Test Report 3055321.

Smart Systems Limited

Incorporating Smart Extrusions

Introduction.

This report has been prepared by David Vinyard and relates to the activity detailed below:

Job/Registration Details		Client Details
Job number:	**3055321**	Smart Systems Limited Incorporating Smart Extrusions Arnolds Way Yatton BS49 4QN United Kingdom
Job type:	Testing Samples Submitted	
Start Date:	28/08/2019	
Test type:	Direct	
Sample ID:	10184934	
Registration:	**NA**	
Protocol:	NA	
Quality system:	NA	
Registration:	**NA**	
Protocol:	NA	
Quality system:	NA	

The report has been approved for issue by Chris Rayment – Team Manager

Approved For Issue	
	Issue Date: 5 September 2019

Objectives.

Direct test

Product Scope.

Smart Systems Visofold 1000 aluminium double door

Report Summary.

The sample was received on 28 August 2019 and the testing was started on 28 August 2019 .

The sample submitted complied with the requirements of the test work conducted.

PAS24:2016 Direct Test.

1 off double leaf open in glaze in fully glazed hinged door assembly with a low threshold

(Sample ID No 10184934)

Date sample received: 28 August 2019

Test Results.

1.	Mechanical Loading	The test sample met the requirements of the Specification in respect of B.4.5
2.	Manual Check Test	The test sample met the requirements of the Specification in respect of B.4.6

B.2 Sample Selection.

The sample submitted for tests were selected using the criteria in B.2 of the Specification. The sample was submitted for test mounted in a 75mm x 100mm timber subframe in accordance with the manufacturer's installation requirements. The test sample was manufactured by the client.

The results within this test report are valid only for the conditions under which the testing was carried out, and only for the specified products.

B.3 Requirements for Test Apparatus.

The test apparatus for the manual and mechanical tests is shown in figures B.2 to B.5.

B.4 Test Methods.

The method of testing the samples followed the sequence detailed in B.4 of the Specification.

Description of Sample.

Sample Type - Double leaf open in glaze in fully glazed hinged door assembly with a low threshold

Material - Aluminium

Construction - Cleated

Fittings - **Active Leaf** - a seven-point locking (two hook bolts, two cams, one dead bolt and two shoot bolts) Fuhr espagnolette system, key lockable Mila 3* cylinder, four Smart Systems pin hinges and two run up blocks

Inactive Leaf - a two-point locking (two shoot bolts) Fuhr espagnolette system, key lockable Mila 3* cylinder, four Smart Systems pin hinges and two run up blocks

Classification - D

Glass - Double glazed 6-16-6mm toughened glass sealed units

Panel - Not applicable

Glass Retention System - Internal beads and gaskets

Sample dimensions -

Overall length:	1600mm	Height: 2570mm
Active leaf length:	780mm	Height: 2520mm
Inactive leaf length:	780mm	Height: 2520mm

Visofold Double Door Set. Open In Low Threshold.

Outer Frame width	1600mm	**Outer Frame Material**	Aluminium
Outer Frame height	2570mm	**Outer Frame Gaskets**	
Outer Frame Part Numbers		Gasket Type	EDPM
Top	DV14	Manufacturer	Reddiplex
Bottom	DV171	Product Name	Sealing gasket
Lock Side	DV14	Product Codes	ACDV 272, ACDV244
Hinge Side	DV14	**Threshold**	
Outer Frame section dimensions		Manufacturer	Smart Systems
Width	51.5mm	Product name	Low Threshold
Depth	82mm	Product Code	DV171
French Door Adaptor		Materials	Aluminium
Manufacturer	Smart Systems	**Outer Frame Joint Method**	
Product Name	French Door Adaptor	Head	Glue and mech cleat.
Product code	DV75	Foot	Screw port.
Material	Aluminium		

Leaf		**Leaf Material:**	Aluminium
Leaf Width:	750mm	**Leaf Gasket**	
Leaf Height:	2500mm	Gasket type:	EDPM
Leaf Part Numbers:		Manufacturer:	Reddiplex
Top:	DV23	Product Name:	Sealing Gaskets
Bottom:	DV23	Product Code	ACDV272
Lock side:	DV23	**Lock Packer**	
Hinge Side	DV23	Manufacturer:	Smart Systems
Leaf section size		Product name:	Lock Packer
Width:	60.5mm	Product code:	PCX36
Depth:	74.5mm	Material:	PVC.
Rebate Adaptor		**Leaf joint method**	
Manufacturer:	Smart Systems	Head:	Glue and Mech Cleat
Product Name:	Rebate Adaptor	Foot:	Glue and Mech Cleat
Product Code:	DV76		
Material: Gasket	Aluminium ACVL 032.		
Bead			
Manufacturer:	Smart Systems		
Product Name:	Glazing Bead		
Product Code:	DV67		
Material:	Aluminium		
Bead Size:	22mm x 17mm		
Woolplie Adaptor Wool Pile	DV62 ACDV249.		

Visofold Double Door Set. Open In Low Threshold.

Glazing Unit		**Glazing Gasket**		
Manufacturer:	Ashton Glass , Bristol	Gasket Type:	EDPM	
Inner Thickness:	6mm	Manufacturer:	Aliplast	Senteri
Spacer Material:	Aluminium	Product Name:	E Gasket	Wedge
Outer Thickness:	6mm	Product Code	ACVG31	ACVG34
Unit Sizes:	648mm x 2404mm	**Glazing Clip**		
Glazing Tape Details		Manufacturer:	NA	
Manufacturer:	NA	Product Name:	NA	
Product Name:	NA	Product Code	NA	
Product Code	NA			

Hardware			**Fixings**	**Quantity**
Hinges:	ACDV331	Intermediate Hinge.	M5 Machine Screws ACIM062 . NO 10 CSK	4 Hinges Per leaf
Hinge Protectors:	NA			
Lock:	ACDV722	Multi point lock and Keep	M4x45mm. ACDV241	1 Lock set
Cylinder:	ACCY5050S3	Three Star Cylinder	M5 Machine Screw	2
Handle:	ACDV251	Lever/Lever Handles.	M5 Machine Screws	2
Touch Bar:	NA			
Cylinder Support:	NA			
Cylinder Escutcheon:	NA			
Keeps:	ACDV722	Supplied with lock.	M4x20mm Machine Screws.	1 Keep Set
Drip Bar	NA			
Shootbolts	ACDV737 ACDV738	Top and bottom shootbolts Fitted main door and secondary locks	M4 x 45mm Machine Screws.	4 no shoot bolts.
Shootbolt Extension	ACDV742	200mm TO Main Door	M4 x 45mm. ACDV241	1
Shootbolt Extension	ACDV744	400mm To Secondary Door	M4 x45mm. ACDV241	1
Shootbolt Keeps Under keep packer	ACET288 ACET287	Fitted to head and cill	ACET 060 to cill M4 x 45MM + ACDV241 to Head.	2 no Keeps.
Keep supports	ACET217	Fitted under Shootbolt Keeps.	ACET390	2
Run up BlockS	ACDV080	Fitted to Head and Cill	ACET060	4

Note – parts list supplied by client but not verified by BSI

Test Results (Continued).

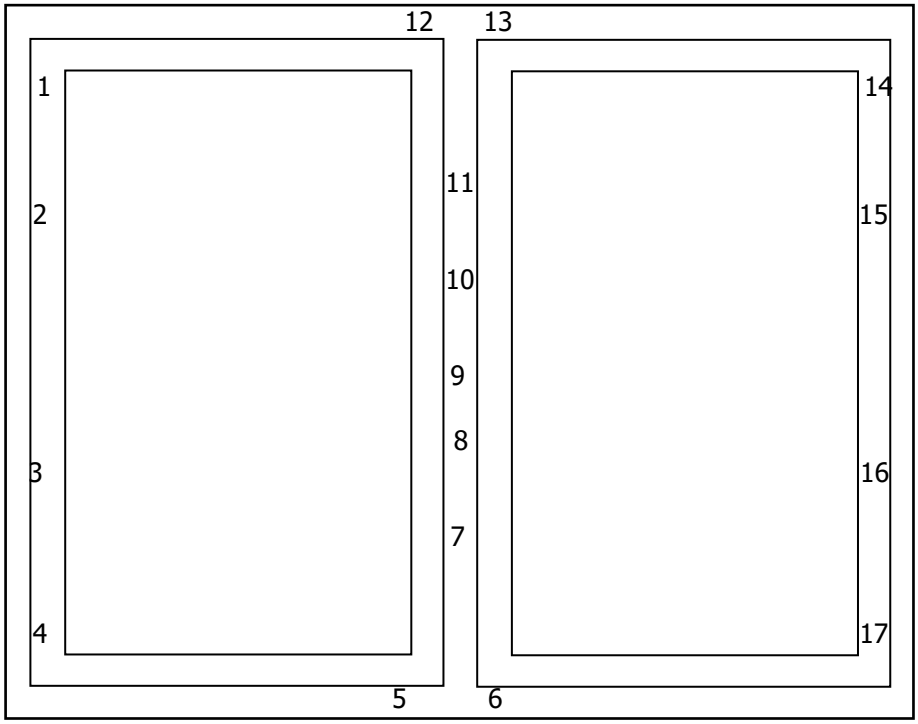
Performance Requirements (Continued).

B.4.5 Mechanical Loading Test

The sample was mounted, vertically and square, in the test rig.

The test was carried out in accordance with the procedures detailed in B.4.5, using loading cases B.1 to B.6 and Figures B.12 for loading sequence, and using the test apparatus detailed in Figures B.6 to B.6.

Diagram of load points



B.4.5.2 Loading Procedure

First Sequence

1. Hinge (upper left jamb)

   Standard loading case used: 1

   Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
   Load applied perpendicular to plane: 4.5kN applied for ten seconds

Test Results (Continued).

B.4.5.2 Loading Procedure (continued)

First Sequence (continued)

2. Hinge (upper left jamb)

   Standard loading case used: 1

   Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
   Load applied perpendicular to plane: 4.5kN applied for ten seconds

3. Hinge (lower left jamb)

   Standard loading case used: 1

   Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
   Load applied perpendicular to plane: 4.5kN applied for ten seconds

4. Hinge (lower left jamb)

   Standard loading case used: 1

   Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
   Load applied perpendicular to plane: 4.5kN applied for ten seconds

5. Shoot Bolt (threshold of master leaf)

   Standard loading case used: 3

   Load applied in plane: 1.5kN along the edge in the direction to disengage the bolt
   Load applied perpendicular to plane: 4.5kN applied for ten seconds

6. Shoot Bolt (threshold of slave leaf)

   Standard loading case used: 3

   Load applied in plane: 1.5kN along the edge in the direction to disengage the bolt
   Load applied perpendicular to plane: 4.5kN applied for ten seconds

7. Cam (lower mullion)

   Standard loading case used: 6

   Load applied in plane: 1.5kN along the edge in the direction to disengage the cam
   Load applied perpendicular to plane: 4.5kN applied for ten seconds

   Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
   1.5kN at the mullion to oppose the above load
   Load applied perpendicular to plane: 4.5kN applied for ten seconds

Test Results (Continued).

B.4.5.2 Loading Procedure (continued)

First Sequence (continued)

8. Hook Bolt (lower mullion)

   Standard loading case used: 6

   Load applied in plane: 1.5kN along the edge in the direction to disengage the bolt
   Load applied perpendicular to plane: 4.5kN applied for ten seconds

   Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
   1.5kN at the mullion to oppose the above load
   Load applied perpendicular to plane: 4.5kN applied for ten seconds

9. Dead Bolt (centre mullion)

   Standard loading case used: 4

   Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
   1.5kN at the mullion to oppose the above load
   Load applied perpendicular to plane: 4.5kN applied for ten seconds

10. Hook Bolt (upper mullion)

    Standard loading case used: 6

    Load applied in plane: 1.5kN along the edge in the direction to disengage the bolt
    Load applied perpendicular to plane: 4.5kN applied for ten seconds

    Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
    1.5kN at the mullion to oppose the above load
    Load applied perpendicular to plane: 4.5kN applied for ten seconds

11. Cam (upper mullion)

    Standard loading case used: 6

    Load applied in plane: 1.5kN along the edge in the direction to disengage the cam
    Load applied perpendicular to plane: 4.5kN applied for ten seconds

    Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
    1.5kN at the mullion to oppose the above load
    Load applied perpendicular to plane: 4.5kN applied for ten seconds

Test Results (Continued).

B.4.5.2 Loading Procedure (continued)

First Sequence (continued)

12. Shoot Bolt (head of master leaf)

    Standard loading case used: 3

    Load applied in plane: 1.5kN along the edge in the direction to disengage the bolt
    Load applied perpendicular to plane: 4.5kN applied for ten seconds

13. Shoot Bolt (head of slave leaf)

    Standard loading case used: 3

    Load applied in plane: 1.5kN along the edge in the direction to disengage the bolt
    Load applied perpendicular to plane: 4.5kN applied for ten seconds

14. Hinge (upper right jamb)

    Standard loading case used: 1

    Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
    Load applied perpendicular to plane: 4.5kN applied for ten seconds

15. Hinge (upper right jamb)

    Standard loading case used: 1

    Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
    Load applied perpendicular to plane: 4.5kN applied for ten seconds

16. Hinge (lower right jamb)

    Standard loading case used: 1

    Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
    Load applied perpendicular to plane: 4.5kN applied for ten seconds

Test Results (Continued).

B.4.5.2 Loading Procedure (continued) Assessment

First Sequence (continued)

17. Hinge (lower right jamb)

Standard loading case used: 1

Load applied in plane: 1.5kN at right angles to the edge and towards the opposite edge
Load applied perpendicular to plane: 4.5kN applied for ten seconds

No entry gained Pass

Date of test – 18 August 2019
Test engineer(s) – D Vinyard, J Nicholls
Laboratory temperature – 21.4ºC

Clause B.4.6 Manual Check Test

The sample was mounted, vertically and square, in the test rig as described in B.3.1.

The test was carried out in accordance with the given objectives of this clause using the procedure detailed in B.4.6.3 and the tools described in B.4.6.2.

No one technique was used for more than three minutes.

No alternative method of entry could be found.

Date of test – 18 August 2019
Test engineer(s) – D Vinyard, J Nicholls
Laboratory temperature – 21.4ºC

Test Sample.

Sample Id	ER Number	Description
1	10184934	Aluminium double door

Description of Test Sample.

Sample Description
1 off double leaf open in glaze in hinged door assembly fully glazed with a low threshold

Test Requirements.

PAS24 direct test

Clause	Requirements
Results table	PAS24 direct test

Glossary of Terms.

PASS: Complies. Tested by BSI engineers at BSI laboratories.

PASS1: Complies. Witnessed by BSI engineers in manufacturers laboratory.

PASS2: Complies. Tests carried out by third party lab; results accepted by BSI.

PASS*: Report resulted in uncertainty and states that Compliance is more probable than non-compliance.

FAIL: Non compliance – Product does not meet the requirements of this clause.

FAIL*: Report resulted in uncertainty and states that Non-compliance is more probable than compliance.

N/A: Not applicable to design under consideration.

N/T: Not tested due to similarity to previously tested item; reference earlier test report.

Conditions of Issue.

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End of Report