Element Materials Technology
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PAS 24:2016

Annex A&B

Test of: Inward-Opening Single Timber Doorset

Enhanced security performance requirements for doorsets

A Report To:
Selectron
Halkal-¦ Merkez Mah, Sengul Sok.No:6, Istanbul, Turkey, 34303

Document Reference:
WIL 414072

Date: 12/06/2019

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Element Materials Technology Wednesbury Limited
Fire & Building Products
Registered in England & Wales
Registered Office: 10 Lower Grosvenor Place, London, SW1W 0EN, United Kingdom
Company Registration No: 11446650

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TEST CONCLUSIONS

Samples of:

Manufacturer	Selectron
Product	Doorset
Model	Inward-Opening Single Timber Doorset

have been tested in accordance with: PAS24:2016 Annex A & B
By Element Materials Technology, a UKAS accredited Testing Laboratory (No. 0621)

At Unit 3 Wednesbury One, Black Country New Road, Wednesbury, WS10 7NZ.
Results and comments as detailed below:

Clause No.	Description	Compliance
4	**Enhanced security performance requirements**	**N/T**
4.1.1	Classification of use	N/T
4.1.2	Locking cylinder	Yes
4.2	Infill medium	N/T
4.3	Letterplates	N/T
4.4	Classification	D
5	**Marking**	**N/T**
6	**Design and general requirements**	**N/T**
Annex A	**Security hardware and cylinder test and assessment**	**Yes**
A.3	Test procedure	Yes
A.4	Cylinder vulnerability assessment	Yes
Annex B	**Enhanced security performance for doorsets**	**Yes**
B.4.3	Manipulation test	Yes
B.4.4.2	Infill manual test	Yes
B.4.4.3	Infill mechanical test	Yes
B.4.4.4	Manual cutting test	Yes
B.4.5	Mechanical loading test	Yes
B.4.6	Manual check test	Yes
B.4.7	Additional mechanical loading test	N/A
B.4.8	Soft body impact test	Yes
B.4.9	Hard body impact test	Yes

No inferences can be made regarding performance against other requirements of this standard

Tests marked N/A are not applicable to the sample under test.
Tests marked N/T were not applied to the sample under test

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AUTHORISATION

Tests performed by: Josh Ratcliffe, Test Engineer
Sam Laxton, Trainee Test Engineer

Report issued by: Brett Devey, Test Engineer

Signed 

Date 11th June 2019

For and on behalf of Element Materials Technology

Report authorised by: Mark West, Door & Window Laboratory Manager

Signed 

Date 11th June 2019

For and on behalf of Element Materials Technology

Report issued: 12 June 2019

UKAS TESTING
0621

NOTE.
Tests marked "Not UKAS Accredited" are not covered by the Laboratory UKAS accreditation schedule.

The laboratory has tested the product supplied by the client as sampled in accordance with their own requirements

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TEST DETAILS

CLIENT DETAILS

Company name	Selectron
Address	Halkal-¦ Merkez Mah Sengul Sok.No:6 Istanbul Turkey 34303
Contact	Huseyin Caliskan

ORDER DETAILS

Order number	SLN190502
Dated	

SAMPLE DETAILS

Outer frame	1140 x 2390 x 80mm
Opening leaves	1050 x 2380 x 70mm
Configuration	Inward-Opening, Single Doorset
Material	Timber
Details of Hardware	
Hinges	3No. Simonswerk BAKA 3D Hinge 4030 3D FD
Hinge protection	2No. Simonswerk Dog Bolts 97528 & 94089
Lock	Maco Multi-Point Lock Door lock Z-TS 238354
Cylinder	Titon 3* Security Cylinder Asterion Three Star TN62 series
Handles	Pull handle LAZ 11 RY

TEST DETAILS

Test specification	PAS 24:2016
Full test	Yes
Test to clauses	Annex A&B
Sample received	20/05/2019
Test started	20/05/2019
Test completed	20/05/2019
Special Test requirements	
Other reports to be used in conjunction with this report	
Test rig used	Testing carried out in PAS24 test rig reference OLD

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TEST PROCEDURE

Introduction	This test report should be read in conjunction with the Standard PAS 24:2016 Enhanced security performance requirements for doorsets and windows in the UK. The specimens were judged on their ability to comply with the performance criteria as required in PAS24:2016 Annex A & B.
Instruction To Test	Initial requirement was for a classification of D for doorsets..
Test Specimen Construction	A description of the test construction is given in the Schedule of Components. The description is based on a detailed survey of the specimens and information supplied by the sponsor of the test.
Installation	The doorset was supplied mounted within a timber sub-frame of nominal section 75 x 100mm fitted flush with the exterior face, in accordance with the clients fitting instructions.
Sampling	The samples were not independently witnessed or selected and were provided direct from the test sponsor.
Test Climate	The sample was conditioned in the laboratory in the range 15-30 °C and 25-75% humidity for at least 12 hours. The temperature and humidity in the lab was maintained in the range 19.4-25.1°C and 28.2-57.6% humidity for the duration of the test.

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INITIAL OBSERVATIONS

The internal face of the sample

The external face of the sample

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Sample hinge

Sample dog bolt

Central lock

Sample lock keep

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Sample bottom hook bolt

Sample bottom hook bolt keep

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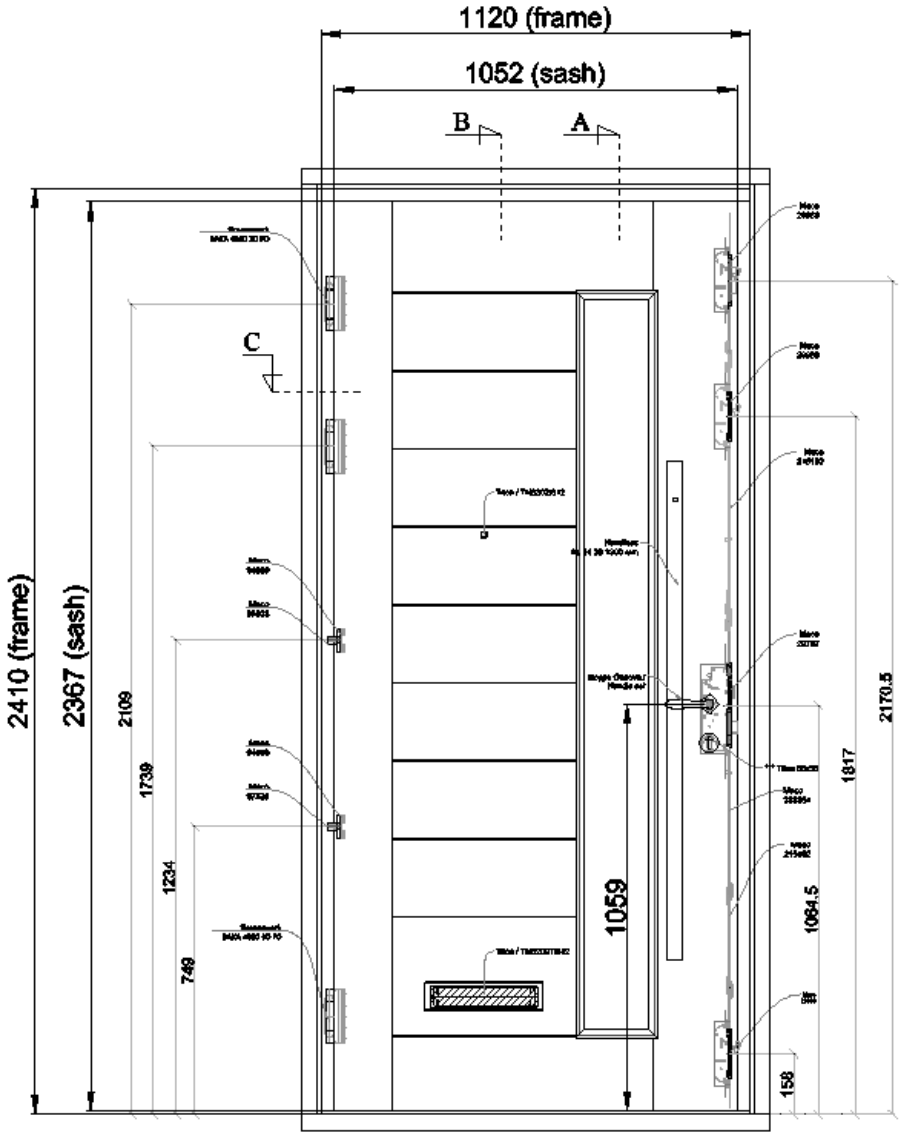
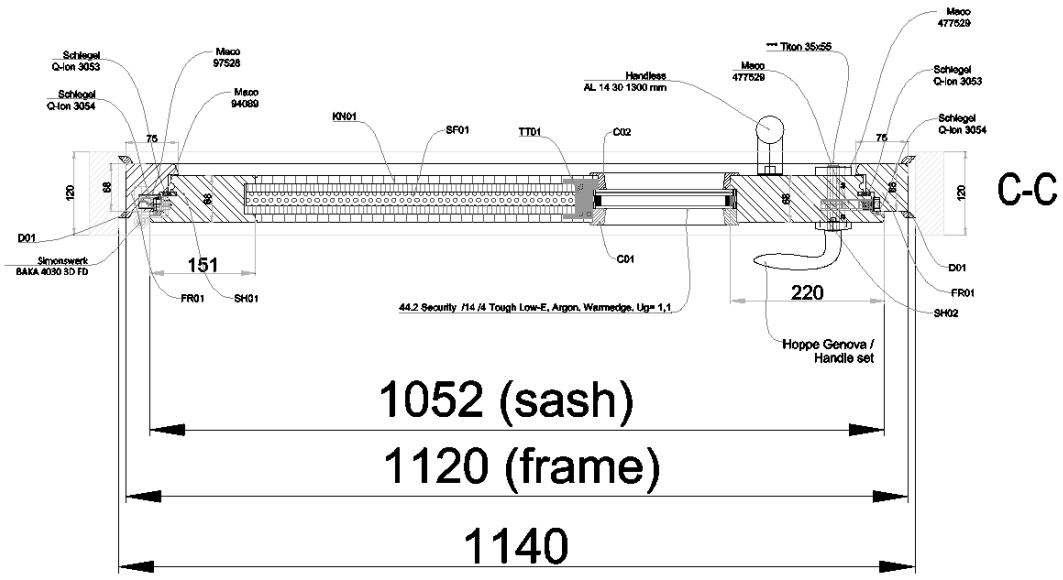
TEST SPECIMEN

Figure 1- General Elevation of Test Specimen (External Face)



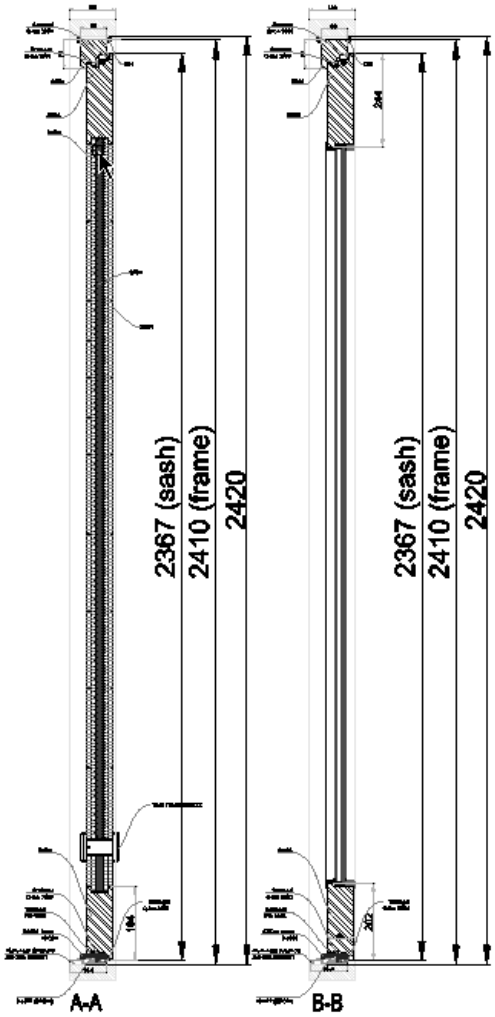
Do not scale. All dimensions are in mm

Figure 2 – Horizontal section



Do not scale. All dimensions are in mm

Figure 3 – Vertical section



Do not scale. All dimensions are in mm

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SCHEDULE OF COMPONENTS

(Refer to Figures 1 to 3)
(All values are nominal unless stated otherwise)
(All other details are as stated by the sponsor)

Variants

None

Item		Description
1. Door frame head		
Material	:	Wood / Pine (Hecht & Kloth)
Density	:	450 kg/m^3 (stated)
Overall section size	:	68 x 75 mm
Rebate	:	15 mm
Fixing jamb to head joints	:	Finger Joint / Conduit
Details of adhesive		
i. supplier	:	SOUDAL (Belgium)
ii. reference	:	D4105333
2. Door frame jamb		
Material	:	Wood / Pine (Hecht & Kloth)
Density	:	450 kg/m^3 (stated)
Overall section size	:	68 x 75 mm
Rebate	:	15 mm
Fixing jamb to sill joints	:	Finger Joint / Conduit
Details of adhesive		
i. supplier	:	SOUDAL (Belgium)
ii. reference	:	D4 105333
3. Door frame threshold		
Supplier	:	Tuna Aluminum
Reference	:	336 - (106 & 107)
Material	:	Aluminium & K4477 (EPDM) Seal
Overall section size	:	96 x 22 mm
Fixing to sill	:	
i. type	:	Screw
ii. size	:	5 x 60 mm
iii. quantity	:	6 No

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Item		Description
4. Door leaf framing		
Overall Size	:	1052 x 2367 mm
Material	:	Wood / Pine (Hecht & Kloth)
Density	:	450 kg/m3
Doorleaf framing section sizes		
i. stile	:	68 x 151 mm & 68 x 220 mm
ii. top rail	:	68 x 236 mm & 68 x 244 mm
iii. bottom rail	:	68 x 194 mm & 68 x 202 mm
Glazing rebate	:	18 mm
Corner fixing method	:	Finger Joint / Conduit
Details of adhesive		D4
i. supplier	:	SOUDAL (Belgium)
ii. reference	:	105333
5. Door leaf weather seals		
Description	:	Schlegel (Germany)
Manufacturer	:	Schlegel
Reference	:	Q Lon 3053, Q Lon 3054 and PB-1018
Fixing method	:	Put into the seal groove
Position	:	All four edges
Continuity	:	Uninterrupted by hardware
6. Door leaf panels		
Material	:	Plywood
Density	:	660 kg/m3
Overall size	:	480 x 1937 mm
Thickness	:	68 mm
Fixing into rebate	:	Nail
7. Door leaf glass (IGU)		
Supplier	:	YILDIZ CAM
Thickness	:	26 mm - Configuration (44.2 Laminated / 14 / 4 Toughened Low-E Warmedge Spacer)
Overall size	:	197 x 1928 mm
Nominal edge clearance	:	4 mm
8. Glazing setting blocks		
Supplier	:	Hecht & Kloth
Material	:	Wood / Pine 450 kg/m3
Thickness	:	4 mm
Overall size	:	52 x 100 mm
9. Glazing beads		
Material	:	Wood / Pine Hecht & Kloth
Density	:	450 kg/m3
Overall size	:	24 x 22 mm
Fixing method	:	
i. type	:	Straight Brad Nails (Stainless Steel) & Silicone
ii. size	:	18x18x10 mm

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Item		Description
10. Hinges		
Supplier	:	***Simonswerk***
Description	:	BAKA 3D Hinge
Reference	:	4030 3D FD
Primary material	:	Steel
Quantity	:	3
Size of knuckle	:	20 mm (Diameter)
Size of blades	:	3,5x39x140mm
Fixing hinge to doorleaf		
iv. type	:	Wood screws into doorleaf
v. size	:	5 x 40 mm
vi. quantity	:	5No
Fixing hinge to frame		
i. type	:	Pins
ii. size	:	M6x45 bolt
iii. quantity	:	2No
Position of hinge		
i. top hinge	:	2109 mm from bottom of door to center of hinge
ii. middle hinge	:	1739 mm from bottom of door to center of hinge
iii. bottom hinge	:	255 mm from bottom of door to center of hinge
11. Dog bolts		
Supplier	:	***MACO***
Description	:	Dog bolts (Lock & Lock Keeps)
Reference	:	97528 & 94089
Material		Steel
Quantity & position	:	2No & 2No
Overall size		
i. dog bolt	:	58x42x21 mm
ii. retaining ring / keeper	:	58x32x24 mm
12. Lock		
Supplier	:	MACO (Austria)
Description	:	Door lock Z-TS
Reference	:	238354
Position	:	1064,5 mm from bottom of door to centre of spindle/lock
Fixings		
i. type	:	Screws
ii. size	:	3.5 x 35 mm
iii. quantity	:	15

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Item		Description
13. Lock Keeps		
Supplier	:	Maco
Description	:	Striker plates
Reference		1No (29787) 3No (29980)
Material		
i. top & bottom keeps	:	29980
ii. centre keep	:	29787
Overall size		Metal in
i. top & bottom keeps	:	8x20x120 mm
ii. centre keep	:	8x20x208 mm
Fixing keeps to frame		
i. type	:	Screws
ii. size	:	4 x 30 mm
iii. quantity	:	2
14. Cylinder		
Supplier	:	Titon
Description	:	Asterion Three Star
Kitemark	:	KM 631878
Reference	:	TN62 series
Fixings		
i. type	:	Machine screw
ii. size	:	M5 x 65mm
iii. quantity	:	1 No
15. Lever handles		
Supplier	:	Handles
Description	:	Polished Chrome
Reference	:	LAZ 11 RY
Material	:	Zamak
Fixings		
i. type	:	Machine screws
ii. size	:	M5 x 90mm
iii. quantity	:	2
16. Door viewer		
Supplier	:	Titon
Description	:	Polished Chrome
Reference	:	TN8302/812
Overall size	:	16mm diameter
Door hole size	:	11.7mm diameter
Fixing height (centre of viewer)	:	1509mm

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Item		Description
17. Letter Plate		
Supplier	:	Titon
Description	:	Polished Chrome
Reference	:	TN8200T/812
Aperture size	:	260 x 40mm
Door slot size	:	264 x 46.5mm
Fixing height (centre of letterplate)	:	306mm
Cowl	:	None fitted
Fixings		
i. type	:	Machine screws
ii. size	:	M5 x 74mm
iii. quantity	:	2

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PERFORMANCE CRITERIA & TEST RESULTS

Clause	Requirement	Results & Observations	Compliance
4.1.1 Classification of use	Doorsets shall be classified according to their intended use for all relevant characteristics in accordance with BS 6375 and the relevant material specific standard.	Performance not assessed. Further test evidence required.	**N/T**
4.1.2 Doorsets	Doorsets must meet the requirements of Annex A of PAS24:2016 and either Annex B of PAS24:2016 or RC3 of BS EN 1627	Doorset meets the requirements of Annex A&B of PAS24.	**YES**
	Cylinders falling within the scope of EN1303:2015 used in the tested door assembly shall meet the requirements of TS007 (3* cylinder or a cylinder and security hardware combined rating of 3*) or of key related security to grade 5 and resistance to drilling grade 2.	Evidence supplied by client. KM 631878	**YES**
4.2 Infill medium requirements	Each glazed area shall include at least one pane of laminated glass meeting the requirements of BS EN 356:2000 Class P1A.	Performance not assessed. Further test evidence required.	**N/T**
4.3 Letterplates	Letter plates shall have a maximum aperture size of 260 x 40mm	Performance not assessed. Further test evidence required.	**N/T**
	Letter plates shall meet the installation height requirements of BS EN 13724:2013 clause 5.3.1 (between 700 and 1700mm from the floor)	Performance not assessed. Further test evidence required.	**N/T**
	Letterplate shall meet the requirements of TS008:2015 enhanced security grade 2	Performance not assessed. Further test evidence required.	**N/T**

Clause	Requirement	Results & Observations	Compliance
4.4 Classification	Following testing to Annex A & Annex B the final classification shall be determined as D for a doorset.	Doorset classified.	**D CLASSIFIED**
5 Marking	Door assembly shall be permanently marked, in a position that is visible and accessible when the door is open, with the following information: • The number and date of the specification and the classification, i.e. PAS24:2016 D • The date of manufacture (at least year and quarter) • The name or trade mark or other means of identifying the manufacturer	Performance not assessed. Further evidence required. Pre certification prototype only. No labels supplied as yet. Customer advised of labelling requirements for production doorsets.	**N/T**
6.1 Doorsets	Where a doorset includes dummy vents, fixed lights, fixed panels and/or opening lights these shall meet the requirements for a doorset	Performance not assessed. Further evidence required.	**N/T**
6.2 Installation instructions	The manufacturer shall supply full instructions for assembly, installation and maintenance	Performance not assessed. Further evidence required. Pre-certification prototype only. No installation instructions supplied as yet. Customer advised of installation instruction requirements for production doorsets.	**N/T**

Clause	Requirement	Results & Observations	Pass / Fail
A.3 Security hardware and cylinder test	Attacks were made with the 6mm chisel to try and pull material from the door leaf from around the escutcheon, this is so the nor bar could be used to pull it from the door leaf, once the escutcheon was removed from the door leaf attacks were made with the curved jaw mole grips to snap the cylinder, once removed the small screwdriver was used to try and disengage the locking mechanism but after 3 minutes of attacking entry was not gained.		**Pass**
	Attacks were made with 2 traction screws to try and screw into cylinder, this is to try and penetrate the cylinder and allow the screw to latch which in turn would allow the cylinder to be pulled from the doorset but this attempt lasted 3 minutes and the screw did not latch therefore entry was not gained.		**Pass**
A.4 Cylinder vulnerability assessment	Additionally cylinders shall have been successfully assessed in accordance with the requirements of Annex A.4 of PAS24:2016 cylinder vulnerability assessment.	Evidence supplied by client. KM 631878	**Pass**
Annex B: Enhanced security performance requirements for doorsets			
B.4.3 Manipulation test	Attacks were made with the craft knife to try and remove the material from around the hinge and attempt to expose the hinge fixings. Some of the material was able to be removed, but not enough for the fixings to be exposed. Total attack time was 3 minutes. Entry not achieved. Attacks were made with the screwdriver to try and gouge a hole in the doorleaf and attempt to expose the hook bolt fixings. A small hole was able to be created, but no further damage was made. Total attack time was 3 minutes. Entry not achieved. Attacks were made with the paint scraper to try and manipulate the hook bolt into the open position, some movement was able to be made to the hook bolt, but not enough for the hook bolt to be disengaged. Total attack time was 3 minutes. Entry not achieved.		**Pass**
B.4.4.2 Manual test on infill	Attacks were made with the craft knife and 6mm chisel to try and remove the beading from around the glazing and attempt to lever out the glazing. Some of the material from around the glazing was removed, but no further damage was made. Total attack time was 3 minutes. Entry not achieved.		**Pass**
B.4.4.3 Mechanical test on infill	2.0kN loads were applied to the top left, top right, bottom right and bottom left corners of the glazing vision panel on the door leaf. All loads were held and no entry was achieved.		**Pass**

Clause	Requirement	Results & Observations	Pass / Fail
B.4.4.4 Manual cutting test	**Zone 1** Attacks were made with the 6mm and 25mm chisel to try and gouge a 50mm hole in the door leaf. A small hole was able to be created, but not enough for the failure criteria to be achieved. Total attack time was 3 minutes. Entry not achieved.		**Pass**
	Zone 2 Attacks were made with the 6mm and 25mm chisels to try and gouge a 465mm hole in the door leaf to try and gain entry, this is so the zone 2 fail criteria can be put through but after 3 minutes of attacking entry was not gained.		**Pass**
B.4.5 Mechanical loading test	Attempts to apply Mechanical loads to all the hinge points and locking points were made with the following results obtained. **Point 1: Top hinge** 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 2: Middle hinge** 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 3: Dog bolt 1** 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 4: Dog bolt 2** 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 5: Bottom hinge** 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 6: Bottom hook bolt** 1.5kN parallel (down) and 4.5kN perpendicular load held for 10s. 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 7: Centre dead bolt** 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 8: Top hook bolt** 1.5kN parallel (down) and 4.5kN perpendicular load held for 10s. 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 8: Top hook bolt** 1.5kN parallel (down) and 4.5kN perpendicular load held for 10s. 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. All loads were held and no entry was achieved.		**Pass**

Clause	Requirement	Results & Observations	Pass / Fail
B.4.6 Manual check test		Attacks were made with the screwdriver and lever bar to try and lever the leaf away from the frame between a dog bolt & a hinge. Some movement was able to be made to the sample, but not enough for the 50mm failure to be achieved. Attacks were made with the screwdriver & lever bar to try and lever the leaf away from the frame between a hinge and a hook bolt to try and disengage the locking mechanism to try and gain entry but only leaf damage occurred and entry was not gained. Attacks were made with the large screwdriver and nail bar to try and pull both hook bolts from there keeps to allow the doorset to be opened and allow the 50mm bar through to identify a vulnerability but after 3 minutes of attacking entry was not gained.	**NO VULNER-ABILITY IDENTIFIED**
B.4.7 Additional mechanical loading test		Testing was not required as no vulnerabilities were identified in the manual check test.	**NOT REQUIRED**
B.4.8 Soft body impact test		The sample withstood 3 soft body impacts to points 800mm above floor level, 1250mm above floor level, and 1700mm above floor level in the centre of the door leaf. No visible damage was caused by these impacts and no entry was gained.	**Pass**
B.4.9 Hard body impact test		Attempts to apply hard body impacts to all the corners of the door leaf, hinge points and locking points were made with the following results obtained. **Point 1: Top hinged edge corner** 3 impacts applied, entry not achieved. **Point 2: Top hinge** 3 impacts applied, entry not achieved. **Point 3: Centre hinge** 3 impacts applied, entry not achieved. **Point 4: Dog bolt 1** 3 impacts applied, entry not achieved. **Point 5: Dog bolt 2** 3 impacts applied, entry not achieved. **Point 6: Bottom hinge** 3 impacts applied, entry not achieved. **Point 7: Bottom hinged edge corner** 3 impacts applied, entry not achieved.	**Pass**

Clause	Requirement	Results & Observations	Pass / Fail
	Point 8: Bottom locking edge corner 3 impacts applied, entry not achieved. **Point 9: Bottom hook bolt** 3 impacts applied, entry not achieved. **Point 10: Locking cylinder** 3 impacts applied, entry not achieved. **Point 11: Centre hook bolt** 3 impacts applied, entry not achieved. **Point 12: Centre dead bolt** 3 impacts applied, entry not achieved. **Point 13: Top hook bolt** 3 impacts applied, entry not achieved. **Point 14: Top locking edge corner** 3 impacts applied, entry not achieved.		

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CONCLUSIONS

Evaluation against objective	The doorsets as provided by the client were subjected to enhanced security testing in accordance with PAS24:2016 Annex A&B and achieved the requirements.
Observations & comments	The self-gripping pliers used during the security hardware test were Irwin Vise Grip 10R (straight jaw) and 10WR (curved jaw)

LIMITATIONS

Limitations	The results relate only to the behaviour of the specimens of the element of construction under the particular conditions of test. They are not intended to be the sole criteria for assessing the potential performance of the element in use, nor do they reflect the actual behaviour in use.
Range of assemblies covered by this report	It is our opinion that the range of assemblies covered by this report are limited to the following ▪ Assemblies with identical hardware fitted no further apart than in the tested assembly ▪ Assemblies of the same or smaller overall dimensions to the tested assembly
Uncertainty of Measurement	The uncertainties of measurements calculated for a confidence level of 95% throughout these tests are within the limits of these tolerances.

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REVISION HISTORY

This issue of the report replaces all previous issues that are now withdrawn.

Issue No :	**Re - Issue Date :**
Revised By:	**Approved By:**
Reason for Revision:	

Issue No :	**Re - Issue Date :**
Revised By:	**Approved By:**
Reason for Revision:	

END OF REPORT