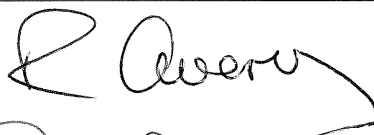



Test Report

Report No	261/7125560/2 of 2	This Report consists of 27 pages
Licence/Certificate No	KM 530838	
Client	Smart Systems Limited Arnolds Way Yatton North Somerset BS49 4QN	
Authority & date	BSI Product Services: Service Management Order No 7125560 dated 18 January 2008 - Equipment Record No 10092330	
Items tested	5 off single leaf hinged door assemblies, Smart Systems Limited Alitherm 47 Thermally Broken Aluminium Alloy Residential Door System	
Specification	PAS 24-1:1999 Enhanced security performance requirements for door assemblies Part 1: Single and double leaf, hinged external door assemblies to dwellings incorporating Amendments 10972, 13946, 16108 and 16144 and the proposed resolutions for PAS24 recommended by the SBD Test House studies group 21.02.01 type testing for product certification	
Results	Pass	
Prepared by	R Avery 	(Engineer 1)
Authorized by	A D Coley 	(Laboratory Manager)
Issue Date	19 February 2008	
Conditions of issue	This Test Report is issued subject to the conditions stated in current issue of <i>PS082</i> 'General conditions relating to acceptance of testing'. The results contained herein apply only to the particular sample/s tested and to the specific tests carried out, as detailed in this Test Report. The issuing of this Test Report does not indicate any measure of Approval, Certification, Supervision, Control or Surveillance by BSI of any product. No extract, abridgement or abstraction from a Test Report may be published or used to advertise a product without the written consent of the Managing Director, BSI Product Services, who reserves the absolute right to agree or reject all or any of the details of any items or publicity for which consent may be sought.	



0135

**TEST AND EXAMINATION OF FIVE SINGLE LEAF HINGED DOOR ASSEMBLIES
SUBMITTED FOR TYPE ASSESSMENT, SMART SYSTEMS LIMITED ALITHERM 47
THERMALLY BROKEN ALUMINIUM ALLOY RESIDENTIAL DOOR SYSTEM**

INTRODUCTION

At the request of BSI Product Services the door assemblies submitted by Smart Systems Limited, detailed below and described on pages 5, 6, 11, 12, 17, 18, 20, 21, 23 and 24, were tested and assessed to the requirements of PAS 24-1:1999 Enhanced security performance requirements for door assemblies - Part 1: Single and double leaf, hinged external door assemblies to dwellings incorporating Amendments 10972, 13943, 16108 and 16144 and the proposed resolutions for PAS24 recommended by the SBD Test House studies group 21.02.01, as indicated on the following pages of this Report.

This request was made on BSI Product Services Service Management Order No 7125560 dated 18 January 2008.

It is emphasized that assessments have not been made against the other Clauses of the Specification.

TEST SAMPLES

1 off single leaf open in glaze in hinged door assembly with midrail (Sample 1)

1 off single leaf open out glaze in hinged door assembly with midrail (Sample 2)

1 off single leaf open in glaze in hinged door assembly with midrail (Sample 3)

1 off single leaf open out glaze in hinged door assembly with midrail (Sample 4)

1 off single leaf open out glaze in hinged door assembly with midrail (Sample 5)

Equipment Record No 10092330

Date samples received: 18 January 2008

NOTES

The Smart Systems Limited Alitherm 47 Thermally Broken Aluminium Alloy Residential Door System has been tested to Test Development Specification Issue 2 - 6 February 2007, BSI Test Report 261/7125560/1 of 2 refers

This Report covers open in doors only.

SUMMARY OF RESULTS

1. Manipulation The test samples met the requirements of the Specification in respect of Clause 7 Annex A.4
2. Infill removal The test samples met the requirements of the Specification in respect of Clause 7 Annex A.5
3. Mechanical loading The test samples met the requirements of the Specification in respect of Clause 7 Annex A.6
4. Manual check test The test samples met the requirements of the Specification in respect of Clause 7 Annex A.7
5. Soft body impact The test samples met the requirements of the Specification in respect of Clause 7 Annex A.9
6. Hard body impact The test samples met the requirements of the Specification in respect of Clause 7 Annex A.10
7. Security hardware and cylinder test The test samples met the requirements of the Specification in respect of Clause 7 Annex A.11

CLAUSE 4 SAMPLE SELECTION

The samples submitted for tests were selected using the criteria in Clause 4 of the Specification. Each sample was submitted for test mounted in a 75mm x 100mm timber subframe in accordance with the manufacturer's installation requirements.

CLAUSE 5.1 TEST METHODS

The method of testing the samples followed the sequence detailed in Annex A of the Specification.

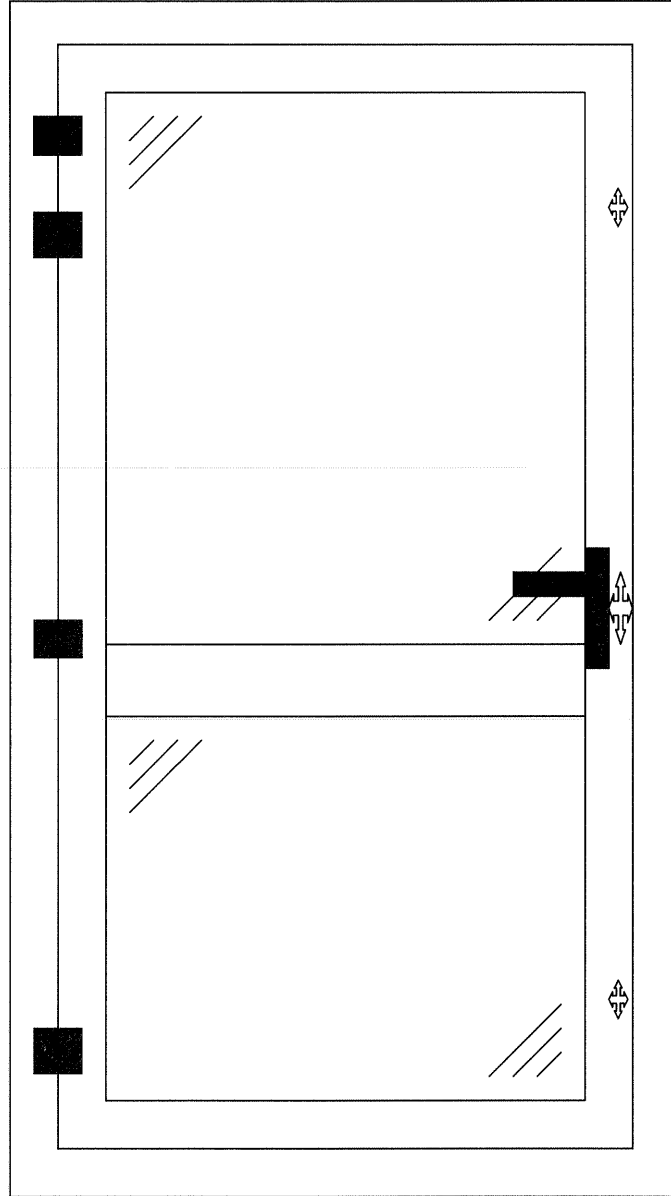
CLAUSE 6 REQUIREMENTS FOR TEST APPARATUS

The test apparatus for the manual and mechanical tests is shown in figures A.1 to A.10 inclusive.

DESCRIPTION OF SAMPLE

Sample Type -	A single leaf open in glaze in hinged door. The leaf has a midrail with glass above and glass below	
Material -	Aluminium alloy, thermally broken	
Finish -	RAL9010 Gloss	
Extrusion Reference -	Frame:	ETD018
	Leaf:	ETD020
	Midrail:	ETD030
	Frame filler:	PCX16
	Leaf filler:	PCX15
Construction -	Mechanically fixed joints	
Fittings -	A three point locking (two hookbolts, one deadbolt and a latch) ACET086 PL18 Paddock Lockmaster espagnolette system with PLK374 keeps, an AVCL117 Sobinco 30/50 euro profile cylinder, a 1710/3623N Hoppe Tokyo Series Secured by Design lever/lever key locking handle with cylinder guard and four ACET054 butt hinges	
Weathersealing -	Double sealed with plastics weatherstrip, reference ACSH039 6mm brush pile for PCX16 and ACVL032 small flipper gasket	
Glass -	Double glazed with 4-16-4 mm toughened glass sealed units	
Glass Retention System -	Internal glazing beads, reference ETC162 Glazing Gaskets, reference ACVG31 3mm E gasket and ACVG34 5mm wedge gasket	
Sample Dimensions -	Overall	
	Length: 950mm	Height: 2100mm
	Door	
	Length: 880mm	Height: 2030mm
Date of Test -	21 January 2008 - conducted by M Walters and P Waller	
Laboratory Temperature -	21.0°C	

ELEVATION DRAWING OF DOOR ASSEMBLY
(indicating positions of hardware)



- hinge



- deadbolt and latch



- hookbolt



- handle, cylinder and lockcase

EXAMINATION AND TEST

CLAUSE 7 PERFORMANCE REQUIREMENTS

ASSESSMENT

Annex A.4 Manipulation Test

The sample was mounted, vertically and square, in the test rig as described in Clause 6.1 and Annex A.2.

The test was carried out in accordance with the given objective of this Annex using the procedure detailed in Annex A.4.2 and the tools described in Annex A.3.

The sample was closed and locked and the key removed.
Within the overall time limit of 15 minutes no one technique was used for more than 3 minutes.

No entry could be effected by any technique within 3 minutes

Pass

EXAMINATION AND TEST (CONTINUED)

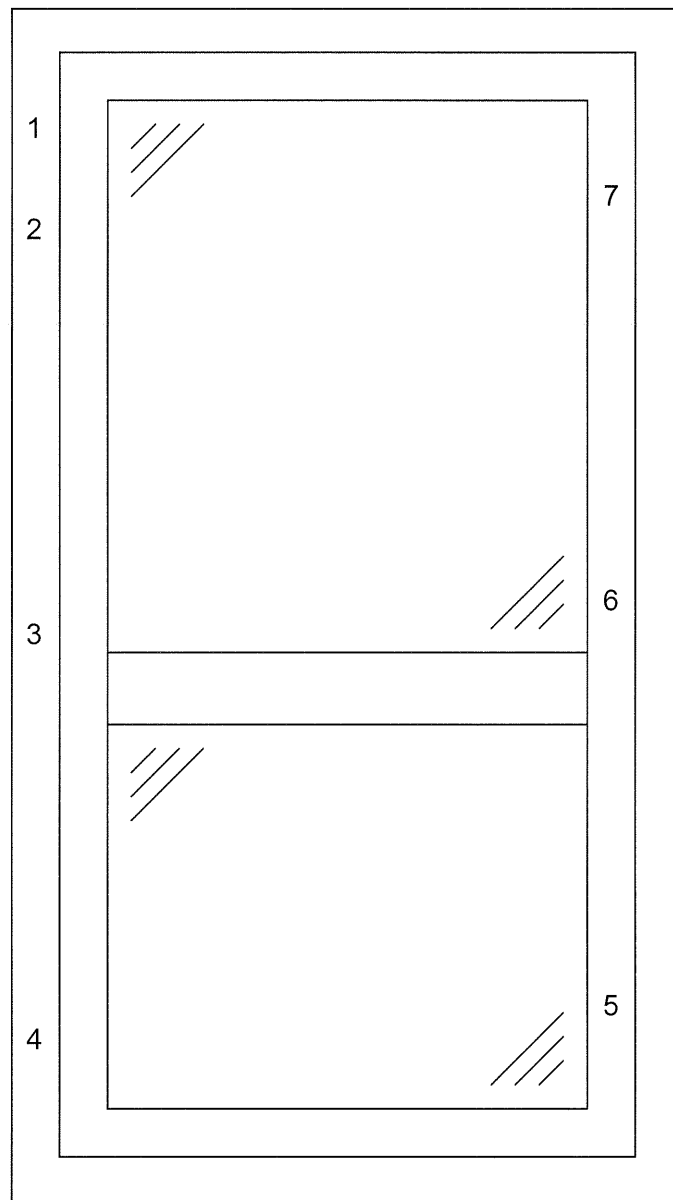
CLAUSE 7 PERFORMANCE REQUIREMENTS

Annex A.6 Mechanical Loading Test

The sample was mounted, vertically and square, in the test rig as described in Clause 6.1 and Annex A.2.

The test was carried out in accordance with the procedures detailed in Annex A.6, Table B.1 and Figures A.1, A.2, A.3, A.4 and A.11 using the test apparatus detailed in Figures A.5, A.6, A.7 and A.8.

Diagram of points of application of loads



EXAMINATION AND TEST (CONTINUED)

CLAUSE 7 PERFORMANCE REQUIREMENTS

Annex A.6 Mechanical Loading Test

Annex A.6.2 Loading Procedures

Point of application of load

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 10 seconds

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 10 seconds

3. Hinge (centre 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 10 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 10 seconds

5. Hookbolt (lower right jamb)

Standard loading case used: 4

Load applied in plane: 1.5kN along the edge in a direction to disengage the bolt

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

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 10 seconds

EXAMINATION AND TEST (CONTINUED)

CLAUSE 7 PERFORMANCE REQUIREMENTS

ASSESSMENT

Annex A.6 Mechanical Loading Test

Annex A.6.2 Loading Procedures

Point of application of load

6. Latch/Deadbolt (centre right jamb)

Standard loading case used: 3

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 10 seconds

7. Hookbolt (upper right jamb)

Standard loading case used: 4

Load applied in plane: 1.5kN along the edge in a direction to disengage the bolt

Load applied perpendicular to plane: 4.5kN applied for 10 seconds

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 10 seconds

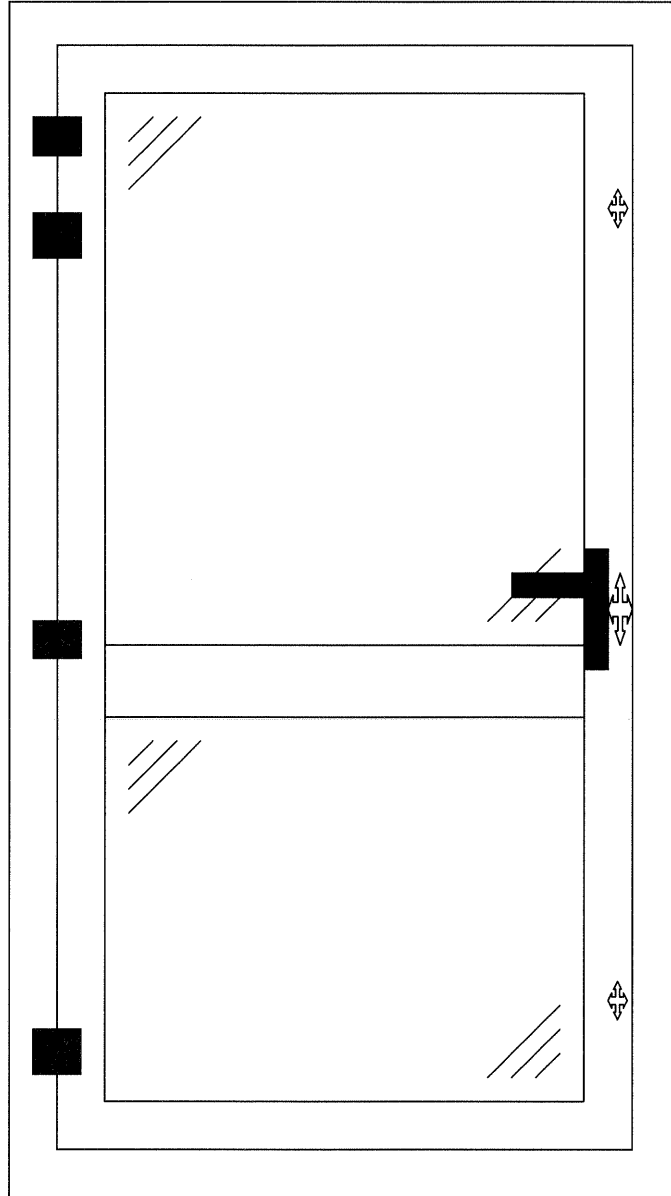
No entry effected

Pass

DESCRIPTION OF SAMPLE

Sample Type -	A single leaf open out glaze in hinged door. The leaf has a midrail with glass above and glass below
Material -	Aluminium alloy, thermally broken
Finish -	RAL9010 Gloss
Extrusion Reference -	Frame: ETD018 Leaf: ETD020 Midrail: ETD030 Frame filler: PCX16 Leaf filler: PCX15
Construction -	Mechanically fixed joints
Fittings -	A three point locking (two hookbolts, one deadbolt and a latch) ACET086 PL18 Paddock Lockmaster espagnolette system with PLK374 keeps, an AVCL117 Sobinco 30/50 euro profile cylinder, a 1710/3623N Hoppe Tokyo Series Secured by Design lever/lever key locking handle with cylinder guard and four ACET054 butt hinges
Weathersealing -	Double sealed with plastics weatherstrip, reference ACSH039 6mm brush pile for PCX16 and ACVL032 small flipper gasket
Glass -	Double glazed with 4-16-4 mm toughened glass sealed units
Glass Retention System -	Internal glazing beads, reference ETC162 Glazing Gaskets, reference ACVG31 3mm E gasket and AVCG34 5mm wedge gasket
Sample Dimensions -	Overall Length: 950mm Height: 2100mm Door Length: 880mm Height: 2030mm
Date of Test -	21 January 2008 - conducted by M Walters and P Waller
Laboratory Temperature -	21.0°C

ELEVATION DRAWING OF DOOR ASSEMBLY
(indicating positions of hardware)



- hinge



- deadbolt and latch



- hookbolt



- handle, cylinder and lockcase

EXAMINATION AND TEST (CONTINUED)

CLAUSE 7 PERFORMANCE REQUIREMENTS

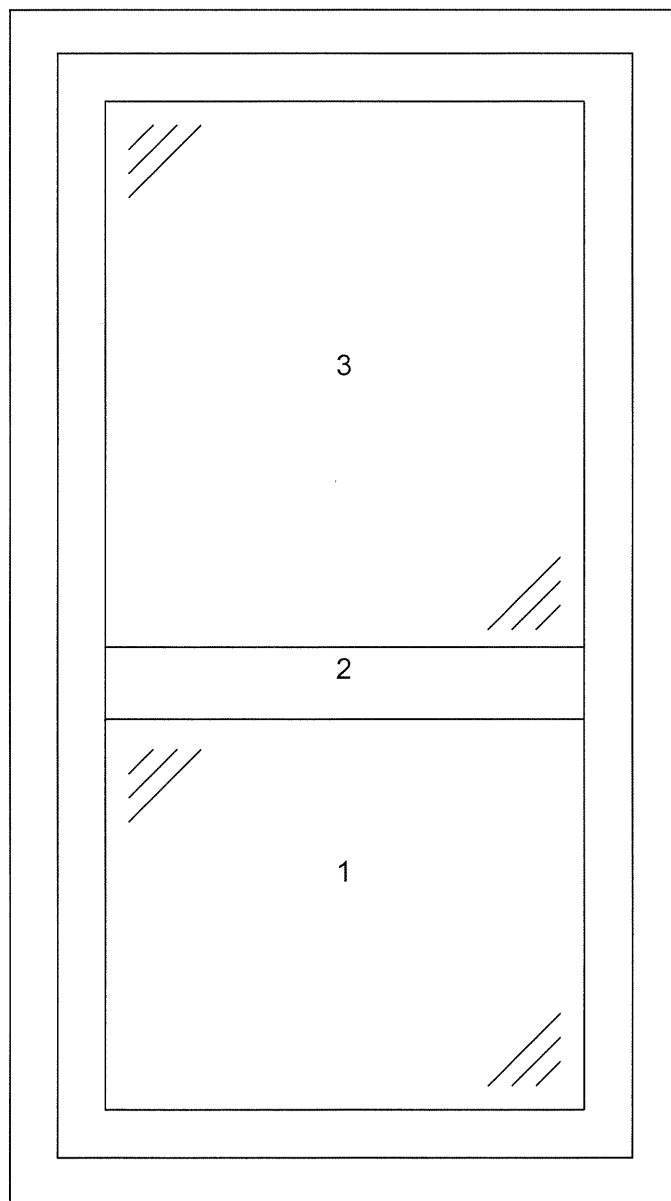
Annex A. 9 Soft Body Impact Test

ASSESSMENT

The sample was mounted, vertically and square, in the test rig as described in Clause 6.1 and Annex A.2.

The test was carried out in accordance with the requirements, objectives and procedures detailed in Clause 6.4, Annex A.9.1 and Annex A.9.3 using the test apparatus detailed in Figure A.9 and the impact points as indicated in Annex A.9.2 a) and Figure A 12

Diagram of points of application of loads



EXAMINATION AND TEST (CONTINUED)

CLAUSE 7 PERFORMANCE REQUIREMENTS

Annex A. 9 Soft Body Impact Test

ASSESSMENT

Impact point	Position from floor level	Effect
1	0.80m	None
2	Midrail	None
3	Centre of upper infill	None

No entry effected

Pass

EXAMINATION AND TEST (CONTINUED)

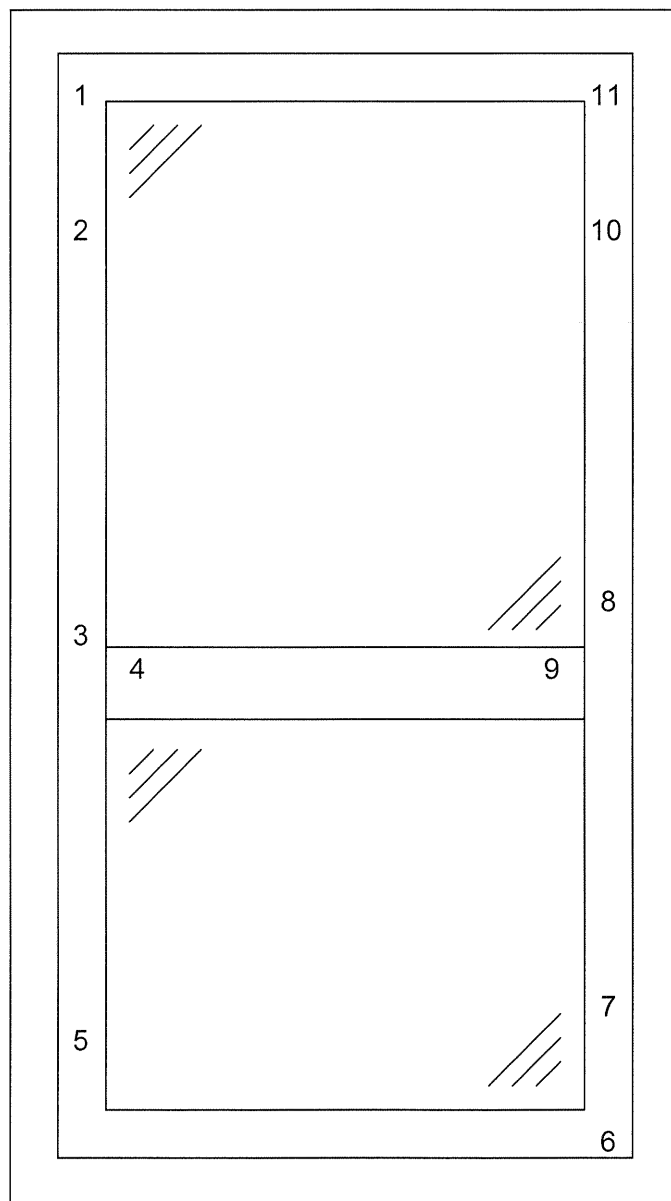
CLAUSE 7 PERFORMANCE REQUIREMENTS

Annex A. 10 Hard body impact test

The sample was mounted, vertically and square, in the test rig as described in Clause 6.1 and Annex A.2.

The test was carried out in accordance with the requirements, objectives and procedures detailed in Clause 6.5, Annex A.10.1 and Annex A.10.3 using the test apparatus detailed in Figure A.10 and the impact points as indicated in Annex A.10.2 and Figure A 13.

Diagram of points of application of loads



EXAMINATION AND TEST (CONTINUED)

ASSESSMENT

CLAUSE 7 PERFORMANCE REQUIREMENTS

Annex A. 10 Hard body impact test (continued)

Impact point	Position	Effect
1	Hinge/Corner of leaf	None
2	Hinge	None
3	Hinge	None
4	Midrail	None
5	Hinge/Corner of leaf	None
6	Corner of leaf	None
7	Hookbolt	None
8	Deadbolt, latch and cylinder	None
9	Midrail	None
10	Hookbolt	None
11	Corner of leaf	None

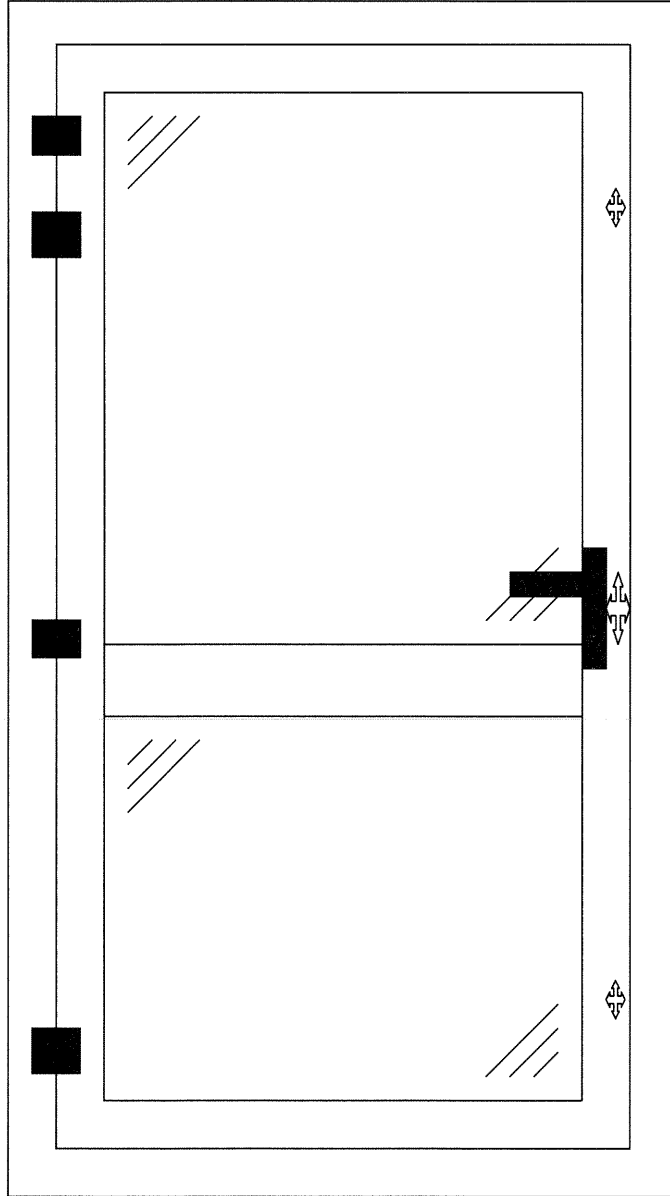
No entry effected

Pass

DESCRIPTION OF SAMPLE

Sample Type -	A single leaf open in glaze in hinged door. The leaf has a midrail with glass above and glass below	
Material -	Aluminium alloy, thermally broken	
Finish -	RAL9010 Gloss	
Extrusion Reference -	Frame:	ETD018
	Leaf:	ETD020
	Midrail:	ETD030
	Frame filler:	PCX16
	Leaf filler:	PCX15
Construction -	Mechanically fixed joints	
Fittings -	A three point locking (two hookbolts, one deadbolt and a latch) ACET086 PL18 Paddock Lockmaster espagnolette system with PLK374 keeps, an AVCL117 Sobinco 30/50 euro profile cylinder, a 1710/3623N Hoppe Tokyo Series Secured by Design lever/lever key locking handle with cylinder guard and four ACET054 butt hinges	
Weathersealing -	Double sealed with plastics weatherstrip, reference ACSH039 6mm brush pile for PCX16 and ACVL032 small flipper gasket	
Glass -	Double glazed with 4-16-4 mm toughened glass sealed units	
Glass Retention System -	Internal glazing beads, reference ETC162 Glazing Gaskets, reference ACVG31 3mm E gasket and AVCG34 5mm wedge gasket	
Sample Dimensions -	Overall	
	Length: 950mm	Height: 2100mm
	Door	
	Length: 880mm	Height: 2030mm
Date of Test -	21 January 2008 - conducted by M Walters and P Waller	
Laboratory Temperature -	21.0°C	

ELEVATION DRAWING OF DOOR ASSEMBLY
(indicating positions of hardware)



- hinge



- deadbolt and latch



- hookbolt



- handle, cylinder and lockcase

EXAMINATION AND TEST (CONTINUED)

CLAUSE 7 PERFORMANCE REQUIREMENTS

ASSESSMENT

Annex A.7 Manual Check Test

The sample was mounted, vertically and square, in the test rig as described in Clause 6.1 and Annex A.2.

The test was carried out in accordance with the given objective of this Annex using the procedure detailed in Annex A.7.3 and the tools described in Annex A.7.2.

No one technique was used for more than 3 minutes.

No alternative method of entry could be effected within 3 minutes

Pass

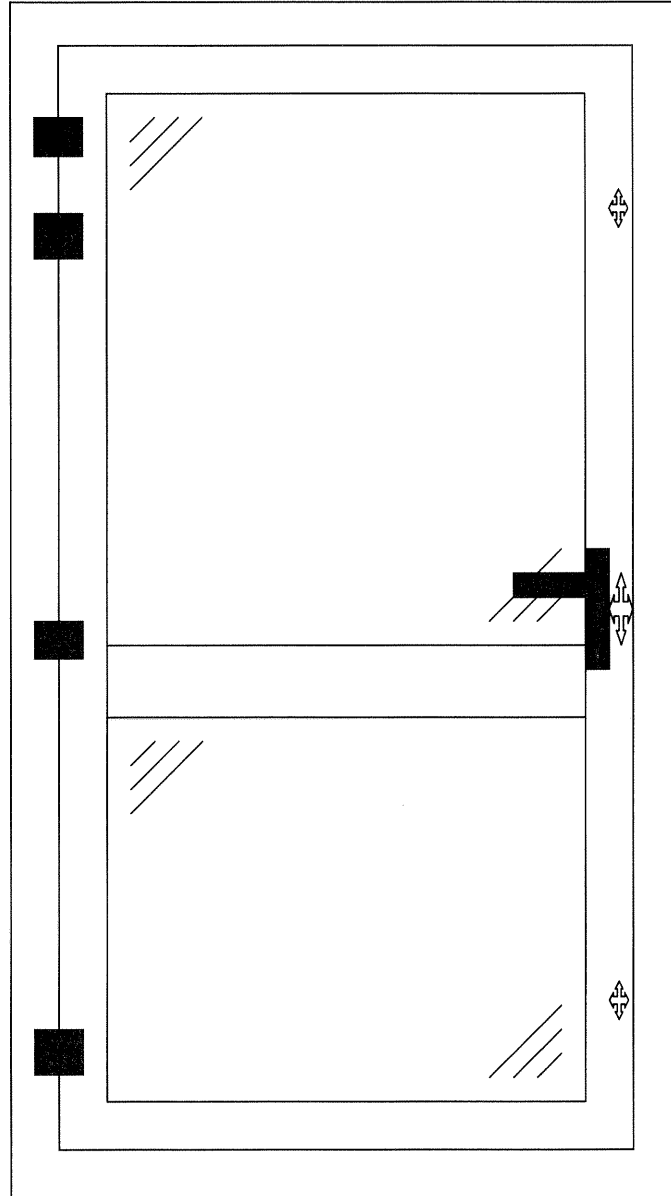
Annex A.8 Additional Loading Test

Not applicable as an alternative method of entry was not identified under Annex A.7

DESCRIPTION OF SAMPLE

Sample Type -	A single leaf open out glaze in hinged door. The leaf has a midrail with glass above and glass below	
Material -	Aluminium alloy, thermally broken	
Finish -	RAL9010 Gloss	
Extrusion Reference -	Frame:	ETD018
	Leaf:	ETD020
	Midrail:	ETD030
	Frame filler:	PCX16
	Leaf filler:	PCX15
Construction -	Mechanically fixed joints	
Fittings -	A three point locking (two hookbolts, one deadbolt and a latch) ACET086 PL18 Paddock Lockmaster espagnolette system with PLK374 keeps, an AVCL117 Sobinco 30/50 euro profile cylinder, a 1710/3623N Hoppe Tokyo Series Secured by Design lever/lever key locking handle with cylinder guard and four ACET054 butt hinges	
Weathersealing -	Double sealed with plastics weatherstrip, reference ACSH039 6mm brush pile for PCX16 and ACVL032 small flipper gasket	
Glass -	Double glazed with 4-16-4 mm toughened glass sealed units	
Glass Retention System -	Internal glazing beads, reference ETC162 Glazing Gaskets, reference ACVG31 3mm E gasket and AVCG34 5mm wedge gasket	
Sample Dimensions -	Overall	
	Length: 950mm	Height: 2100mm
	Door	
	Length: 880mm	Height: 2030mm
Date of Test -	21 January 2008 - conducted by M Walters and P Waller	
Laboratory Temperature -	21.0°C	

ELEVATION DRAWING OF DOOR ASSEMBLY
(indicating positions of hardware)



- hinge



- deadbolt and latch



- hookbolt



- handle, cylinder and lockcase

EXAMINATION AND TEST

CLAUSE 7 PERFORMANCE REQUIREMENTS

ASSESSMENT

Annex A.11 Security Hardware and Cylinder Test

Annex A.11.3.2

The sample was mounted, vertically and square, in the test rig as described in Clause 6.1 and Annex A.2.

The test was carried out in accordance with the given objective of this Annex using the procedure detailed in Annex A.11.3.1 and the tools described in Annex A.11.2.1 to Annex A.11.2.4.

The sample was closed and locked and the key removed.

The total attack time was 3 minutes and the total rest time was 7 minutes

No entry could be effected within 3 minutes

Pass

Annex A.11.3.3

The sample was mounted, vertically and square, in the test rig as described in Clause 6.1 and Annex A.2.

The test was carried out in accordance with the given objective of this Annex using the procedure detailed in Annex A.11.3.1 and the tools described in Annex A.11.2.1 to Annex A.11.2.4 and in Annex A.3

The sample was closed and locked and the key removed.

The total attack time was 3 minutes and the total rest time was 7 minutes

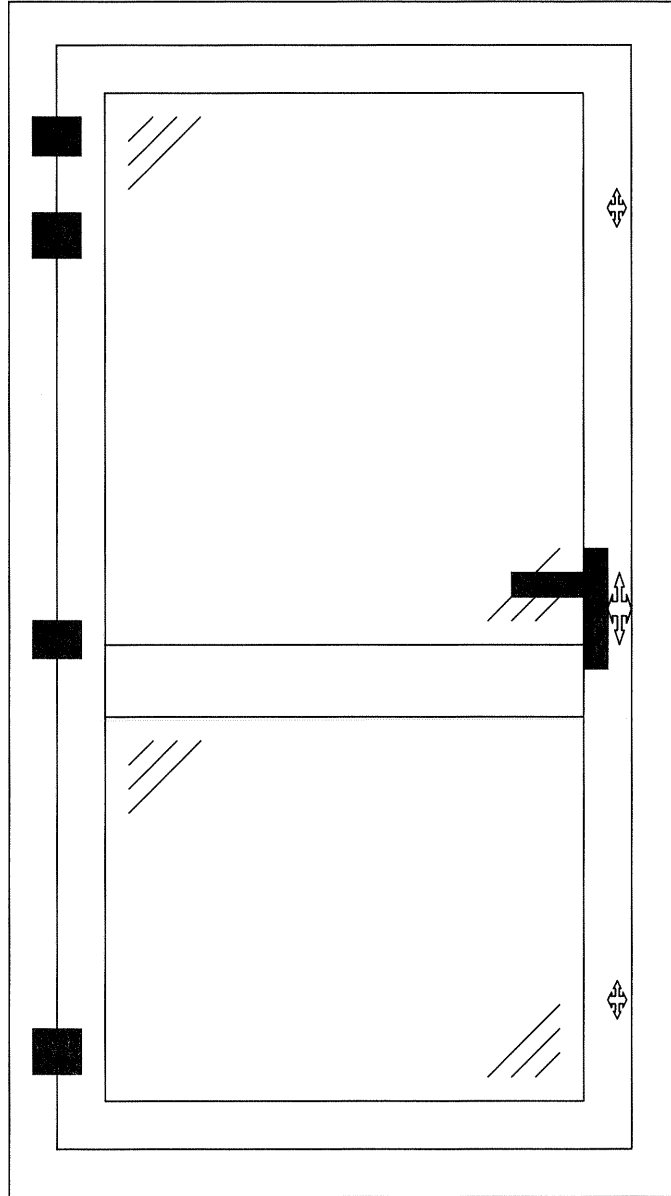
No entry could be effected within 3 minutes

Pass

DESCRIPTION OF SAMPLE

Sample Type -	A single leaf open out glaze in hinged door. The leaf has a midrail with glass above and glass below	
Material -	Aluminium alloy, thermally broken	
Finish -	RAL9010 Gloss	
Extrusion Reference -	Frame:	ETD018
	Leaf:	ETD020
	Midrail:	ETD030
	Frame filler:	PCX16
	Leaf filler:	PCX15
Construction -	Mechanically fixed joints	
Fittings -	A three point locking (two hookbolts, one deadbolt and a latch) ACET086 PL18 Paddock Lockmaster espagnolette system with PLK374 keeps, an AVCL117 Sobinco 30/50 euro profile cylinder, a 1710/3623N Hoppe Tokyo Series Secured by Design lever/lever key locking handle with cylinder guard and four ACET054 butt hinges	
Weathersealing -	Double sealed with plastics weatherstrip, reference ACSH039 6mm brush pile for PCX16 and ACVL032 small flipper gasket	
Glass -	Double glazed with 4-16-4 mm toughened glass sealed units	
Glass Retention System -	Internal glazing beads, reference ETC162 Glazing Gaskets, reference ACVG31 3mm E gasket and AVCG34 5mm wedge gasket	
Sample Dimensions -	Overall	
	Length: 950mm	Height: 2100mm
	Door	
	Length: 880mm	Height: 2030mm
Date of Test -	21 January 2008 - conducted by M Walters and P Waller	
Laboratory Temperature -	21.0°C	

ELEVATION DRAWING OF DOOR ASSEMBLY
(indicating positions of hardware)



- hinge



- deadbolt and latch



- hookbolt



- handle, cylinder and lockcase

EXAMINATION AND TEST (CONTINUED)

CLAUSE 7 PERFORMANCE REQUIREMENTS

ASSESSMENT

Annex A.5 Infill medium removal test

Annex A.5.2 Manual Test

The sample was mounted, vertically and square, in the test rig as described in Clause 6.1 and Annex A.2.

The test was carried out in accordance with the requirements of this Annex using the tools described in Annex A.3.

No entry could be effected within 3 minutes

Pass

Annex A.5.3 Mechanical Test

The sample was mounted, vertically and square, in the test rig as described in Clause 6.1 and Annex A.2.

The test was carried out with a perpendicular to plane load of 2.0kN applied to each corner of the glazing in turn as specified in this Annex.

No evidence of bead failure
No entry could be effected

Pass

Annex A.5.4 Manual Cutting Test

Not applicable

APPENDIX A

Door Type:	a single leaf open in glaze in hinged door.	
Door System:	Smart Systems Limited Alitherm 47 Thermally Broken Aluminium Alloy Residential Door System	
Fabrication and Installation:	As detailed in the latest Synseal Extrusions Limited PAS 23/24 Alitherm 47 Residential Doors Manual	
General Description of Doors:	The door system is single leaf only, open in only, glaze in only, with midrail, infill glass only and of mechanically fixed joint construction.	
Size Limitations: (up to a maximum of)	Length	Height
Overall	950mm	2100mm
Door	880mm	2030mm
Extrusion Reference -	Frame:	ETD018
	Leaf:	ETD020
	Midrail:	ETD030
	Frame filler:	PCX16
	Leaf filler:	PCX15
Glass Retention System -	Internal glazing beads, reference ETC162 Glazing Gaskets, reference ACVG31 3mm E gasket and AVCG34 5mm wedge gasket	
Weatherseal -	Double sealed with plastics weatherstrip, reference ACSH039 6mm brush pile for PCX16 and ACVL032 small flipper gasket	

APPENDIX A (CONTINUED)

Hardware Requirements:	Hinges	-	ACET054 butt hinges
	Locking	-	ACET086 PL18 Paddock Lockmaster (two hookbolts, one deadbolt and a latch) with PLK374 keeps espagnolette system 1710/3623N Hoppe Tokyo Series Secured by Design lever/lever key locking handle with cylinder guard AVCL117 Sobinco 30/50 euro profile cylinder
Hardware Fixing Requirements:			
	Hinges	-	¾"size 8 countersunk self-tapping stainless steel screws
	Locking		
	Lock	-	RCA054 countersunk screws
	Keeps	-	RCA054 countersunk screws
	Handle	-	M6 hardened stainless steel screw