Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

PAS 24:2016

Annex A&B

Test of: Flamebreak FD30 – Inward-opening Single Timber Doorset

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 418722

Date: 27/11/2019

Copy: 1

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

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

TEST CONCLUSIONS

Samples of:

Manufacturer	Pacific Rim Wood Ltd
Product	Doorset
Model	Flamebreak FD30 – 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/A
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	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

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

AUTHORISATION

Tests performed by: Brett Devey, Test Engineer
Macauley Buchan, Trainee Test Engineer

Report issued by: Brett Devey, Test Engineer

Signed 

Date 25th November 2019

For and on behalf of Element Materials Technology

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

Signed 

Date 25th November 2019

For and on behalf of Element Materials Technology

Report issued: 27 November 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

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

CONTENTS **PAGE NO.**

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

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	Lisa McGee

ORDER DETAILS

Order number	PWR/Flamebreak/Pas24/Sep19
Dated	29/08/2019

SAMPLE DETAILS

Outer frame	1000 x 2200 x 90mm
Opening leaves	925 x 2145 x 44mm
Configuration	Inward-Opening Single Doorset
Material	Timber
Details of Hardware	
Hinges	4No. Union Hi Load Lift Off Hinges. Ref: JH605lolr-M-SSF
Lock	Winkhaus AV2-F 3-point lock. Ref: 2559895
Cylinder	Euro Profile Euro Cylinder. Ref: KIN 30/30 NAS
Handles	Era Fab & Fix Windsor Lever Handle. Ref: 1F302

TEST DETAILS

Test specification	PAS 24:2016
Full test	Yes
Test to clauses	Annex A&B
Sample received	06/09/2019
Test started	09/09/2019
Test completed	10/09/2019
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

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

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 22.3-23.9°C and 44.9-52.9% humidity for the duration of the test.

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

INITIAL OBSERVATIONS

The internal face of the sample

The external face of the sample

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

Sample hinge

Sample cylinder

Sample central lock

Sample central lock keep

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

Sample top lock

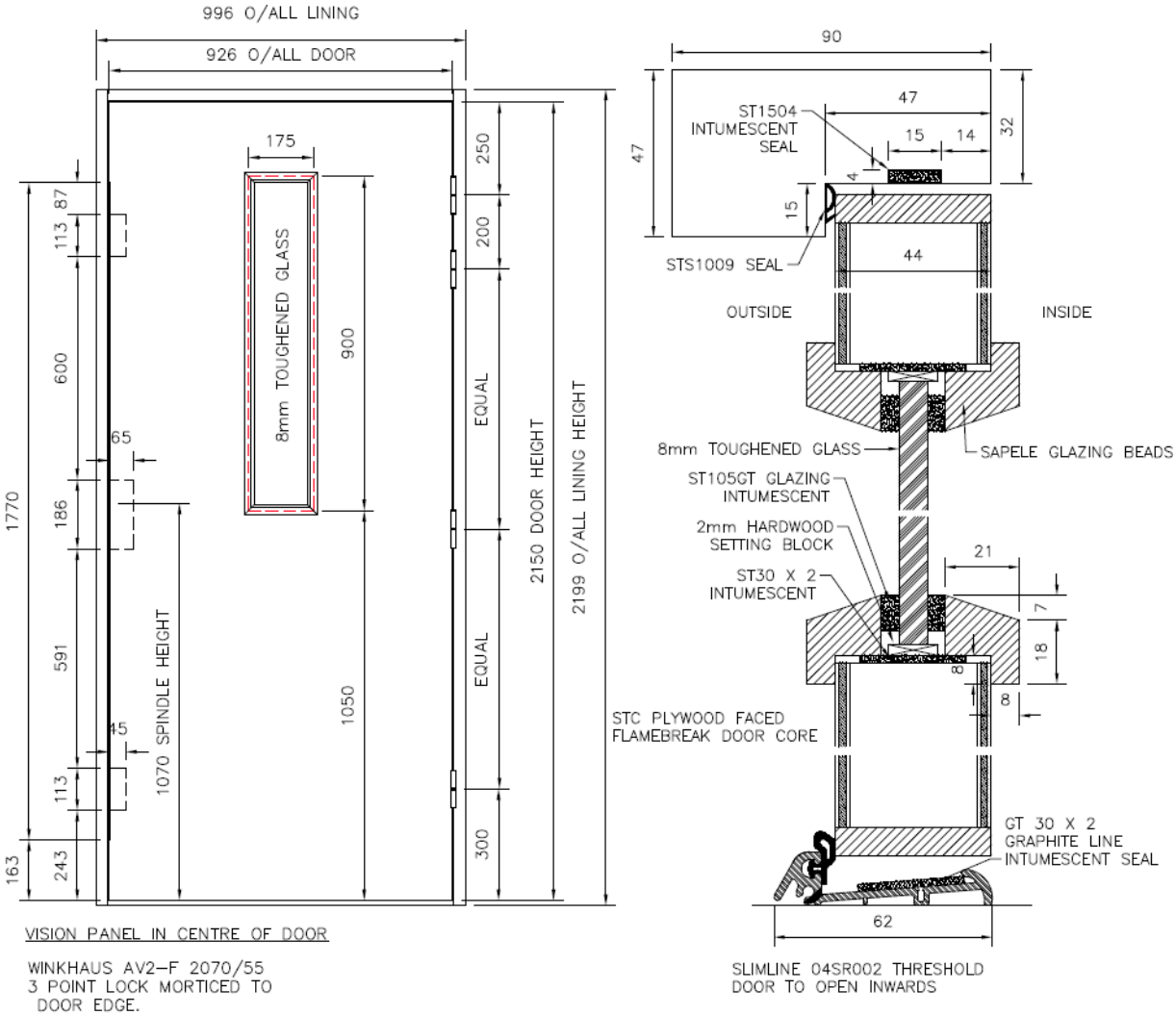
Sample top lock keep

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

TEST SPECIMEN

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



Do not scale. All dimensions are in mm

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

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	:	European Redwood
Density	:	> 450kg/m^3 (stated)
Section size	:	90 x 47mm
Rebate	:	15mm
Fixing jamb to head joints	:	Mortice & Tenon
Details of adhesive		PVA
2. Door frame jamb		
Reference	:	European Redwood
Material	:	>450kg/m^3 (stated)
Density	:	90 x 47mm
Section size	:	15mm
3. Door frame weather seals		
Description	:	Slimline 04 SR 002
Manufacturer	:	Stormguard
Reference	:	04SR002
Fixing method	:	Screw fixing to floor level
Position	:	Threshold – in between jambs
Continuity	:	Uninterrupted by hardware
4. Door frame intumescent seals		
Description	:	ST1504
Manufacturer	:	Sealed Tight solutions
Reference	:	ST1504
Fixing method	:	Connection bonded with instant adhesive
Position	:	Three edges – jambs and head
Continuity	:	Uninterrupted by hardware
5. Door frame smoke/acoustic seals		
Description	:	STS Perimeter Seal
Manufacturer	:	Sealed Tight Solutions
Reference	:	STS1009
Fixing method	:	Self-Adhesive
Position	:	Three edges (head & jambs)
Continuity	:	Uninterrupted by hardware

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

Item		Description
6. Door leaf		
Supplier/manufacturer	:	Flamebreak Type 430 – Plywood faced
Overall leaf size	:	926 x 2150 x 44mm
7. Door leaf core		
Supplier/manufacturer	:	Flamebreak Type 430
Thickness	:	44mm
8. Door leaf lippings		
Position	:	Fitted to four edges
Material	:	Sapele
Density	:	>640
Section size	:	8mm
Details of adhesive	:	PUR glue, Tehcnomelt PUR Henkel
9. Door leaf weather seals		
Description	:	Slimline 04 SR 002
Manufacturer	:	Stormguard
Reference	:	04SR002
Fixing method	:	Screw fixing to floor level
Position	:	Threshold – in between jambs
Continuity	:	Uninterrupted by hardware
10. Door leaf glazed panel		
Supplier	:	AGC Pyrobelite
Thickness/configuration	:	8mm toughened glass
Overall size	:	900 x 175mm
Nominal edge clearance	:	11 overall
11. Glazing setting blocks		
Material	:	Sapele
Thickness	:	2mm
12. Glazing tape – Internal face		
Supplier	:	Sealed Tight Solutions
Reference	:	ST105 GT
Material	:	Silicone
Thickness	:	5mm
Overall size	:	10 x 5mm
Fixing method	:	Self adhesive – then sealed with silicone on top
11a Glazing Liner		
Supplier	:	Sealed Tight Solutions
Reference	:	ST30 Graphite Graphite Liner x 2
Material	:	Graphite
Thickness	:	2mm
Overall size	:	30 x 2mm
Fixing method	:	Self adhesive

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

Item		Description
13. Glazing tape – External face		
Supplier	:	Sealed Tight Solutions
Reference	:	ST105 GT
Material	:	Silicone
Thickness	:	5mm
Overall size	:	10 x 5mm
Fixing method	:	Self adhesive – then sealed with silicone on top
14. Glazing beads		
Glazing method	:	Cassette beaded - cloak
Material	:	Sapele
Density	:	>640kg/m^3 (stated)
Section size	:	25 x 21mm
Fixing method	:	
i. type	:	Glazing pins
ii. size	:	50mm
15. Hinges		
Supplier/manufacturer	:	Union
Description	:	Hi Load Lift Off Hinges
Reference	:	JH605lolr-M-SSF
Primary material	:	Grade II steel
Size of knuckle	:	14mm
Size of blades	:	35 x 100mm
Quantity	:	4No.
Intumescent protection (if applicable)	:	
Position of hinges		
i. top hinge	:	204mm from top of door to top of hinge
ii. 2nd hinge		403mm from top of door to top of hinge
iii. 3rd hinge hinges	:	1102mm from top of door to top of hinge
iv. bottom hinge	:	1801mm from top of door to top of hinge
Fixing hinge to doorleaf		
i. type	:	Screws
ii. size	:	10 x 30mm
iii. quantity	:	10No.
Fixing hinge to frame		
i. type	:	Screws
ii. size	:	10 x 30mm
iii. quantity	:	10No.

Item		Description
16. Lock		
Supplier/manufacturer	:	Winkhaus
Description	:	AV2-F 3-point lock
Reference	:	2559895
Face plate size	:	20 x 1770 x 3mm
Intumescent protection (if applicable)	:	ST30 Graphite Lock Kit
Position	:	1070mm to centre of spindle/lock
Fixings		
i. type	:	Woodscrews
ii. size	:	12No.
iii. quantity	:	7 x 38mm
17. Lock Keeps		
Supplier/manufacturer	:	Winkhaus
Description	:	Keeps
Reference		
i. top & bottom keeps	:	F24-908 – single pocket keep
ii. centre keep	:	F24-908 Centre-keep
Material	:	
Intumescent protection (if applicable)	:	STS Graphite FS567 AV2 Kit
Overall size		
i. top & bottom keeps	:	24 x 235 2.5mm
Fixing keeps to frame		
i. type	:	Woodscrews
ii. size	:	2 x 25mm
iii. quantity	:	7No.
18. Cylinder		
Supplier/manufacturer	:	Euro Profile
Description	:	Euro Cylinder
TS007 certification ref (if applicable)	:	KM 561977
Reference	:	KIN 30/30 NAS
Overall size	:	72mm
Fixings		
i. type	:	Screw
ii. size	:	M5 x 55mm
iii. quantity	:	1No.
19. Lever handles		
Supplier/manufacturer	:	Era Fab & Fix
Description	:	Windsor Lever Handle
Reference	:	1F302
TS007 certification ref (if applicable)	:	
Material	:	Solid die cast zinc
Overall size	:	243 x 32mm
Lever length	:	17 x 120mm
Fixings		
i. type	:	M5
ii. size	:	55mm
iii. quantity	:	2No.

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

Item		Description
20. Door closer		
Supplier/manufacturer	:	Eclipse
Description	:	Face fixed door closer
Reference	:	28730
Fixing device to doorleaf		
i. type	:	Screws
ii. size	:	M5 x 30mm
iii. quantity	:	4No.
Fixing device to frame		
i. type	:	Screws
ii. size	:	M5 x 28mm
iii. quantity	:	2No.

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

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 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 561977	**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	Doorset not fitted with a letterplate, not applicable.	**N/A**
	Letter plates shall meet the installation height requirements of BS EN 13724:2013 clause 5.3.1 (between 700 and 1700mm from the floor)	Doorset not fitted with a letterplate, not applicable.	**N/A**
	Letterplate shall meet the requirements of TS008:2015 enhanced security grade 2	Doorset not fitted with a letterplate, not applicable.	**N/A**

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.	**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.	**N/T**

Clause	Requirement	Results & Observations	Pass / Fail
A.3 Security hardware and cylinder test	Attacks were made to the handle using a 6mm chisel to try and create space between the handle and leaf. Once a space had been created, a NorBar was used to lever the handle from the leaf. The cylinder was then snapped using curved jaw mole grips. Attacks were then made using a 6 and 25mm chisel to lever away some of the material surround the cylinder, in an attempt to get behind the lock casement. A small screwdriver was used to try and disengage the internal lock but with no success. Total attack time was 3 minutes. Entry not achieved.		**Pass**
	Attacks were made to the cylinder using 2No. 4 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 further attacks could be considered. 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 561977	**Yes**

Annex B: Enhanced security performance requirements for doorsets

Clause	Requirement	Results & Observations	Pass / Fail
B.4.3 Manipulation test		Attacks were made to the 3rd hinge using a craft knife to cut away some of 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. Attacks were made to the bottom hook bolt using a craft knife to cut away some of 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 locks but with no success. Total attack time was 3 minutes. Entry not achieved. Attacks were made to the bottom hook bolt using a small screwdriver to try and disengage the lock and allow entry but with no success. Total attack time was 3 minutes. Entry not achieved.	**Pass**
B.4.4.2 Manual test on infill		Attacks were made to the glazed infill beading using a 6 and 25mm chisel to try and remove the bead, in an attempt to free up the glass but with no success. Total attack time was 3 minutes. Entry not achieved.	**Pass**
B.4.4.3 Mechanical test on infill		N/A – Surface area of the infill is smaller than the loading pad.	**Pass**
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 to score into the material. Attacks were then made using a 6 and 25mm chisel to try and create a hole big enough for the failure criteria but with no success. 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 to score into the material. Attacks were then made using a 6 and 25mm chisel to try and create a hole big enough for the failure criteria but with no success. 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			
Defined mechanical loading points			
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 (up) and 4.5kN perpendicular load held for 10s. 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 2: 2nd hinge** 1.5kN parallel (up) and 4.5kN perpendicular load held for 10s. 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s.		**Pass**

Clause	Requirement	Results & Observations	Pass / Fail
	Point 3: 3rd hinge 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 4: Bottom hinge** 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s **Point 5: 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 6: Centre dead bolt** 1.5kN parallel (horizontal) and 4.5kN perpendicular load held for 10s. **Point 7: 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.		
B.4.6 Manual check test	Attacks were made between the 3rd and 4th 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 hook bolt 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 hook bolt and central dead bolt using a nail bar and screwdriver to lever between the leaf and frame, in an attempt to lever out the locks but with no success. Total attack time was 3 minutes. Entry not achieved. Attacks were made between central dead bolt and top hook bolt 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.		**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**

Clause	Requirement	Results & Observations	Pass / Fail
Defined soft & hard body impact ponts			
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: 2nd hinge** 3 impacts applied, entry not achieved. **Point 4: 3rd hinge** 3 impacts applied, entry not achieved. **Point 5: Bottom hinge** 3 impacts applied, entry not achieved.		**Pass**

Clause	Requirement	Results & Observations	Pass / Fail
		Point 6: Bottom hinged edge corner 3 impacts applied, entry not achieved. **Point 7: Bottom locking edge corner** 3 impacts applied, entry not achieved. **Point 8: Bottom hook bolt** 3 impacts applied, entry not achieved. **Point 9: Locking cylinder** 3 impacts applied, entry not achieved. **Point 10: Centre dead bolt** 3 impacts applied, entry not achieved. **Point 11: Top hook bolt** 3 impacts applied, entry not achieved. **Point 12: Top locking edge corner** 3 impacts applied, entry not achieved. No visible damage was caused by these impacts and no entry was gained.	

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

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 to be classified 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.
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.

Element Materials Technology
Unit Three, Wednesbury One
Black Country New Road
Wednesbury
WS10 7NZ, UK

0121 506 7500
Element.com

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