



Technical Report – R4790261459-1 PAS 24:2016 - Enhanced security performance requirements for doorsets and windows in the UK

> Vista Panels Single Inward Opening Composite Door



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1. Introduction

This report describes tests carried in order to determine compliance with PAS 24:2016 of the test specimen supplied as follows:

Test Details	
Customer:	Vista Panels Unit H1 Prenton Way North Cheshire Trading Estate Wirral CH43 3DU GB
Product Tested:	Vista Panels, Xtreme and Dales Composite Doors – Single inward opening door
Date of Test:	18th January 2022
Test Conducted at:	UL International (UK) Limited Halesfield 2 Telford Shropshire TF7 4QH
Test Conducted by:	S Ward Senior Laboratory Technician C Holden Laboratory Assistant

Report Authorisation		
Report Compiled by:	R Cadwallader	
	Project Handler	lann
		100000
Authorised by:	D Potts	1189
-	Engineering Leader	Here
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2. Summary of Results

The following summarises the results of testing carried out, in accordance with PAS 24:2016.

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

Test Description	Result
A.3 – Security hardware & cylinder test	Pass
B.4.6 - Manual check test	No entry gained
B.4.4.3 - Infill – mechanical test	Pass
B.4.3 - Manipulation test (a)	Pass
B.4.4.4 - Manual cutting test	Pass
B.4.5 - Mechanical loading test	Pass
B.4.4.2 - Infill – manual test	Pass
B.4.8 - Soft body impact test	Pass
B.4.9 - Hard body impact test	Pass
Overall Classification in accordance with PAS 24:2016	D

More comprehensive details are reported in Section 6.

Note: These results are valid only for the conditions under which the test was conducted

Note: All measurement devices, instruments and other relevant equipment were calibrated and traceable to National Standards.

2.1 Decision Rule

Classifications reported in Section 5 indicate that the product conforms with the relevant accuracy requirements of Section B.3 and C.3 of PAS 24:2016.

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 the customer.

General Information	
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:	Right Hand Opening In
Product manufacturer:	Vista Panels
The sample is typical of normal production:	Yes
Please define the closing condition of the sample: I.e. Closed, fastened, latched, locked and secured etc.	Latched & Locked Centrally, Hooks engaged Top & Bottom
Weight of Sample including subframe (kg):	Approx. 50kg

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
Тор:	EWS0315.3 WQL Profile	Threshold	
Bottom:	AC85646W Cill	Manufacturer:	Exitex
Lock side:	EWS0315.3 WQL Profile	Product name:	MXS15/2 - RITB
Hinge side:	EWS0315.3 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		
Тор:		Leaf midrail			
Bottom:		Manufacturer:	n/a		
Lock side:	DoorCo Original Slab	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	4961WH	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	

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:	17 th January 2022





4. Test Arrangement

4.1 Test Rig

The test sample was supplied mounted in 100×50 mm timber sub-frame in accordance with manufacturer's installation requirements. It was fitted into the test rig, shown below which was constructed to meet the requirements of the test specification and was fitted plumb, square and without twist or bends.









4.2 Attack Tool Groups

4.2.1 Tool group A

- A.2.1.1 Assorted mild steel wire
- A.2.1.2 Two credit cards
- A.2.1.3 Two paint scrapers
- A.2.1.4 One craft knife

A.2.1.5 Two flat blade screwdrivers, 150mm length

4.2.2 Tool group B

- A.2.2.1 One 25mm wood chisel
- A.2.2.2 One 6mm wood chisel
- A.2.2.3 One flat blade screwdriver, 200mm length
- A.2.2.4 One brick bolster
- A.2.2.5 One crosspoint screwdriver, 200mm length
- A.2.2.6 One cross head screwdriver, 200mm length

4.2.3 Tool Group C

- A.2.3.1 One pair of self-gripping pliers
- A.2.3.2 One torque gauge
- A.2.3.3 One shallow curve head attachment
- A.2.3.4 One hooked head attachment
- A.2.3.5 A selection of steel self-cutting traction screws with deep thread and gimlet point, self-tapping thread with drill point, single and twin start.

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.





5. Test Procedures

5.1 Security hardware & cylinder test

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 24:2016. The test was broken in to 2 parts as follows:

5.1.1 Part 1

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 cylinder and lock by attacking any protective item
- ii. Attempts to break or defeat the cylinder by applying a twisting or bending force
- iii. Attempts to operate any accessible mechanism in order to gain entry

5.1.2 Part 2

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 cylinder and lock by attacking any protective item
- ii. Attempts to screw self-cutting screws in to the exposed part of the cylinder in order to provide a suitable fixing force for activity iii.
- iii. Attempts to break and defeat the cylinder by applying a nominally axial force to the screw using a hooked head crowbar attachment
- iv. Attempts to operate any accessible mechanism in order to gain entry

5.2 Manual check test

The objective of the manual check test is to explore the possibility that there might be weaknesses and vulnerabilities in the product that are not covered in the standard cases.

The objective of this test was to assess any vulnerabilities of the sample that are not covered by the standard loading cases assessed in the mechanical loading test B.4.5. The tools described in Section B.4.6.2 of PAS 24:2016 were used for a maximum period of 15 minutes in an attempt to gain entry through the sample. No single location was tested for more than 6 minutes with no single attack technique being used for more than 3 minutes.

5.3 Infill – Mechanical test

The objective of this test was to assess the ability of the infill to withstand a specified sequence of loading without gaining entry through the sample. The loads and loading sequence were in accordance with Section B.4.4.3 of PAS 24:2016.

5.4 Manipulation test (a)

The objective of this test was to highlight any inherent vulnerability in the design of the door which, from the outside, would permit entry by the hardware being operated, released or disengaged when tested using all of Tools group A from Section A.2.1 of PAS 24:2016 and, where applicable, tools specified in A.2.2.3, A.2.2.5 and A.2.2.6 in Tools group B from Section A.2.2 of PAS 24:2016. The overall attack time was limited to 15 minutes with no single test technique being used for more than 3 minutes.





5.5 Manual cutting test

The objective of this test was to cut an aperture in the infill or fabric of the door leaf in order to gain entry using the tools described in section A.2.1.3, A.2.1.4, A.2.2.1 and A.2.2.2. Two tests were conducted: one in Zone 1 and a second in Zone 2. The overall attack time for each test was 3 minutes.

Zone 1 is a horizontal band with an upper limit 400 mm (+0 mm / -10 mm) above the centre of rotation of the upper hardware unlocking point and a lower limit 400 mm (+0 mm / -10 mm) below the centre of the rotation of the lower unlocking point as shown below. In the case of a single hardware unlocking point zone 1 is a horizontal band with limits 400 mm (+0 mm / -10 mm) above and below the centre of rotation of the hardware unlocking point. Zone 2 covers any point of the doorset not in zone 1.

5.6 Mechanical loading test

The objective of this test was to assess the ability of the sample to withstand a specified sequence of loading without gaining entry through the sample. The loads and loading sequence were in accordance with Section B.4.5 of PAS 24:2016.

5.7 Infill – Manual test

The objective of this test was to attempt to remove gaskets, beads, security devices (if applicable) and the infill, using Tools group A and Tools group B described in section A.2.1 & A.2.2 of PAS 24:2016 for a maximum period of 3 minutes.

5.8 Soft body impact test

The objective of this test was to assess the ability of the sample to resist impacts using a soft body impactor as shown in Figure B.11 of PAS 24:2016 and at various impact locations specified in Section B.4.8.2 of PAS 24:2016.

5.9 Hard body impact test

The objective of this test was to assess the hardware, infill medium and its retention system to hard body impacts using the impactor as shown in Figure B.12 of PAS 24:2016. Impacts were conducted at various locations specified in Section B.4.9.2 of PAS 24:2016.





6. Test Results

6.1 Laboratory Conditions

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

Date	24 th January 2022
Temperature (°C)	20.1
Humidity (% RH)	26.5

Note The test samples were stored in a non-destructive environment at a temperature of $15 - 30^{\circ}$ C for a minimum of 12 hours, testing was also conducted at those conditions. Prior to testing, the door was closed and locked and any keys were removed.

6.2 Security Hardware & Cylinder Test

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 24:2016.

No entry was gained during the attack time, and as such the product has passed this part of the test.

6.3 Manual check test

Attempts were made from the external face to gain entry through the sample by applying load combinations not covered by the standard loading cases for the mechanical loading test. The overall attack time was limited to 15 minutes with no single attack technique being used for more than 3 minutes and no single location being attacked for more than 6 minutes.

No entry was gained during this test.

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 24:2016. A perpendicular-to-plane load of 2.0kN was applied and held for 8-12 seconds at each corner of the infill.

No entry was gained during this test.





6.5 Manipulation test (a)

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 C.4.3 of PAS 24:2016. The results are as follows:

Location	Tools Used	Method	Time	Entry gained
1 – Hinge	x2 Paint scrapers	The paint scrapers were used to lever between the frame and the leaf in an attempt to manipulate the hardware.	03:00	No
2 – Hinge	x2 Paint scrapers	The paint scrapers were used to lever between the frame and the leaf in an attempt to manipulate the hardware.	03:00	No
3 – Double Hook	x2 Paint scrapers	The paint scrapers were used to lever between the frame and the leaf whilst attempting to manipulate the locking hardware.	03:00	No
4 – Hook	x2 Paint scrapers	The paint scrapers were used to lever between the frame and the leaf whilst attempting to manipulate the locking hardware.	03:00	No
5 – Double Hook	x2 Paint scrapers	The paint scrapers were used to lever between the frame and the leaf whilst attempting to manipulate the locking hardware.	03:00	No

Table 1 – Manipulation test (a)









6.6 Manual cutting test

Attempts were made from the external face to cut an aperture in the infill or fabric of the door leaf in order to gain access using tools as described in section A.2.1.3, A.2.1.4, A.2.2.1 and A.2.2.2 of PAS 24:2016. Two 3 minutes tests were carried out; one in Zone 1 and one in Zone 2 as defined in Section B.4.4.4 of PAS 24:2016.

No entry was gained during this test.

6.7 Mechanical loading test

A series of loads were applied to the internal face of the sample as defined in Section B.4.5 of PAS 24:2016. The loading combinations used were as defined in Table B.1 to Table B.6 of PAS 24:2016 for the applicable door type and as shown in Table 2. The results are as follows:

Table 2 -	Mechanical	Loading
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Loading Point	Parallel-to-plane Load		Perpendicular-to-plane Load		Result
	Load (kN)	Direction	Load (kN)	Direction	
1 – Hinge	1.5	\rightarrow	4.5	-	Pass
2 – Hinge	1.5	\rightarrow	4.5	-	Pass
3 – Hinge	1.5	\rightarrow	4.5	-	Pass
4 – Double Hook	1.5	\downarrow	4.5	-	Pass
4 – Double Hook	1.5	↑ (4.5	-	Pass
4 – Double Hook	1.5	←	4.5	-	Pass
5 - Hook	1.5	↑ (4.5	-	Pass
5 – Hook	1.5	←	4.5	-	Pass
6 – Double Hook	1.5	↑ (4.5	-	Pass
6 – Double Hook	1.5	Ļ	4.5	-	Pass
6 – Double Hook	1.5	←	4.5	-	Pass

Figure 3 - Loading points







6.8 Infill manual test

Attempts were made from the external face to remove gaskets and beading in order to gain access to and remove the infill using tools A.2.1 & A.2.2 in accordance with Section B.4.4.2 of PAS 24:2016.

No entry was gained during this test.

6.9 Soft body impact test

The test sample was subject to soft body impacts on the external face as shown in Figure 4. Each of the locations was subject to 3 impacts from a drop height of 800mm, following which no damage was observed.

Figure 4 – Impact locations



6.10 Hard body impact test

The test sample was subject to hard body impacts on the external face in accordance with section B.4.9.2 of PAS 24 2016. Each of the impact locations was subject to 3 impacts from a drop height of 165 mm and the result compared with the relevant entry definition.

No entry was gained during this test.





7. System Drawings









Composite Door System Information







MXS 15/2 RITB

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













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







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★ +44 (0) 1952 586580
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