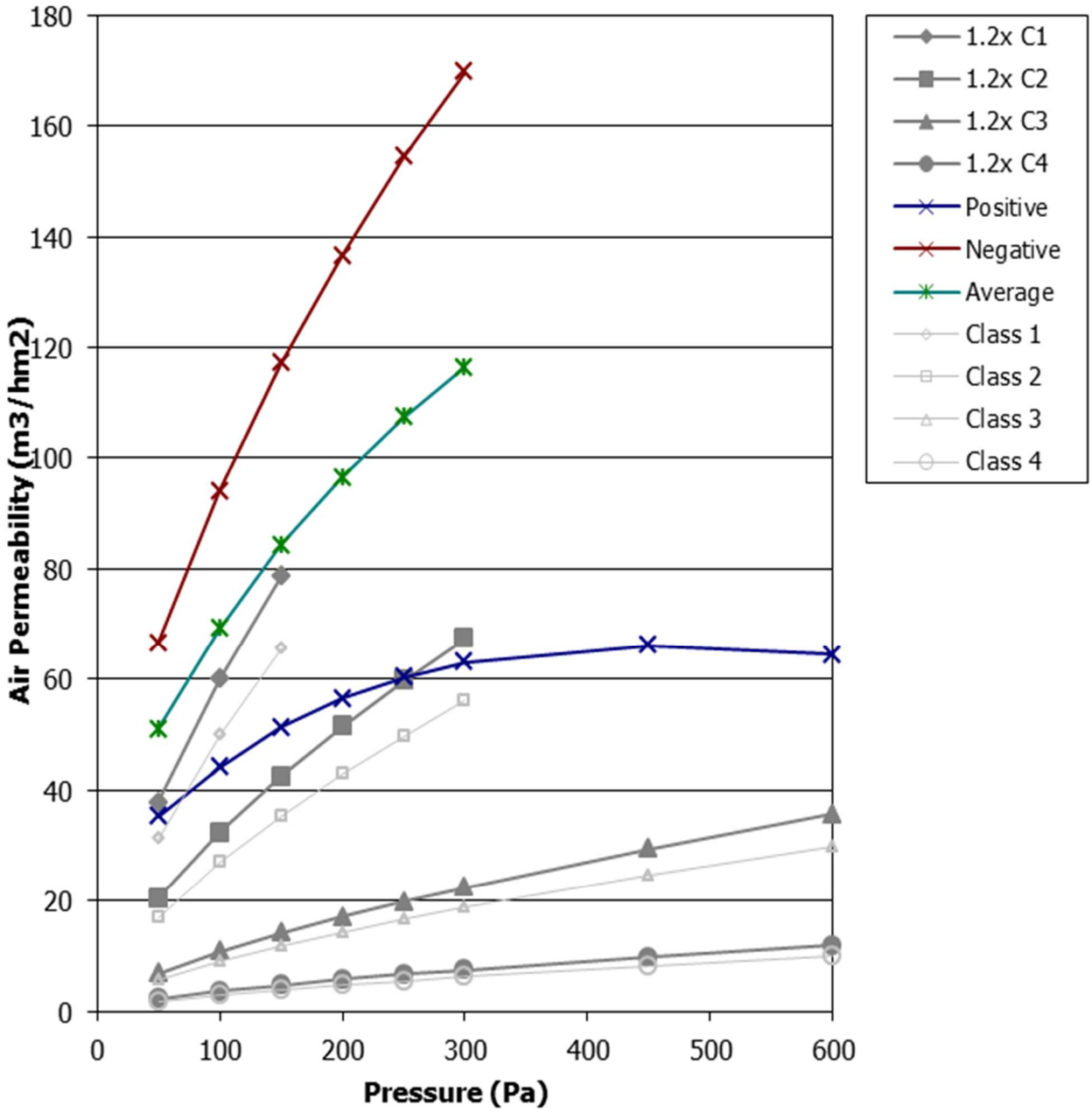
Note:

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

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
6 Test for air permeability	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. 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. 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. During the repeat air permeability test the average air leakage continued to meet the requirements of Class 0. **The sample could therefore be classified as Class 0 for the air permeability test.**	**PASS CLASS 0**
7 Test for water tightness	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. These requirements were satisfied up to a point 1min and 0sec into a test pressure of 50 Pa when water penetration was observed. **The sample could therefore be classified as Class 1A for the watertightness test.**	**PASS CLASS 1A**
8 Test for resistance to wind - Deformation test	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. 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. For positive pressure the member tested was the top rail, it was 990mm long, and was subject to a maximum deflection of 0.55mm (1/1800) for positive wind pressure. For negative pressure the member tested was the top rail , it was 990mm long, and was subject to a maximum deflection of 0.5mm (1/1980) for negative wind pressure. **The sample met the requirements for Class C3 for the deflection test.**	**PASS**

Clause	Result	Pass/Fail
Repeated pressure test	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%. Following a test pressure P2 of -600Pa and 600Pa repeated 50 times there were no visible failures. 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.	**PASS**
Safety test	During the safety test under a pressure P3 of -1800Pa & 1800Pa the sample must remain closed and no parts must come detached. On the application of the test pressure the sample remained closed The sample met the requirements for Class C3 for the safety test. **The sample could therefore be classified as Class C3 for the wind resistance test.**	**PASS CLASS C3**

CONCLUSIONS

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	

LIMITATIONS

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 ± 5% ▪ Air pressure ± 5% ▪ Water flow ± 10% ▪ Distance ±1mm for tape measures ± 0.1mm for displacement transducers

REVISION HISTORY

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

Issue No : 2	**Re - Issue Date :** 22/01/2018
Revised By: MW	**Approved By:** CB
Reason for Revision: Corrected an error on page 5, inconsistent sample size	

Issue No :	**Re - Issue Date :**
Revised By:	**Approved By:**
Reason for Revision:	

END OF REPORT