

MILA TEST CENTRE

TEST REPORT

TEST NUMBER : 2134

NUMBER OF PAGES : 17 plus cover

SUBJECT : Door Performance: Enhanced Security

DATE : 26th March 2004

ITEMS TESTED : External Door Assemblies

SAMPLE REFERENCE : Inwards Opening / Internal Bead

DATE OF TEST : Between 25th November & 5th December 2003

TEST SPECIFICATIONS : PAS 24-1: 1999: Enhanced security performance requirements for door assemblies
Part 1: Single leaf, external door assemblies to dwellings.

TEST EQUIPMENT : Purpose designed and built for the application of loading as described within PAS 24-1: 1999.

Report Prepared By: DANIEL MILES Job Title: TEST CENTRE DEPUTY MANAGER

Signature:

Checked By: JOHN MILES Job Title: TEST CENTRE MANAGER

Signature:

Test(s) Conducted for:



SAMPLE REFERENCE: Inwards Opening / Internal Bead

This report relates to door assemblies manufactured from the items as identified, selected, submitted and tested and to those assemblies alone. Details of the door system and hardware used are supplied by the client and / or persons acting on their behalf and the onus for the accuracy of those details rests with the client

The results obtained are only relevant to the conditions applicable at the time of testing and do not necessarily relate to samples from the production line, nor do they imply performance or quality of the continuing production.

The results and conclusions shown in this report are given in good faith. Mila Hardware accept no liability or responsibility for any loss or damage occurring from the use of same.

This report is confidential to the testing laboratory and the client. The information contained within is the property of the client who remains the sole authority for any copying. However, if copying is authorised, the report must be reproduced in full. Part copies of selected sections of the report are not permitted unless prior written approval is obtained from the testing laboratory:-

MILA TEST CENTRE

UKAS Accredited Testing Laboratory No. 2235

C/o Mila Hardware
1 Brunel Close
Drayton Fields Industrial Estate
DAVENTRY
Northamptonshire
NN11 5RB

Tel: 01327 872511
Fax: 01327 706676

NOTE. Accreditation Schedule is for testing windows and doors in accordance with the following Standard specifications:-

• windows; BS 7950: 1997. Specification for enhanced security performance of casement and tilt/turn windows for domestic applications.

• doors; PAS 23-1: 1999. General performance requirements for door assemblies- Part 1: Single leaf, external door assemblies to dwellings.

doors; PAS 24-1: 1999. Enhanced security performance requirements for door assemblies-

Part 1: Single leaf, external door assemblies to dwellings.

All tests reported within this document were conducted in accordance with our scope of UKAS accreditation. However, accreditation includes only factual reporting therefore any expression of opinion and interpretation are outside and excluded from that scope of accreditation.

MILA REPORT TEST NO: 2134

PAGE 2 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

1. INTRODUCTION

- 1.1** At the request of Paddock Fabrications Ltd. door assemblies manufactured by [REDACTED], as identified below and described on Pages 3, 4 and 5 were tested using test methods detailed within:-

PAS 24-1: 1999.

Enhanced security performance requirements for Door assemblies.

Part 1: Single leaf, external door assemblies to dwellings.

- 1.2** For the purpose of assessment three sample door assemblies were supplied in keeping with the requirements of PAS 24-1: 1999. The samples were as identical as production methods permit and selection to nominate as sample one, two or three was at the discretion of Test Centre personnel.

- 1.3** Tests were conducted on the door assembly samples as identified in the main body of this report.

2. TEST SAMPLE DESCRIPTION AND QUANTITY

PVCu single leaf external door assembly.

3 Samples

3. PERFORMANCE SUMMARY

Using the tests and test methods described within the edition of PAS 24-1:1999 incorporating SBDTSG Resolutions 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14 and 15, current at time of testing, the door assembly resisted attempts to gain entry as defined within the PAS 24-1: 1999 specification.

MILA REPORT TEST NO: 2134

PAGE 3 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

DESCRIPTION OF TEST SAMPLES

UNIT TYPE : Door assembly comprising of an outer frame with low threshold and an internally beaded, inwards opening door leaf featuring two glass infills separated by a midrail.

UNIT SIZE : Overall outer frame size: 0.950m x 2.100m
Leaf size: 0.848m x 2.008m

MATERIAL : PVCu; extruded hollow sections strategically reinforced with metal section. Swiftframe System.

Client reference

Frame Code: 55102KM Reinforcing Code: 55707

Leaf Code: 55203KM Reinforcing Code: 55706

Midrail Code: 55303KM Reinforcing Code: 55703

CONSTRUCTION : Frame is hot plate fusion welded at top corners and mechanical jointed at bottom corners / low threshold.

Leaf is hot plate fusion welded at all corner and midrail joints

WEATHER SEAL : Leaf: Seal 55601
 Frame: Seal 55601

GLAZING SYSTEM : Dry glazed; Internal: Co-extruded Bead 55404 KM
 External: Gasket 71300940

GLAZING : 2 off 28 mm insulating double glazed units, 4 mm toughened glass with 20 mm spacer.

Glazed sizes:- Top unit 0.648 m wide x 1.010 m high
 Lower unit 0.648 m wide x 0.702 m high

MILA REPORT TEST NO: 2134

PAGE 4 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

DESCRIPTION OF TEST SAMPLES (continued.....)

HARDWARE AND FASTENINGS : Per sample:-

	(Client Reference)
3 x Paddock; 'Wel Secure' 3DL hinge	(5971-720-P)
4.8mm x 38mm self drill screw	(SDS4838D)
Window Master 4.2mm x 25mm screw	(3500/25Y)
1 x Paddock; 'Lockmaster' Lock (PL64)	
1 x Paddock; 'High Security' one piece keep	(PLK316HS) RH
	(PLK315HS) LH
Window Master 4.2mm x 25mm screw	(3500/25Y)
Architectural supplies 3.9mm x 38mm screw	(CSR3.9x38Y)
1 x ISEO; Euro cylinder 40/50	(8209405091)
1 x Paddock; 'Classic' lever/lever handle set	(P817)
Paddock 80mm Machine screw	(1431)

1 x Swiftframe; 'Aluminium' low threshold (55801)

MILA REPORT TEST NO: 2133

PAGE 5 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

- (A) Hinge
- (B) Sealing Cam }
- }
- (C) Hook / Pin Bolt }
- } Combined Keep
- (D) Mortice Bolt }
- }
- (E) Latch }

Drawing not to scale, for reference only
Viewed from outside.

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TEST EQUIPMENT

Mila Test Rigs Nos. 01 and 02 purpose designed and built for the application of tests as described within PAS 24-1: 1999.

All equipment used for the measurement of time, force or distance is calibrated, with traceability to National Standards, using UKAS Accredited Testing Laboratories. At the time of this test all equipment was within its calibration period and all recorded results within the tolerances permitted by the Test Standard.

TEST PREPARATION AND TESTS

In keeping with the requirements detailed within annex A clause A.2, the test sample was delivered mounted into a sub-frame made from 100mm x 75mm (Nominal) timber. Mounting screws being driven from opening cavity of outer frame, through the frame section and into timber subframe, so as to simulate normal installation work practice.

The complete assembly was installed vertically in the test rig and checked for overlap (cover) at the over-rebate flanges, perimeter gap / clearances and correct operation.

Tests were conducted in accordance with the methods as detailed within PAS 24-1: 1999 Annex Clauses A.4, A.5, A.6, A.7, A.8, A.9, A.10 incorporating SBDTSG Resolution Nos 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14 and 15, and in accordance with appropriate Standard Loading Cases as identified from those outlined in Annex B. This reports deals with tests in the numerical order as they appear in Annex A of PAS 24-1:1999.

TEST CONDUCTED	BY: Daniel Miles	}	Mila Test Centre
	John Miles	}	

WITNESSED	BY: Paul Jelly	}	Paddock Fabrications*
	Steve Weaver	}	
	Huw Rogers	}	



TEST CENTRE ENVIRONMENT DURING 24HR CONDITIONING PERIOD AND TESTING

Temperature:	Minimum	:	18°C	Maximum	:	21°C
Humidity:	Minimum	:	48%	Maximum	:	62%

MILA REPORT TEST NO: 2134

PAGE 7 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TEST AND RESULTS

Note: a) kN = kiloNewtons = 1,000 Newtons.

Annex A Clause A.4 Manipulation

The tests were conducted on Sample 2 in accordance with Clause A.4.2 using tools described in Clause A.3, Tools Group A.

Sections of the frame were removed using craft knife (A.3.4). Having exposed sections of the locking system attempts were made to disengage / manipulate the locking mechanism using the following hand tools:-

- small screwdriver (A.3.5)
- steel wire (A.3.1)

No entry could be achieved within a 6 minute test time:

Result: PASS

Annex A Clause A.5 Infill Removal

Clause A.5.1 Manual Test

The tests were conducted on Sample 3 using the tools described in Clause A.3, Tools Groups A and B.

Using craft knife (A.3.4) a section of the glazing rebate was removed and attempts were made to remove the internal glazing beads with chisel (A.3.6).

No entry could be achieved within the 3 minutes test time:

Result: PASS

Clause A.5.2 Mechanical Test

The tests were conducted on Sample 2. A perpendicular to plane load of 2.0kN was applied progressively to each corner of the glazed infill, in turn.

The infill resisted all applied loads, Entry was not gained:

Result: **PASS**

MILA REPORT TEST NO: 2134

PAGE 8 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TEST AND RESULTS (continued.....)

Annex A Clause A.6 Mechanical Loading

These tests were conducted on Sample 2.

Loading Point 1: Standard loading case 1.
Hanging edge; top hinge.

- | | | |
|----|------------------------|--|
| i) | Parallel to Plane | 1.5kN - At right angles to hanging edge in the direction towards closing edge. |
| | Perpendicular to Plane | Centred at the hinge.
4.50kN for 10 seconds - Load Held |

Loading Point 2: Standard loading case 1.
Hanging edge; central hinge.

- | | | |
|----|------------------------|--|
| i) | Parallel to Plane | 1.5kN - At right angles to hanging edge in the direction towards closing edge. |
| | Perpendicular to Plane | Centred at the hinge.
4.50kN for 10 seconds - Load Held |

Loading Point 3: Standard loading case 1.
Hanging edge; bottom hinge.

- | | | |
|----|------------------------|--|
| i) | Parallel to Plane | 1.5kN - At right angles to hanging edge in the direction towards closing edge. |
| | Perpendicular to Plane | Centred at the hinge.
4.50kN for 10 seconds - Load Held |

MILA REPORT TEST NO: 2134

PAGE 9 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TEST AND RESULTS (continued.....)

Loading Point 4: Standard loading case 4.
Closing edge; bottom sealing cam.

- | | | |
|-----|------------------------|--|
| i) | Parallel to Plane | 1.5kN - Vertically upwards along edge in the direction to disengage cam. |
| | Perpendicular to Plane | Centred over cam.
4.50kN for 10 seconds - Load Held |
| ii) | Parallel to Plane | 1.5kN - At right angles to closing edge in the direction towards hanging edge. |
| | Perpendicular to Plane | Centred over cam
4.50kN for 10 seconds - Load Held |

Loading Point 5: Standard loading case 4.
Closing edge; bottom hook / pin bolt.

- | | | |
|----|------------------------|---|
| i) | Parallel to Plane | 1.5kN - Vertically downwards along edge in the direction to disengage hook. |
| | Perpendicular to Plane | Equidistant between hook and pin. |

- | | | |
|-----|------------------------|--|
| | | 4.50kN for 10 seconds - Load Held |
| ii) | Parallel to Plane | 1.5kN - At right angles to closing edge in the direction towards hanging edge. |
| | Perpendicular to Plane | Equidistant between hook and pin
4.50kN for 10 seconds - Load Held |

MILA REPORT TEST NO: 2134

PAGE 10 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TEST AND RESULTS (continued.....)

Loading Point 6: Standard loading case 4.
Closing edge; lower central sealing cam.

- | | | |
|-----|------------------------|--|
| i) | Parallel to Plane | 1.5kN - Vertically upwards along edge in the direction to disengage cam. |
| | Perpendicular to Plane | Centred over cam.
4.50kN for 10 seconds - Load Held |
| ii) | Parallel to Plane | 1.5kN - At right angles to closing edge in the direction towards hanging edge. |
| | Perpendicular to Plane | Centred over cam
4.50kN for 10 seconds - Load Held |

Loading Point 7: Standard loading case 3.
Closing edge; latch and mortice bolt.

- | | | |
|----|-------------------|--|
| i) | Parallel to Plane | 1.5kN - At right angles to closing edge in the direction towards hanging edge. |
|----|-------------------|--|

Perpendicular to Plane

Equidistant between latch and mortice bolt.
4.50kN for 10 seconds - Load Held

Loading Point 8: Standard loading case 4.
Closing edge; upper central sealing cam.

- | | | |
|-----|------------------------|--|
| i) | Parallel to Plane | 1.5kN - Vertically upwards along edge in the direction to disengage cam. |
| | Perpendicular to Plane | Centred over cam.
4.50kN for 10 seconds - Load Held |
| ii) | Parallel to Plane | 1.5kN - At right angles to closing edge in the direction towards hanging edge. |
| | Perpendicular to Plane | Centred over cam
4.50kN for 10 seconds - Load Held |

MILA REPORT TEST NO: 2134

PAGE 11 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TEST AND RESULTS (continued.....)

Loading Point 9: Standard loading case 4.
Closing edge; top hook / pin bolt.

- | | | |
|-----|------------------------|--|
| i) | Parallel to Plane | 1.5kN - Vertically downwards along edge in the direction to disengage hook. |
| | Perpendicular to Plane | Equidistant between hook and pin.
4.50kN for 10 seconds - Load Held |
| ii) | Parallel to Plane | 1.5kN - At right angles to closing edge in the direction towards hanging edge. |
| | Perpendicular to Plane | Equidistant between hook and pin
4.50kN for 10 seconds - Load Held |

Loading Point 10: Standard loading case 4.

Closing edge; top sealing cam.

- | | | |
|-----|------------------------|--|
| i) | Parallel to Plane | 1.5kN - Vertically upwards along edge in the direction to disengage cam. |
| | Perpendicular to Plane | Centred over cam.
4.50kN for 10 seconds - Load Held |
| ii) | Parallel to Plane | 1.5kN - At right angles to closing edge in the direction towards hanging edge. |
| | Perpendicular to Plane | Centred over cam
4.50kN for 10 seconds - Load Held |

The door assembly resisted all loadings. Entry was not achieved.

Result: **PASS**

MILA REPORT TEST NO: 2134

PAGE 12 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TEST AND RESULTS (continued.....)

Annex A Clause A.7 Manual Check Test

The tests were conducted on Sample 1 in accordance with Clause A.7.3, using the tools described in Clause A.7.2.

Using screwdriver (A.7.2.1) and nailbar (A.7.2.2) three attempts were made at different locations:-

- at the main detention mortice bolt by applying 'end pressure', SBDTSG Resolution No. 8
- at the bottom corner of the door leaf and between bottom hook and lower central cam

- at the lockside between latch and upper central cam

Entry was not gained during a 9 minute total test time.

Result: **PASS**

Annex A Clause A.8 Additional Mechanical Loading Test

As entry was not gained during A.7 tests, above, no additional mechanical loading tests were required or conducted.

MILA REPORT TEST NO: 2134

PAGE 13 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS AND RESULTS (continued.....)

Annex A Clauses A.9 Soft Body Impact Testing and A.10 Hard Body Impact Testing

HB1	:	Cylinder	SB1	:	800mm from floor level
HB2	:	Top corner lockside(includes top cam)	SB2	:	Centre of mid-rail
HB3	:	Top corner hingeside	SB3	:	Centre of top infill
HB4	:	Bottom corner hingeside			
HB5	:	Bottom corner lockside(includes bottom cam)			
HB6	:	Bottom hook/pin bolt			
HB7	:	Lower central cam			
HB8	:	Mortice bolt and latch			
HB9	:	Upper central cam			
HB10	:	Top hook/pin bolt			
HB11	:	Top hinge			
HB12	:	Central hinge			
HB13	:	Bottom hinge			
HB14	:	Edge of midrail hingeside			
HB15	:	Edge of midrail lockside			

SB : **Soft Body Impact Points**
HB : **Hard Body Impact Points**

MILA REPORT TEST NO: 2134

PAGE 14 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS AND RESULTS (continued.....)

Annex A Clause A.9 Soft Body Impact

The tests were conducted on Sample 3 in accordance with Clause A.9.2 section (a).
Impacts applied to EXTERNAL face of doorleaf:-

SB1 : Three impacts, NO DAMAGE

SB2 : Three impacts, NO DAMAGE

SB3 : Three impacts caused damage to the midrail weld, hinge side on the inside face
and damage to weld at top corner, hinge side on the inside face of the door leaf.

The door assembly resisted all impacts:

Result: **PASS**

MILA REPORT TEST NO: 2134

PAGE 15 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

TESTS AND RESULTS (continued.....)

Annex A Clause A.10 Hard Body Impact

The tests were conducted on Sample 3 in accordance with Clause A.10.2., incorporating the impact points as detailed within SBDTSG Resolution No. 11. Impacts applied to EXTERNAL face of doorleaf.

- HB1 : Three impacts caused the cylinder to be depressed inwards by 2mm.
- HB2 : Three impacts caused no visible damage.
- HB3 : Three impacts caused no visible damage.
- HB4 : Three impacts caused damage to the bottom corner hinge side weld on inside face of door leaf.
- HB5 : Three impacts caused damage to the bottom corner lock side weld on inside face of door leaf.
- HB6 : Three impacts caused no visible damage.
- HB7 : Three impacts caused no visible damage.
- HB8 : Three impacts caused no visible damage.
- HB9 : Three impacts caused no visible damage.
- HB10 : Three impacts caused no visible damage.
- HB11 : Three impacts caused no visible damage.
- HB12 : Three impacts caused no visible damage.
- HB13 : Three impacts caused no visible damage.
- HB14 : Three impacts caused no visible damage.
- HB15 : Three impacts caused damage to the midrail lock side weld on inside face of door leaf

The door assembly resisted all impacts.

Result: **PASS**

MILA REPORT TEST NO: 2134

PAGE 16 OF 17

SAMPLE REFERENCE: Inwards Opening / Internal Bead

APPENDIX

1. TEST SEQUENCE

- 1.1** Within PAS 24-1: 1999 there is a designated sequence for the application of bi-directional loading during mechanical testing, Annex A Clause A.6. The starting point (Loading Point 1) should be the top hinge then continue down the hinge stile and up the lock stile as below:- .

2. EXCLUSIONS

This report is an assessment of a complete door assembly system only. It is NOT an assessment of the individual items used to manufacture the complete unit, nor is it an assessment of the manufacturer's production control either before or after the issue of this report

APPENDIX (continued.....)

3. CONCLUSIONS

The door assembly system resisted all attempts to gain entry, and met the requirements relating to enhanced security performance as defined within the PAS 24-1: 1999 specification.

4. ADDITIONAL COMMENTS

It is reasonable to assume that other doorset assemblies of the same style within the size range as below would also show the same ability to resist the loadings imposed and offer a similar degree of enhanced security provided that:-

- ÿ the door assembly is made from the materials as identified on page 3 of this report*.
- ÿ the door assembly is made using hardware components from the same product range, as identified on page 4 of this report.
- ÿ the fastenings used have the same component details as identified on page 4 of this report.
- ÿ there is no reduction in the quality or strength of those materials and components.
- ÿ the doorset assemblies are manufactured using the same degree of skill and work practices.
- ÿ the locking mechanisms provide hookbolt, deadbolt and roller cam to keep engagement system with the same dimensional configuration.
- ÿ the distance between those “locking points” is NO GREATER than that as fitted to the test samples.

**Size Range: opening height up to the sizes tested
opening width up to the sizes tested**

***Note:** Toughened glass units are for Test Operative safety only and may be replaced by annealed or laminated glass units.

Expressions of opinion and interpretation are outside and excluded from the Mila Test Centre scope of UKAS accreditation.

END OF REPORT