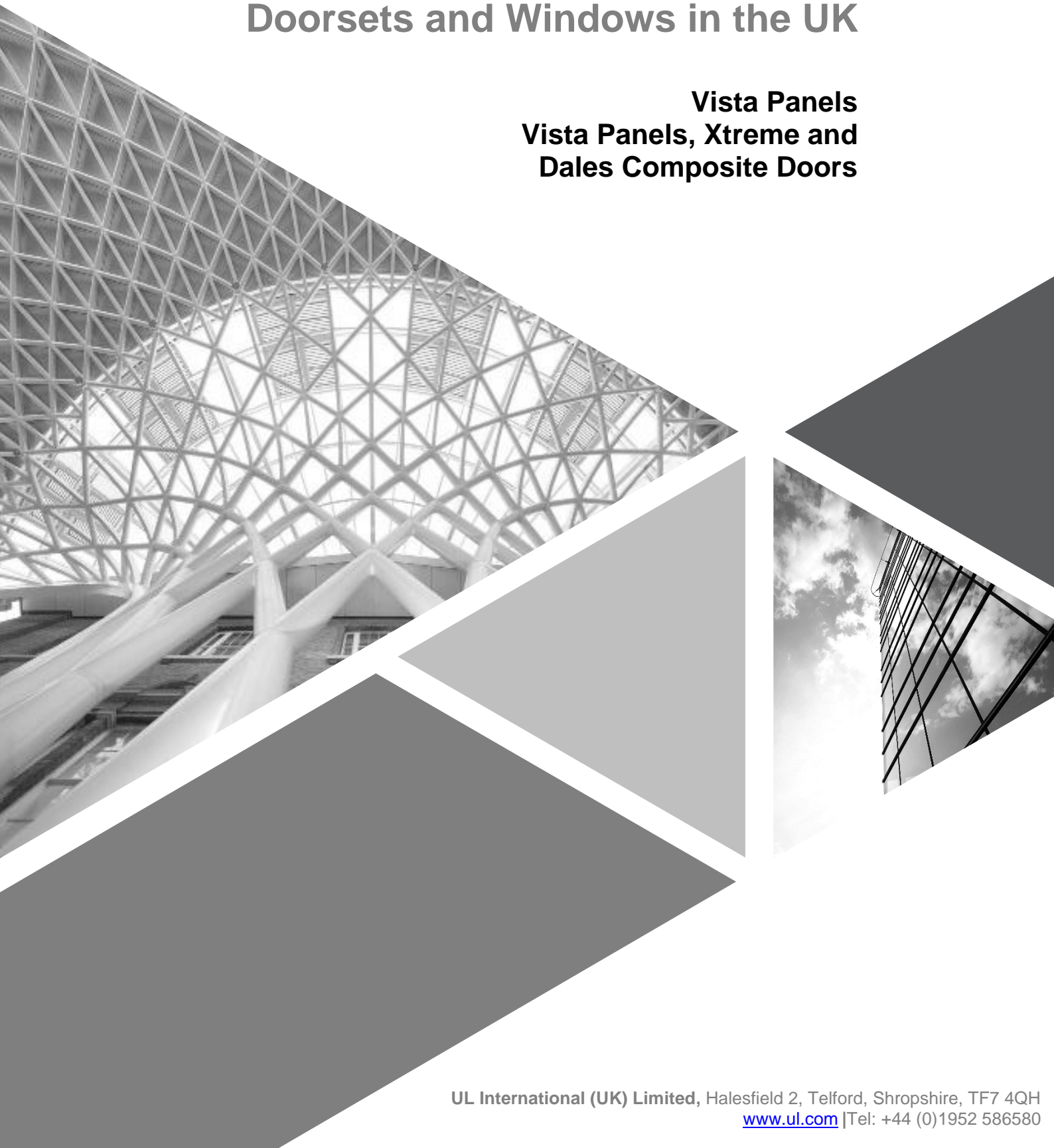


Technical Report – R4790888868-1 PAS 24:2022 - Enhanced Security Performance Requirements for Doorsets and Windows in the UK

**Vista Panels
Vista Panels, Xtreme and
Dales Composite Doors**





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1. Introduction

This report describes tests carried in order to determine compliance with PAS 24:2022 of the test specimen supplied as follows:

Test Details	
Customer:	Vista Panels Unit H1 Prenton Way North Cheshire Trading Estate Wirral CH43 3DU United Kingdom
Product Tested:	Single Door-Set
Sample ID Tested:	Sample 1
Date of Sample Received:	31 st January 2024
Date of Test:	1 st February 2024
Test Witnessed By:	H Rogers Ingenious Locks and Hardware Limited P Anger Vista Panels
Test Conducted at:	UL International (UK) Limited Halesfield 2 Telford Shropshire TF7 4QH
Test Conducted by:	D Adams <i>Senior Engineering Technician</i> S Ward <i>Engineering Technician</i>

Report Authorisation	
Report Compiled by:	R Cooper <i>Project Handler</i> 
Authorised by:	M Witkowska <i>Laboratory Manager</i> 

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2. Summary of Results

The following summarises the results of testing carried out, in accordance with PAS 24:2022.

The performance of the sample tested has been assessed against the criteria described in the standards below.

Test Description	Sample Tested (ID No.)	Test Sheet reference	Result	Test Date
A.3.3 – Security hardware & cylinder test – Part 3	1	TS 001	Pass	1 st February 2024
B.4.4.3 – Infill – mechanical test	1	TS 001	Pass	1 st February 2024
B.4.5 – Mechanical loading test	1	TS 001	Pass	1 st February 2024

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.

This PAS 24 test was conducted through the use of our flexible scope of accreditation.

2.1 Decision rule

Classifications reported in section 6 indicate that the product conforms with the relevant accuracy requirements of section B.3 and C.3 of PAS 24:2022.

2.2 Measurement uncertainty

The results as reported in this test report are not accounting measurement of uncertainty as no numerical values were recorded during the test.

3. Description of Test Sample

The details shown in section 3 and drawings shown in section 7 have been supplied by and confirmed as typical of normal production by Vista Panels and have not been verified by UL International (UK) Limited.

See Section 7 for test sample drawings as provided by Vista Panels.

Product range name:	Vista Panels, Xtreme and Dales Composite Doors
Project name to appear on front page of the test report:	Vista Panels, Xtreme and Dales Composite Doors
Configuration:	Single Door-Set
Opening direction:	Left Hand Opening In
Product manufacturer:	Vista Panels
The sample is typical of normal production:	Yes
Please define the closing condition of the sample:	Latched & Locked Centrally, Hooks engaged Top & Bottom
Weight of Sample including subframe (kg):	Approx. 50kg
Weight of sash (kg) - applicable for sample tested with accordance with BS 6375-2:2009	n/a

Outer Frame			
Height:	2117 including PVC Cill	Outer frame gasket	Co-ex to EWS031
Width:	1034mm	Gasket type:	Flipper
Outer frame material:	PVC	Manufacturer:	Eurocell
Surface finish	Smooth	Product name:	n/a
Outer frame Part Numbers		Product code:	n/a
Top:	EWS031 5.3 WQL Profile	Threshold	
Bottom:	AC85646W Cill	Manufacturer:	Exitex
Lock side:	EWS031 5.3 WQL Profile	Product name:	MXS15/2 - RITB
Hinge side:	EWS031 5.3 WQL Profile	Product code:	1.01.0760.1050.15
Outer frame section size		Material:	Aluminium
Width:	70mm	Outer frame joint method	
Depth:	80mm	Head:	Welded
Reinforcing:		Foot:	Screwed On
Manufacturer:	Eurocell		
Product name:	Large Composite Door Frame Insert		

Product code:	EWS831P		
Material:	Re-cycled PVC		

Leaf, Sash, or Casement - 1

Width:	914mm	Leaf / casement gasket	
Height:	2013mm	Gasket type:	Flipper – Co-ex to Profile
Material:	GRP Composite Slab	Manufacturer:	Eurocell
Surface finish:	GEL Coat – Wood Grained Finish	Product name:	n/a
Leaf / casement part numbers		Product code:	n/a
Top:	DoorCo Original Slab	Leaf midrail	
Bottom:		Manufacturer:	n/a
Lock side:		Product name:	n/a
Hinge side:		Product code:	n/a
Leaf / casement section size		Material:	
Width:	n/a	Leaf / casement joint method	
Depth:	n/a	Head:	n/a
Reinforcing	n/a	Foot:	n/a
Manufacturer:	DoorCo		
Product name:	Combi Door Slab		
Product code:	914 4/6P WH		
Material:	GRP		

Leaf, Sash, or Casement - 2

Width:	914mm	Leaf / casement gasket	
Height:	2013mm	Gasket type:	Flipper – Co-ex to Profile
Material:	GRP Composite Slab	Manufacturer:	Eurocell
Surface finish:	GEL Coat – Wood Grained Finish	Product name:	n/a
Leaf / casement part numbers		Product code:	n/a
Top:	DoorCo Original Slab	Leaf midrail	
Bottom:		Manufacturer:	n/a
Lock side:		Product name:	n/a
Hinge side:		Product code:	n/a
Leaf / casement section size		Material:	
Width:	n/a	Leaf / casement joint method	
Depth:	n/a	Head:	n/a

Reinforcing	n/a	Foot:	n/a
Manufacturer:	DoorCo		
Product name:	Combi Door Slab		
Product code:	914 4/6P WH		
Material:	GRP		

Glazing			
Glass unit		Glazing gasket	
Manufacturer:	Art Glass	Gasket type:	n/a
Inner thickness:	18mm	Manufacturer:	n/a
Spacer material:	Silver Painted Spacer Bar - 17.5mm Air Space x 6.5mm Height - Rear Weld	Product name:	n/a
Outer thickness:	26mm	Product code:	n/a
Unit sizes:	26x559x913mm	Glazing clip	n/a
Bead		Manufacturer:	n/a
Manufacturer:	ODL Europe	Product name:	n/a
Product name:	Half Glazed Trisys Cassette	Product code:	n/a
Product code:	Inner: TSWHT2236CASSINS Outer: TSWHT2236	Glazing tape details	
Bead size:	n/a	Manufacturer:	UK Industrial Tapes
Bead material:	PC/ABS	Product name:	BLUEFILMIC LINER Tape
		Product code:	ProLINK 1000R

Hardware				
	Manufacturer:	Product description:	Product code:	Quantity:
Hinges:	Nico Manufacturing	White Icon Adjustable Hinge	4961WHF (Chinese Manufacture))	3 (Top, Middle, Bottom)
Hinge fixing:	Rapierstar	Countersunk Screw	CSR 4.8x45 Z StarPVCU	Each Hinge has 4 screws to the slab & 4 screws to the Frame
Hinge protectors:	n/a	n/a	n/a	n/a
Hinge protector fixings:	n/a	n/a	n/a	n/a
Locking hardware:	Ingenious Locks & Hardware	Multipoint Lock	1009 Duplex MPL	1

Locking hardware fixing:	Rapierstar	Countersunk Screw	CFG 4.3x40Z	8
Cylinder:	Ingenious Locks & Hardware	Key/Key EPC 1 Star Cylinder	6001-13-3535-SN	1
Cylinder fixing:	Ingenious Locks & Hardware	Countersunk Bolt	M5 65 Z	1
Handle:	Ingenious Locks & Hardware	Lever/Lever PVD Chrome Handles	4007-LL-SS-04	1
Handle fixings:	Ingenious Locks & Hardware	Pan-Head Securing Bolts	M5 x 60	2
Touch bar:	n/a	n/a	n/a	n/a
Cylinder support:	Ingenious Locks & Hardware	Cylinder Guard	9101	1
Cylinder escutcheon :	n/a	n/a	n/a	n/a
Keeps:	Ingenious Locks & Hardware	1009 MPL Keep Set	1141LH, 1141RH, 1143	1 of each
Keep fixings:	Rapierstar	Countersunk Screw	CFG 4.3x30Z	2 per Keep
Drip bar:	Exitex	Deflector 20	1.01.0110.0914.30	1
Drip bar fixings:	Rapierstar	Countersunk Screw	CFG 4.3x20Z	4
Any additional hardware:	n/a	n/a	n/a	n/a

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:	Vista Panels
Name:	Pip Anger
Position:	Technical Director
Date:	19 th January 2024

4. Test Arrangement

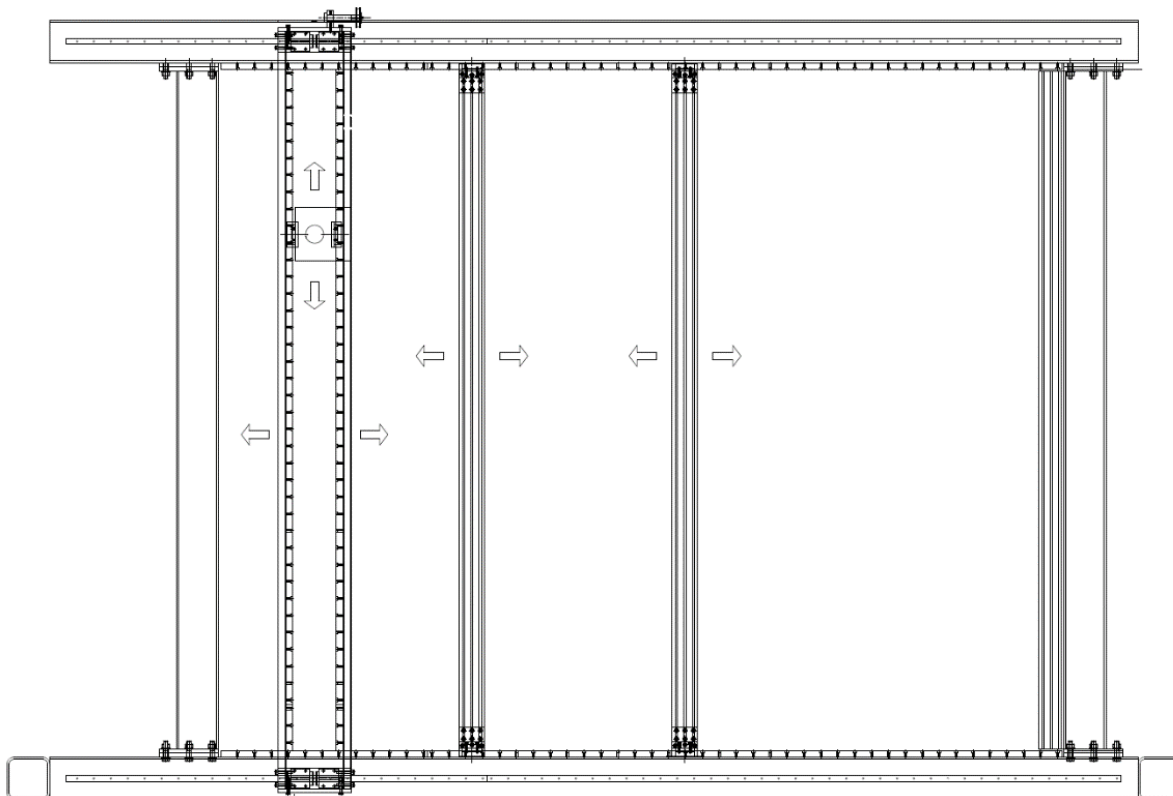
4.1 Environmental conditioning

The test samples were stored in a non-destructive laboratory environment at a temperature of between 15 – 30°C and between a humidity of 25 – 75% RH for a minimum of 12 hours before, and during, the testing.

4.2 Test rig

The test sample was supplied mounted in a 75 x 90 mm timber sub-frame in accordance with manufacturer's installation requirements. The sample was installed into the test rig, which was constructed to meet the requirements of the test specification, and was installed plumb, square and without twist or bends.

Figure 1 – Test rig used for testing



4.3 Mechanical load application

A series of parallel to plane loads and perpendicular to plane loads were applied to the products using hydraulic cylinders. The loads parallel and perpendicular to the plane of the test sample were applied to within a measured accuracy of $\pm 2\%$. Perpendicular-to-plane loads were controlled to an accuracy of $\pm 5\%$, and they were applied within 5° perpendicular to the plane of the sample.

Mechanical loading to the door leaf was applied by a pad with a nominal area of $1,000\text{mm}^2$ with a minor dimension of not less than 20mm.

Mechanical loading to the infill was applied with a pad (as described above) centrally attached to a $150 \times 150 \pm 5$ mm plywood pad with a thickness of not less than 25mm.

4.4 Attack tool groups

The following list of tools were available for use during the relevant manual attack tests.

The tools were not used to strike the test sample, or strike one another, nor were they connected in any way to increase the leverage available during any of the manual attack tests.

4.4.1 Tool group A

Section reference	Tool description
A.2.2.1	Assorted mild steel wire
A.2.2.2	Two credit cards
A.2.2.3	Two paint scrapers
A.2.2.4	One craft knife
A.2.2.5	Two flat blade screwdrivers, 150mm length

4.4.2 Tool group B

Section reference	Tool description
A.2.3.1	One 25mm wood chisel
A.2.3.2	One 6mm wood chisel
A.2.3.3	One flat blade screwdriver, 200mm length
A.2.3.4	One brick bolster
A.2.3.5	One cross point screwdriver, 200mm length
A.2.3.6	One cross head screwdriver, 200mm length
A.2.3.7	One interchangeable bit screwdriver, 200mm length, PH1 to PH3, PZ1 to PZ3, T5 to T30, H2 to H6, Hexagon heads range from 4mm to 10mm and slotted 3.5mm to 6.5mm bits. This screwdriver was only used for removal of exposed fixings if applicable.

4.5 Soft body impactor

The soft body impact energy was applied by the pendulum fall of a leather sphericoconical bag of approximately 1100 ± 80 mm circumference filled with fine dry sand to a total mass of 30 ± 0.05 kg (this corresponds to a sand density of 1500 kg/m^3 and a grain size of < 2 mm). The impactor was suspended by a cable of at least 1.5 m in length, such that the movement of the impactor is in a vertical plane perpendicular, $\pm 5^\circ$, to the impacted face of the component.

4.6 Hard body impactor

The hard body impact energy was applied by the pendulum fall of a cylindrical steel block having a mass of 50 ± 0.05 kg. The nose of the impactor was 50 ± 0.5 mm in diameter and 175 ± 35 mm in length. The overall length of the impactor was 820 ± 10 mm. The impactor was arranged to swing in an arc normal to the plane of the door and its longitudinal axis was horizontal at the moment of impact.

4.7 Entry cylindroids

4.7.1 Entry definition cylindroid

A 500 ± 25 mm long cylindroid of a diameter 50 ± 0.5 mm was used to confirm that any aperture created did not satisfy the entry definition as of section 3.9 in PAS 24:2022, for any relevant tests.

4.7.2 Entry definition ellipsoid

A 500 ± 25 mm long cylindroid with an elliptical section of 225 ± 2 mm minor and 380 ± 2 mm major diameters was used to confirm that any aperture created during the Manual cutting test in zone 2 did not satisfy the entry definition as of section 3.10 in PAS 24:2022.

5. Test Procedures

5.1 Security hardware & cylinder test – part 3

The objective of this test was to assess the lock and cylinder and its resistance to manual attack when using the tools as described in section A.2 of PAS 24:2022.

The hardware was attacked for a total of 3 minutes which consisted of the following activities:

- i. Attempts to remove, dislodge or otherwise gain access to the lock mechanism by attacking any item protecting the lock mechanism.
- ii. Attempts to defeat the lock and expose mechanisms within the lock case.
- iii. If access to the internal workings of the hardware, cylinder or lock is gained, then attempts to defeat the lock and gain entry by operating any accessible mechanism.

5.2 Infill – mechanical test

The objective of this test was to assess the ability of any infill medium to withstand a load of 2.0 kN applied to the exterior face at each corner. The load was applied to the top left corner before working clockwise around the remaining corners of the infill medium. The force was applied over a period of between 10 and 20 seconds and the force maintained until it had been held for between 8 to 12 seconds.

The loads and loading sequence were in accordance with section B.4.4.3 of PAS 24:2022.

5.3 Mechanical loading test

The objective of this test was to assess whether the sample is capable of withstanding a specified sequence of mechanical loads without creating an entry.

Mechanical loads were applied progressively and without shock over a period of 10 and 20 seconds. Once the target parallel-to-plane load was achieved, the load was held, and the perpendicular-to-plane loading applied. Once the perpendicular-to-plane load target was achieved the loads were held between 8 and 12 seconds before the loads were removed, without shock, over a period which did not exceed 20 seconds.

The loads and loading sequence were in accordance with section B.4.5 of PAS 24:2022.

5.4 Entry definitions

The performance of the door was measured against the entry definitions as described in 3.10 PAS 24:2022.

For all of the tests, attempts were made to pass the 500 mm long cylindroid, of diameter 50 mm, through any aperture(s) created.

6. Test Results

6.1 Laboratory conditions

Prior to the start of the test, the laboratory conditions were measured as follows:

Date	1 st February 2024
Temperature (°C)	20.0
Humidity (% RH)	35.7

Note: *The test samples were stored in a non-destructive environment at a temperature of 15 – 30°C for a minimum of 12 hours, testing was also conducted at those conditions.*

6.2 Locking condition

Before testing, the door was closed and locked in the most onerous condition based on its intended use and any keys were removed.

Tested locking condition	Closed and locked
--------------------------	-------------------

6.3 Security hardware & cylinder test – part 3

Attempts were made from the external face to operate, release and disengage the system hardware in order to gain entry through the sample in accordance with section A.3 of PAS 24:2022.

No entry was gained during the attack time.

6.4 Infill – mechanical test

A series of loads were applied to the external face of the infill as defined in section B.4.4.3 of PAS 24:2022. A perpendicular-to-plane load of 2.0kN was applied and held for 8-12 seconds at each corner of the infill. Starting in the top left corner and working clockwise in turn and in a direction towards the inside.

No entry was gained during this test.

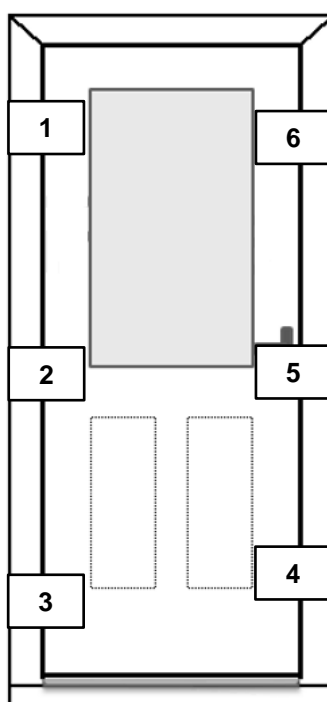
6.5 Mechanical loading test

A series of loads were applied to the door leaf as defined in section B.4.5 of PAS 24:2022. The loading combinations used were as defined in table B.1 to table B.6 of PAS 24:2022 for the applicable door type and were applied as shown in table 2. The results are as follows:

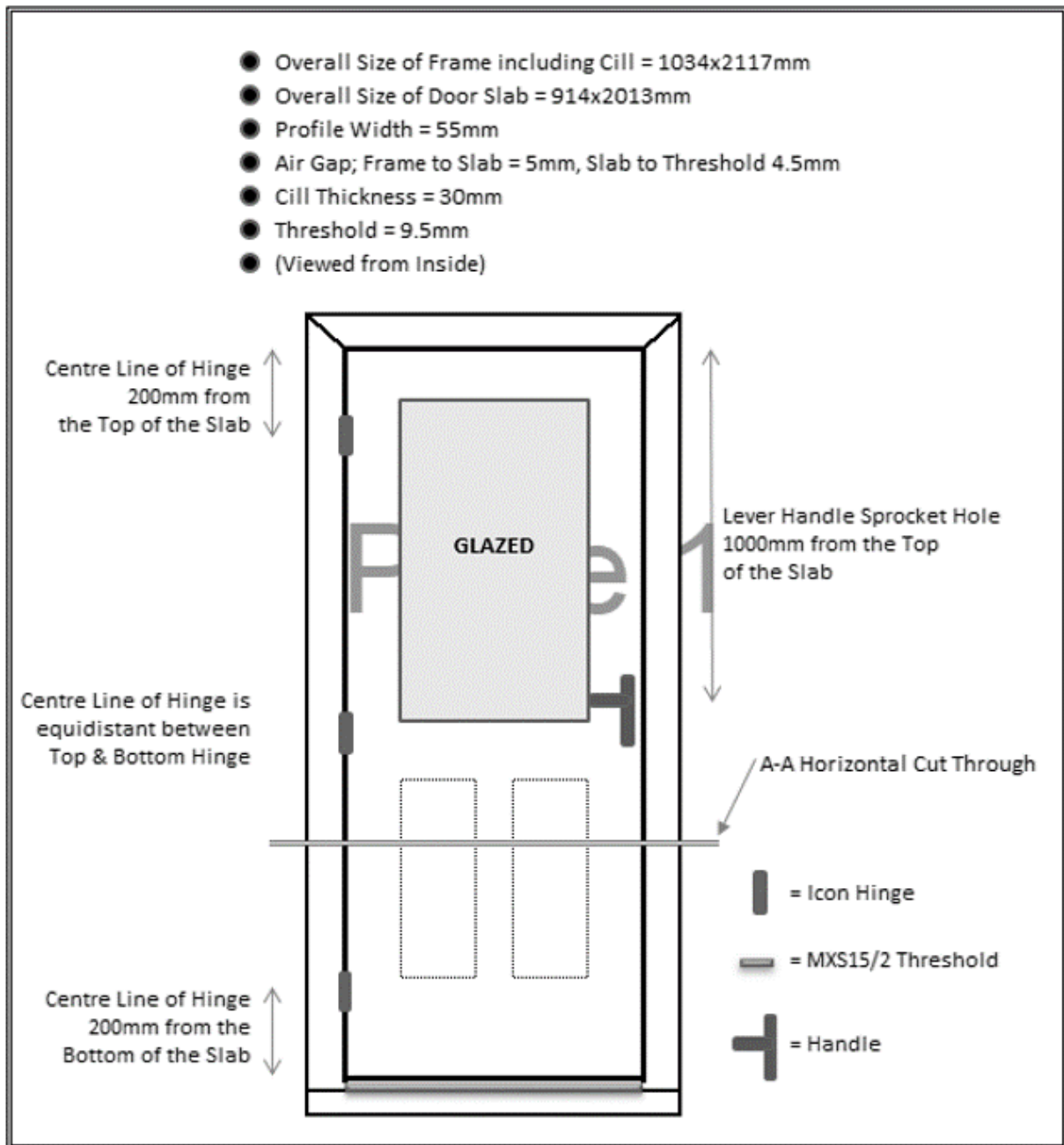
Table 2 – Mechanical loading

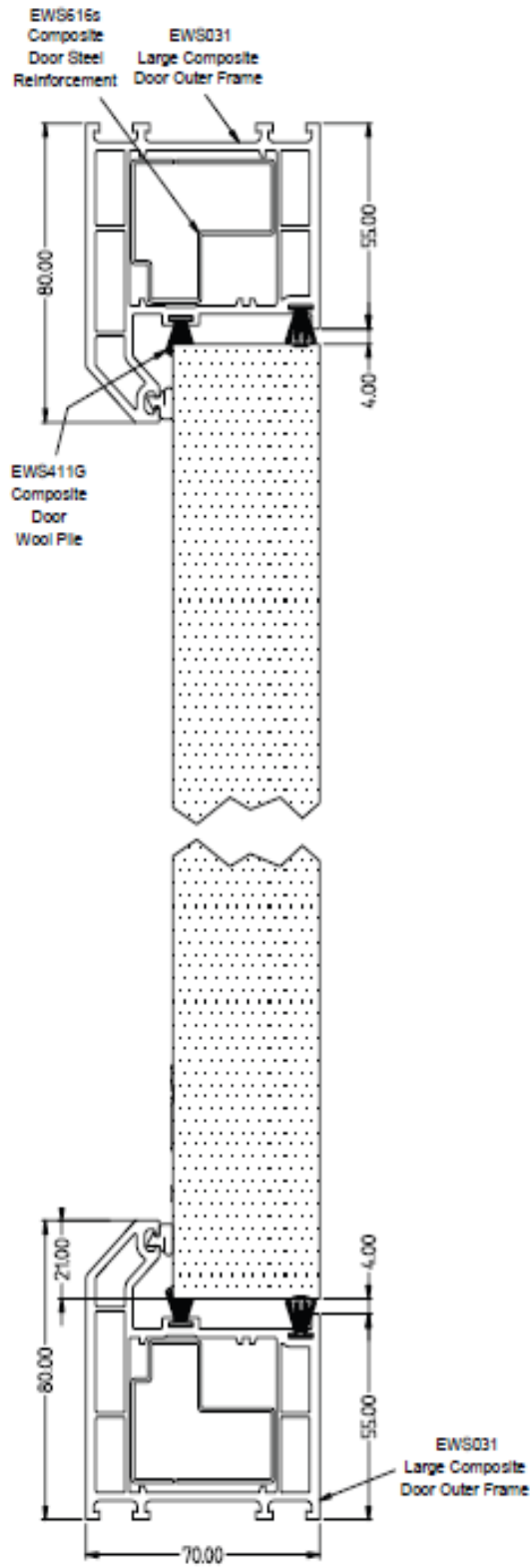
Loading point	Parallel-to-plane load			Perpendicular-to-plane load			Result
	Targeted (kN)	Applied (kN)	Direction	Targeted (kN)	Applied (kN)	Direction	
1 - Hinge	1.5	1496.000	→	4.5	4484.0	-	Pass
2 - Hinge	1.5	1502.000	→	4.5	4460.0	-	Pass
3 - Hinge	1.5	1496.000	→	4.5	4464.0	-	Pass
4 - Double hook bolt	1.5	1506.000	↓	4.5	4438.0	-	Pass
4 - Double hook bolt	1.5	1482.000	↑	4.5	4424.0	-	Pass
4 - Double hook bolt	1.5	1498.000	←	4.5	4434.0	-	Pass
5 - Hook bolt	1.5	1520.000	↑	4.5	4438.0	-	Pass
5 - Hook bolt	1.5	1496.000	←	4.5	4520.0	-	Pass
6 - Double hook bolt	1.5	1516.000	↓	4.5	4422.0	-	Pass
6 - Double hook bolt	1.5	1512.000	↑	4.5	4424.0	-	Pass
6 - Double hook bolt	1.5	1494.000	←	4.5	4434.0	-	Pass

Figure 2 – Loading points



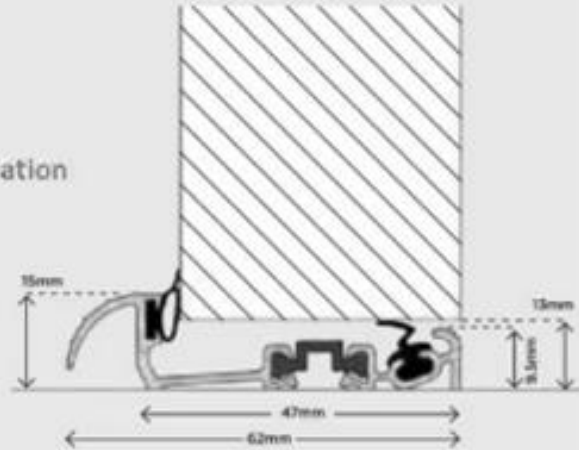
7. System Drawings





MXS 15/2 RITB

Inward Opening
Available in Gold & Mill Finish
Part M Compliant
Thermally Broken Prevents Condensation



----- END OF REPORT -----



Facade Testing



Onsite Testing



Product Certification



Window & Door Testing

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