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PAS 24:2016

Annex A&B

Test of: Flamebreak 430 – Single Door – Door Type 2

Enhanced security performance requirements for doorsets

A Report To:
Pacific Rim Wood Ltd
Ground Floor Suite, Block B, Old Kelways, Somerton Road, Langport,
Somerset, TA10 9SJ

Document Reference:
WIL 501512-1

Date: 13/12/2021

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Issue No.: 1

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	Pacific Rim Wood Ltd
Product	Flamebreak
Model	Flamebreak 430 – Single Door – Door Type 2

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**	**Yes**
4.1.1	Classification of use	Yes
4.1.2	Locking cylinder	Yes
4.2	Infill medium	N/A
4.3	Letterplates	Yes
4.4	Classification	D
5	**Marking**	**No**
6	**Design and general requirements**	**No**
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	N/A
B.4.4.3	Infill mechanical test	N/A
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: Brett Devey, Test Engineer
Sam Laxton, Trainee Test Engineer

Report issued by: Chris Bryan, Senior Test Engineer

Signed

Date 10/12/2021

For and on behalf of Element Materials Technology

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

Signed

Date 10/12/2021

For and on behalf of Element Materials Technology

Report issued: 13 December 2021

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	Pacific Rim Wood Ltd
Address	Ground Floor Suite, Block B, Old Kelways, Somerton Road, Langport, Somerset, TA10 9SJ
Contact	Shaun Hannan

ORDER DETAILS

Order number	PRW/PAS24/GPM
Dated	26/01/2021

SAMPLE DETAILS

Outer frame	955 x 2211 x 110mm
Opening leaves	861 x 2116 x 44mm
Configuration	Inward-opening single timber doorset
Material	Timber
Details of Hardware	
Hinges	4No. NICO Manufacturing LTD NICO security hinge. Ref: 53150R10SEC
Lock	Winkhaus GmbH & Co Multipoint lock. Ref: Winkhaus AV2 F2070
Cylinder	ERA 35/35 key/thumbturn. Ref: BS-L-T3535-51
Handles	Winkhaus GmbH & Co Lever handles with face plates. Ref: Winkhaus Melbourne 1672/2390N – ZA/3816N

TEST DETAILS

Test specification	PAS 24:2016
Full test	Yes
Test to clauses	Annex A&B
Sample received	08/03/2021
Test started	10/03/2021
Test completed	10/03/2021
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 18.3-21.7°C and 34-50.1% 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 top lock

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Sample handle

Sample centre dead bolt

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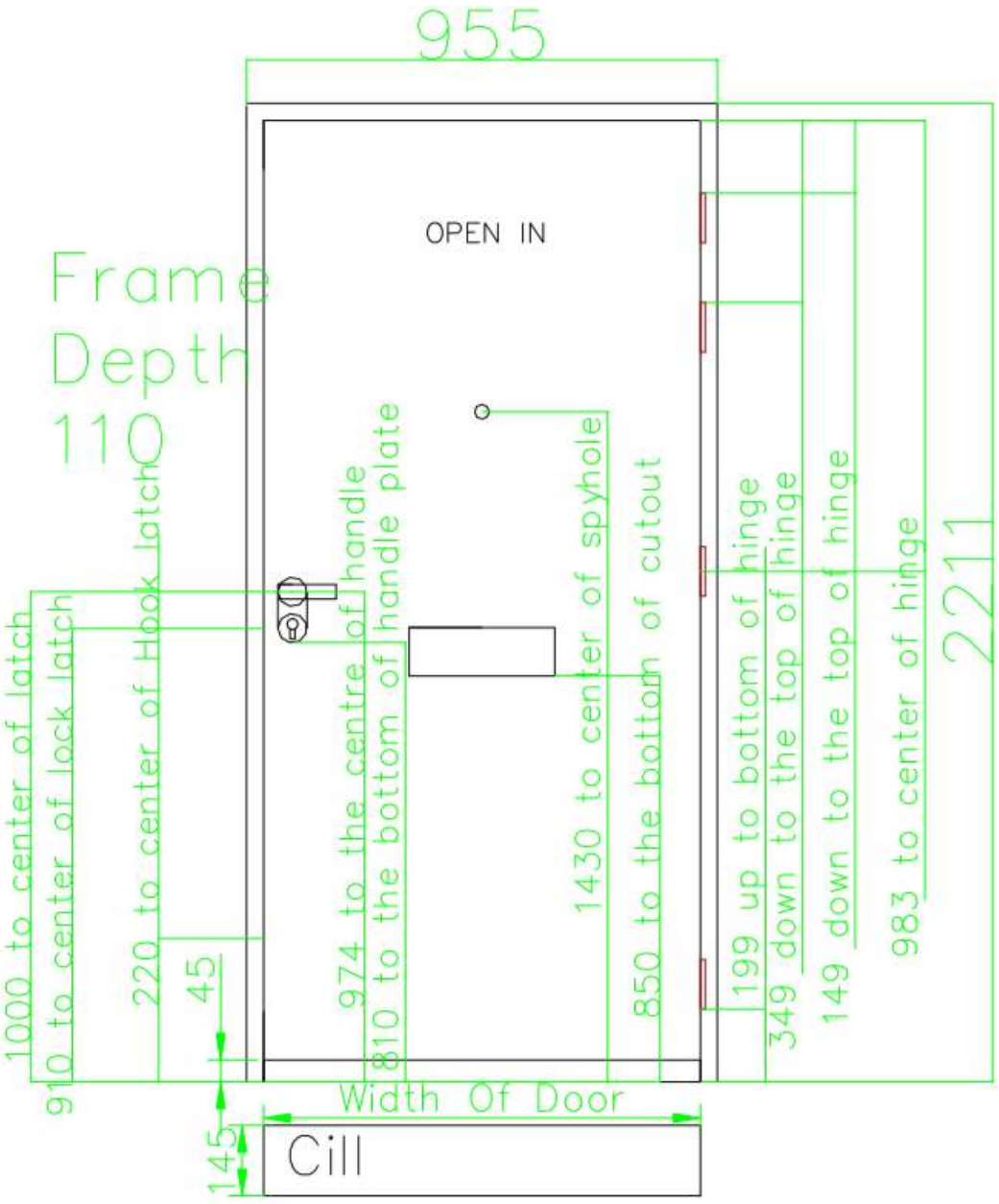
TEST SPECIMEN

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

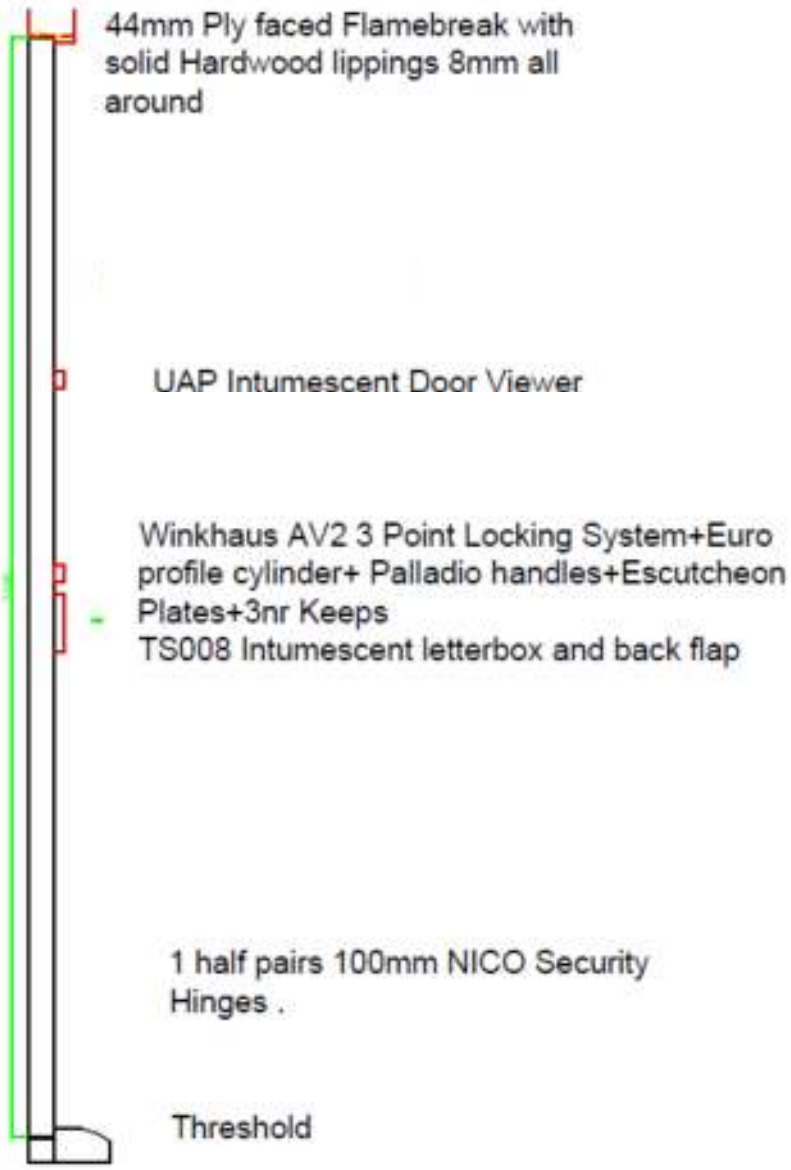


Do not scale. All dimensions are in mm

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		
Reference	:	Custom
Material	:	Sapele
Density	:	661.52 kg/m^3 (stated)
Section size	:	110mm wide x 59mm thick
Rebate	:	50mm wide x 15mm deep integral with frame
Fixing jamb to head joints	:	Rebated butt joint
i. type	:	Wood screws
ii. size	:	5.0mm diameter x 100mm long
iii. quantity	:	6No. / frame (3No. for each joint)
Details of adhesive		
i. supplier	:	Timbond Professional
ii. reference	:	PVA wood adhesive D3 water resistant
2. Door frame jamb		
Reference	:	Custom
Material	:	Sapele
Density	:	661.52 kg/m^3 (stated)
Section size	:	110mm wide x 59mm thick
Rebate	:	50mm wide x 15mm deep integral with frame
3. Door frame sill		
Reference	:	Custom
Material	:	Sapele
Density	:	661.52 kg/m^3 (stated)
Section size	:	145mm wide x 60mm high
Rebate	:	50mm wide x 15mm deep integral with frame
Fixing jamb to sill joints	:	Butt joint
i. type	:	Wood screws
ii. size	:	5.0mm diameter x 100mm long
iii. quantity	:	6No. / frame (3No. for each joint)
Details of adhesive		
i. supplier	:	Timbond Professional
ii. reference	:	PVA wood adhesive D3 water resistant

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Item		Description
4. Door frame weather seals		
Description	:	Aquamac 21 draught strip seal
Manufacturer	:	Schlegel
Reference	:	
Fixing method	:	Slot into a pre-cut groove in the rebate
Position	:	All four rebated edges
Continuity	:	Uninterrupted by hardware
5. Door frame intumescent/smoke seals		
Description	:	15mm wide x 4mm thick intumescent brush strip
Manufacturer	:	Pyroplex
Reference	:	
Fixing method	:	Self adhesive
Position	:	In both jambs and head of frame; present in the bottom of the leaf as well
Continuity	:	Interrupted by hardware. All hardware items have intumescent pads behind them
6. Door leaf		
Supplier/manufacturer	:	Flamebreak 430 – Pacific Rim Wood Ltd
Overall leaf size		
i. active leaf	:	861mm wide x 2116mm high x 44mm thick
7. Door leaf internal framing		
Material	:	Mixed Tropical hardwood
Density	:	Approx. 480 kg/m^3 (stated)
Core section size	:	3 layer Falcatta core – each layer = 12.3mm thickness with lamels of width :- 36mm/40mm/42mm/45mm/47mm/54mm/56mm dependent on raw material availability.
Doorleaf framing section sizes		
i. top rail	:	36mm thick x 35mm deep – incorporating a 9mm x 9mm tongue
Details of adhesive		
i. supplier	:	Pamolite Adhesive Industries
ii. reference	:	Type 1 Melamine glue
8. Door leaf core		
Supplier/manufacturer	:	Flamebreak 430
Material	:	Albisia Falcatta – Trilaminate core
Density	:	140 – 360 kg/m3 (stated)
Thickness	:	35mm
Fixing into rebate	:	N/A
9. Door leaf facings		
Material	:	Nominal 4mm Ply Faced both sides
Density	:	Average 575 kg/m^3 (stated)
Thickness	:	Nominal 4mm

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Item		Description
Details of adhesive		
i. supplier	:	Pamolite Adhesive Industries
ii. reference	:	Type 1 Melamine glue
10. Door leaf lippings		
Position	:	Fitted to two long edges, top and bottom
Material	:	Sapele
Density	:	Min 640 kg/m3 (Stated)
Section size	:	44mm wide x 8mm thick
Details of adhesive		
i. supplier	:	Adkwick
ii. reference	:	Kleibert 707.6
11. Hinges		
Supplier/manufacturer	:	NICO Manufacturing LTD
Description	:	NICO security hinge
Reference	:	53150R10SEC
Primary material	:	Steel
Size of knuckle	:	14mm diameter x 107mm high
Size of blades	:	102mm high x 31mm wide x 3mm thick
Quantity	:	4No. hinges / leaf
Intumescent protection (if applicable)	:	2No. 1mm thick x 100mm long x 30mm wide radius NOR910 Norsound intumescent pad. One applied between the hinge blade and frame and the other one between the other hinge blade and the leaf
Position of hinges		
i. top hinge	:	149mm from top of door to top of hinge
ii. middle hinge	:	932mm from top of door to top of hinge
iii. bottom hinge	:	1850mm from top of door to top of hinge
iv second hinge from the top	:	349mm from top of door to top of hinge
Fixing hinge to doorleaf		
i. type	:	Wood screw
ii. size	:	4.5mm diameter x 30mm long
iii. quantity	:	4No.
Fixing hinge to frame		
1. type	:	Wood screw
2. size	:	4.5mm diameter x 30mm long
3. quantity	:	4No.

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Item		Description
12. Lock		
Supplier/manufacturer	:	Winkhaus GmbH & Co
Description	:	Multipoint lock
Reference	:	Winkhaus AV2 F2070
Face plate size	:	1770mm high x 20mm wide x 3mm thick
Intumescent protection (if applicable)	:	Interdens 1mm OFFICIAL Winkhaus AV2 kit lock protection
Position	:	974mm from bottom of door to centre of spindle
Fixings		
type	:	Wood screw
size	:	3.5mm diameter x 50mm long
quantity	:	12no
13. Lock Keeps		
Supplier/manufacturer	:	Winkhaus GmbH & Co
Reference		
i. top & bottom keeps	:	STVSBAV2
ii. centre keep	:	STVSBFR24
Material	:	Stainless steel
Intumescent protection (if applicable)	:	Interdens 1mm OFFICIAL Winkhaus AV2 kit keep protection
Overall size		
i. top & bottom keeps	:	175mm high x 24 mm wide x 2 mm thick
ii. centre keep	:	234mm high x 24 mm wide x 2 mm thick
Fixing keeps to frame		
i. type	:	Wood screw
ii. size	:	3.5mm diameter x 35mm long
iii. quantity	:	4No. 3.5mm thread diameter x 35mm long for top/bottom keep
	:	3No. 3.5mm thread diameter x 35mm long for centre keep
14. Cylinder		
Supplier/manufacturer	:	ERA
Description	:	35/35 key/thumbturn
TS007 (if applicable)	:	Yes
Reference	:	BS-L-T3535-51
Overall size	:	34mm high x 17mm wide x 70mm long euro profile
Fixings		
i. type	:	M5 Machine Screw
ii. quantity	:	1 No.

Item		Description
15. Lever handles		
Supplier/manufacturer	:	Winkhaus GmbH & Co
Description	:	Lever handles with face plates
Reference	:	Winkhaus Melbourne 1672/2390N – ZA/3816N
TS007 certification ref (if applicable)	:	
Material	:	Aluminium
Overall size	:	External face plate: 258mm high x 34mm wide x 15mm thick x 4mm cylinder incorporated escutcheon projection
	:	Internal face plate: 258mm high x 34mm wide x 10mm thick
Lever length	:	Handles: 30mm high x 135mm wide x 65mm projection
Fixings		
i. type	:	Steel bolts
ii. size	:	5.0mm diameter x 60mm long
iii. quantity	:	3No.
16. Door viewer		
Supplier/manufacturer	:	UAP Limited
Description	:	14mm Wide angle door viewer
Reference	:	
Overall size	:	14mm Ø with 22 mm Ø to unexposed face, 26 mm Ø to exposed face
Door hole size	:	16.4mm
Intumescent protection (if applicable)	:	45mm long x 40mm wide x 1mm thick reinforced bespoke intumescent jacket rolled and inserted in the aperture prior to the door viewer being installed
Fixing height (centre of viewer)	:	1430mm from bottom of door
17. Letter Plate		
Supplier/manufacturer	:	UAP Limited
Description	:	Soterian TS008 letterplate
TS008 (if applicable)	:	Yes
Reference	:	
Aperture size	:	External size 40 mm high x 259.5 mm wide Internal size 55 mm high x 259.5 mm wide
Door slot size	:	
Fixing height	:	850mm up to bottom of aperture
Cowl	:	115mm high x 305mm wide x 6mm thick x 35 mm projection
Intumescent protection (if applicable)	:	Bespoke intumescent protection pre-fitted on internal framing and external face plate
Fixings		
i. type	:	Various screws and bolts provided in the letter plate kit

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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.	Evidence supplied WIL 501510 – BS 6375-1 WIL 501511 – BS 6375-2	**Yes**
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 of PAS24. Doorset meets the requirements of Annex 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 provided. KM 553031	**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.	No glazed infill present, not applicable.	**N/A**
4.3 Letterplates	Letter plates shall have a maximum aperture size of 260 x 40mm	Aperture size 258 x 40mm.	**Yes**
	Letter plates shall meet the installation height requirements of BS EN 13724:2013 clause 5.3.1 (between 700 and 1700mm from the floor)	Installation height 880mm from floor.	**Yes**
	Letterplate shall meet the requirements of TS008:2015 enhanced security grade 2	Evidence provided. KM 670828	**Yes**

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 as D for doorsets	**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.	**No**
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.	**No**
6.2 Installation instructions	The manufacturer shall supply full instructions for assembly, installation and maintenance	Performance not assessed. Further evidence required.	**No**

Clause	Requirement	Results & Observations	Pass / Fail
A.3 Security hardware and cylinder test	Attacks were made to the material surrounding the handle using a craft knife and 6mm chisel to try and cut out the material and a created a leverage point. Once a space had been created, a NorBar was used to lever the handle away from the leaf but with no success. Total attack time was 3 minutes. Entry not achieved.		**Pass**
	Attacks were made to the cylinder using 2No. 3.5 x 35mm traction screws and a cross point screwdriver to screw through the centre of the cylinder, in an attempt to create a leverage point. The screws could not be fully inserted and time expired before alternative attacks could be attempted. Total attack time was 3 minutes. Entry not achieved.		**Pass**
Damage to the sample following A.3 security hardware and cylinder test			
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 provided. KM 553031	**Yes**

Clause	Requirement	Results & Observations	Pass / Fail
Annex B: Enhanced security performance requirements for doorsets			
B.4.3 Manipulation test	Attacks were made to the bottom hook bolt using a craft knife to cut out the surrounding material, in an attempt to expose the lock and allow it to be manipulated but with no success. Total attack time was 3 minutes. Entry not achieved. Attacks were made to the bottom hook bolt using 2 paint scrapers to lever between the leaf and frame, in an attempt to lever out the lock but with no success. Total attack time was 3 minutes. Entry not achieved. Attacks were made to the 3rd hinge using a craft knife to cut out the surrounding material, in an attempt to expose the hinge and allow it to be manipulated but with no success. Total attack time was 3 minutes. Entry not achieved. Attacks were made to the 3rd hinge using 2 paint scrapers to lever between the leaf and frame, in an attempt to lever out the hinge but with no success. Total attack time was 3 minutes. Entry not achieved.		**Pass**
B.4.4.2 Manual test on infill	No infill present, not applicable.		**N/A**
B.4.4.3 Mechanical test on infill	No infill present, not applicable.		**N/A**
B.4.4.4 Manual cutting test	**Zone 1** Attacks were made within 400mm of the centre of rotation of the door leaf using a craft knife, 6mm chisel, and 25mm chisel to cut through the leaf and try to create a hole big enough for the failure criteria. A hole was created but entry could not be gained. Total attack time was 3 minutes. Entry not achieved. **Zone 2** Attacks were made below 400mm of the centre of rotation of the door leaf using a craft knife, 6mm chisel, and 25mm chisel to cut through the leaf and try to create a hole big enough for the failure criteria. A hole was created but entry could not be gained. Total attack time was 3 minutes. Entry not achieved.		**Pass** **Pass**

Clause	Requirement	Results & Observations	Pass / Fail
Damage to the sample following B.4.4.4 Manual cutting test			
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: Bottom hinge** 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 4: Bottom hook bolt** 1.5kN parallel (up) and 4.5kN perpendicular load held for 10s. 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 5: Centre dead bolt** 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 6: Top hook bolt** 1.5kN parallel (up) 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 between the 2nd and 3rd hinges using a nail bar and screwdriver to lever between the leaf and frame, in an attempt to lever out the hinges but with no success. Total attack time was 3 minutes. Entry not achieved. Attacks were made between the bottom hinge and bottom lock using a nail bar and screwdriver to lever between the leaf and frame, in an attempt to lever out the lock but with no success. Total attack time was 3 minutes. Entry not achieved. Attacks were made between the bottom and centre lock using a nail bar and screwdriver to lever between the leaf and frame, in an attempt to lever out the lock but with no success. Total attack time was 3 minutes. Entry not achieved. Attacks were made between the top 2 hinges using a nail bar and screwdriver to lever between the leaf and frame, in an attempt to lever out the hinges but with no success. Total attack time was 3 minutes. Entry not achieved.		**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: Bottom hinge** 3 impacts applied, entry not achieved.		**Pass**

Clause	Requirement	Results & Observations	Pass / Fail

Point 5: Bottom hinged edge corner
3 impacts applied, entry not achieved.

Point 6: Bottom locking edge corner
3 impacts applied, entry not achieved.

Point 7: Bottom hook bolt
3 impacts applied, entry not achieved.

Point 8: Locking cylinder
3 impacts applied, entry not achieved.

Point 9: Centre dead bolt
3 impacts applied, entry not achieved.

Point 10: Top hook bolt
3 impacts applied, entry not achieved.

Point 11: Top locking edge corner
3 impacts applied, entry not achieved.

No visible damage was caused by these impacts and no entry was gained.

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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 for a classification of D for doorsets.
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.
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:	

END OF REPORT