

BS 6375-2&3:2009



Test of: Flamebreak 430 – Single Door – Door Type 1

Performance of windows & doors - Part 2: Operation & strength & Part 3: Additional performance characteristics

A Report To:

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

Document Reference:

WIL 501508-1

Date: 13/12/2021

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TEST CONCLUSIONS

Samples of:
 Manufacturer Pacific Rim Wood Ltd
 Product Flamebreak
 Model Flamebreak 430 – Single Door – Door Type 1

have been tested in accordance with: BS6375-2:2009 & BS6375-3:2009 Annex A&C.
 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:

BS6375-2 Clause	Description	Compliance
6.1	UK Category of Duty - Medium	YES
6.2	Operating forces – Class 1	YES
6.3	Mechanical strength – Class 2	YES
6.3.1	Vertical load – Class 2	YES
6.3.2	Static torsion – Class 2	YES
6.3.3	Soft and heavy body impact – Class 2	YES
6.3.4	Hard body impact – Class 2	YES
6.4	Load bearing capacity of safety devices – 350N	N/A
6.5	Resistance to repeated opening and closing – Class 4	YES
BS6375-3 Clause	Description	Compliance
Annex A	Basic security	YES
Annex C	Closure against obstruction	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

AUTHORISATION

Tests performed by: Chris Bryan, Senior Test Engineer Josh Ratcliffe, 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

**NOTE.**

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

Tests marked NT were not tested

Tests marked NA are not applicable to the product on test.

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 1025 x 2246 x 110mm
Opening leaves 931 x 2151 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 BS 6375-2:2009 & BS 6375-3 :2009
Full test Yes
Test to clauses All
Test methods BS EN 12046-2:2000 operating forces
BS EN 947:1999 vertical load
BS EN 948:1999 static torsion
BS EN 949:1999 soft body impact
BS EN 950:1999 hard body impact
BS EN 948:1999 strength of safety devices
BS EN 1191:2012 Annex H repeated opening & closing
BS 6375-3:2009 Annex A basic security
BS 6375-3:2009 Annex C closure against obstruction

Sample received 09/03/2021
Test started 10/03/2021
Test completed 26/03/2021

Special Test
requirements
Other reports to be
used in conjunction
with this report

TEST PROCEDURE

Introduction	<p>This test report should be read in conjunction with the Standard BS 6375-2:2009 Performance of windows and doors – Part 2: Classification for operation and strength characteristics and guidance on selection & specification and Part 3: Classification for additional performance characteristics and guidance on selection and specification.</p> <p>The specimens were judged on their ability to comply with the performance criteria as required in BS 6375-2:2009 and BS6375-3:2009, with test methods BS EN 12046-2:2000, BS EN 947:1999, BS EN 948:1999, BS EN 949:1999, BS EN 950:1999, BS EN 1191:2012 Annex H and BS6375-3:2009 Annex A&C. classified in accordance with BS 6375-2:2009, BS EN 12217:2015, BS EN 1192:2000 & BS EN 12400:2002.</p>
Instruction To Test	<p>Initial requirement was for a UK category of use of medium duty as defined in BS6375-2, requiring a performance of Class 1 for operating forces, Class 2 for mechanical strength, a threshold value of 350N for load-bearing capacity of safety devices, and Class 4 for repeated opening and closing.</p>
Test Specimen Construction	<p>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.</p>
Installation	<p>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.</p>
Sampling	<p>The samples were not independently witnessed or selected and were provided direct from the test sponsor.</p>
Test Climate	<p>The sample was conditioned in the laboratory in the range 15-30 °C and 25-75% humidity.</p> <p>The temperature and humidity in the lab was maintained in the range 18.3-21.7°C and 34-50.6% humidity for the duration of the test.</p>

INITIAL OBSERVATIONS

The external face
of the sample



Sample Handle



Sample Keep



Sample Keep



**Sample internal
of hinge**



**Sample external
face of hinge**



Sample locking

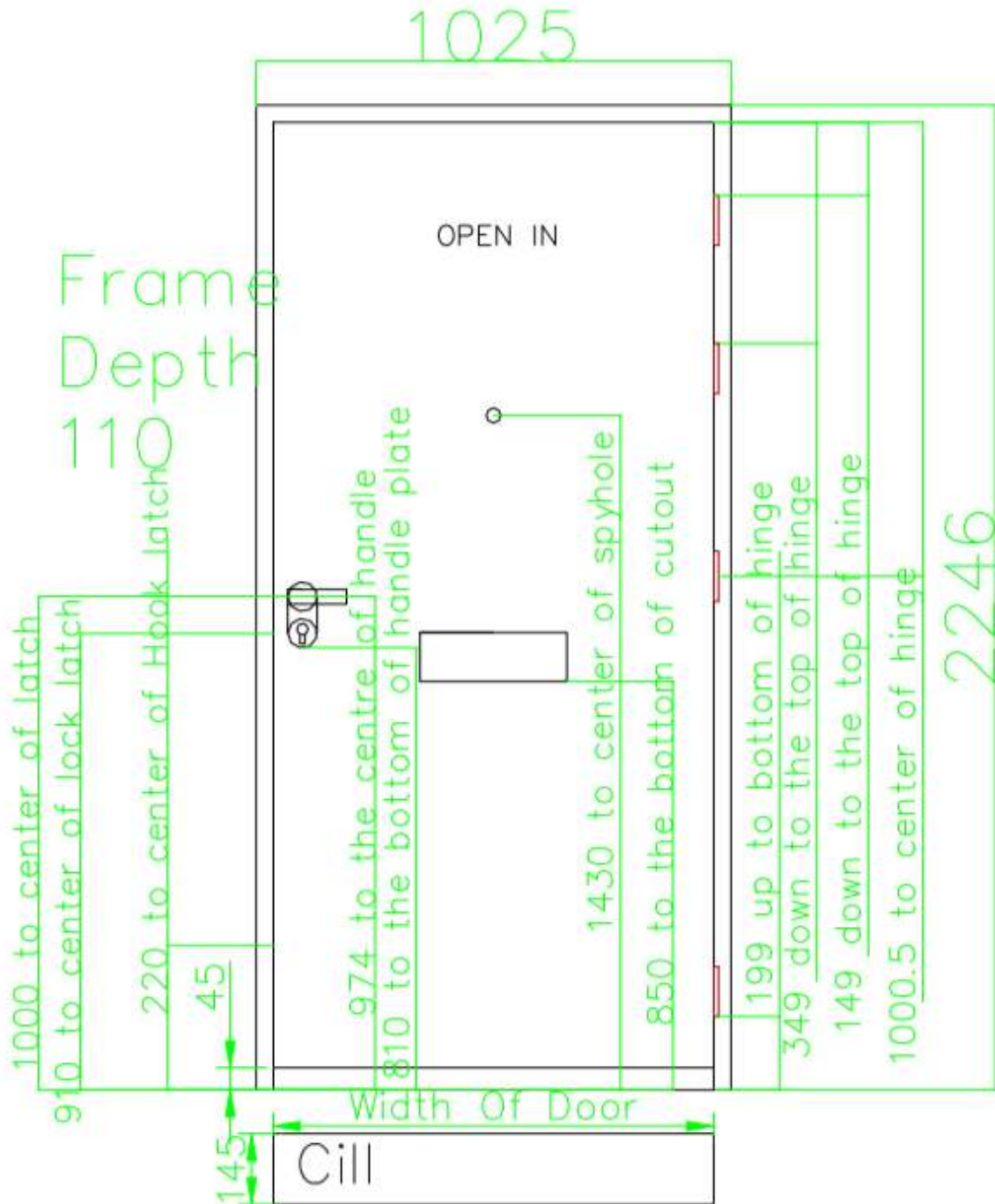


Sample locking



TEST SPECIMEN

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



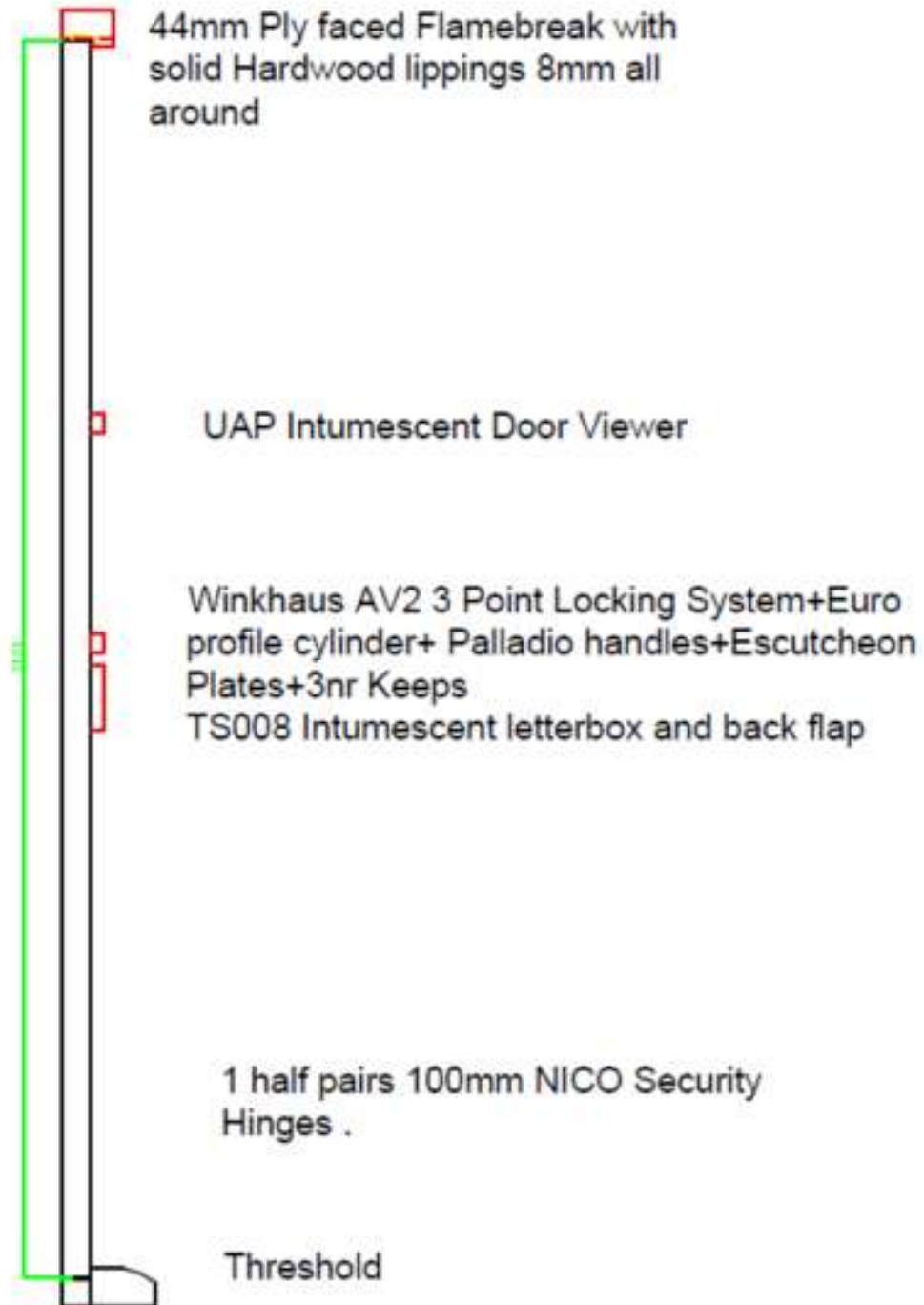
Do not scale. All dimensions are in mm

Figure 2 – Horizontal section



Do not scale. All dimensions are in mm

Figure 3 – Vertical section



Do not scale. All dimensions are in mm

SCHEDULE OF COMPONENTS

Refer to Figures 1 to 3

All values are nominal unless stated otherwise

The schedule of components is based on a survey of the specimens and information supplied by the client.

Variants

None

Item

Description

1. Door frame head

Reference	:	Custom
Material	:	Sapele
Density	:	661.52 kg/m ³ (stated)
Section size	:	110 mm wide x 59 mm thick
Rebate	:	50 mm wide x 15 mm 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	:	110 mm wide x 59 mm thick
Rebate	:	50 mm wide x 15 mm deep integral with frame

3. Door frame sill

Reference	:	Custom
Material	:	Sapele
Density	:	661.52 kg/m ³ (stated)
Section size	:	145 mm wide x 60mm high
Rebate	:	50 mm wide x 15 mm 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

<u>Item</u>	<u>Description</u>
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	: 931 x 2151 x 44mm
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. stile	: 36mm thick x 35mm deep – incorporating a 9mm x 9mm tongue
ii. top rail	: 36mm thick x 35mm deep – incorporating a 9mm x 9mm tongue
iii. bottom 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

<u>Item</u>	<u>Description</u>
8. Door leaf core	
Supplier/manufacturer	: Flamebreak 430
Material	: Albisia Falcatta – Trilaminate core
Density	: 140 – 360 kg/m ³ (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
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 640kg/m ³ (Stated)
Section size	: 44mm wide x 8mm thick
Details of adhesive	
i. supplier	: Adkwick
ii. reference	: Kleiberit 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	: 954.5mm 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	
ii. type	: Wood screw
iii. size	: 4.5mm diameter x 30mm long
iv. quantity	: 4no
Fixing hinge to frame	
i. type	: Wood screw
ii. size	: 4.5mm diameter x 30mm long
iii. quantity	: 4no

Item

Description

12. Lock

Supplier/manufacture	:	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		
i. type	:	Wood screw
ii. size	:	3.5mm diameter x 50mm long
iii. quantity	:	12no

13. Lock Keeps

Supplier/manufacture	:	Winkhaus GmbH & Co
Reference		
i. top & bottom keeps	:	STVSBV2
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/manufacture	:	ERA
Description	:	35/35 key/thumbturn
TS007 (if applicable)	:	Yes
Reference	:	BS-L-T3535-51
Overall size	:	34 mm high x 17 mm wide x 70 mm long euro profile
Fixings		
i. type	:	M5 Machine Screw
ii. quantity	:	1 No.

Item

Description

15. Lever handles

Supplier/manufacture	:	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: 258 mm high x 34 mm wide x 15 mm thick x 4 mm cylinder incorporated escutcheon projection Internal face plate: 258 mm high x 34 mm wide x 10 mm 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/manufacture	:	UAP Limited
Description	:	14mm Wide angle door viewer
Reference	:	
Overall size	:	14 mm 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/manufacture	:	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	:	115 mm high x 305 mm wide x 6 mm 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

PERFORMANCE CRITERIA & TEST RESULTS

Clause	Result	Pass/Fail
BS6375-2 6.2 Operating forces	<p>The average force required to enable the sample to latch must not exceed those defined in table 1 of BS EN 12217, Class 1 (75N) for external doorsets & class 2 (50N) for internal doorsets. The average force or torque required to operate the hardware must not exceed those defined for the relevant class in table 1 on BS EN 12217, Class 1 (100N or 10Nm) for external doorsets & class 2 (50N or 5Nm) for internal doorsets). The average force required to commence and maintain motion must not exceed those defined for the relevant class in table 1 on BS EN 12217, Class 1 (75N) for external doorsets & Class 2 (50N) for internal doorsets</p> <p>The sample met the requirements of Class 2.</p> <p>An average force of 12N was required to latch the sample. An average force of 43.33N was required to disengage and 0N was required to engage the hardware. An average torque of 0.11Nm was required to lock and 0.11Nm was required to unlock the doorset. An average force of 11.9N was required to commence and maintain motion.</p>	PASS CLASS 2
BS6375-2 6.3.1 Vertical load	<p>The doorset was tested in accordance with EN 947, under a load of 600N as required by Class 2 of EN 1192, with a preload of 200N. To achieve the requirements of the class the resultant residual deformation should not exceed 1mm, and the specimen should continue to operate normally.</p> <p>A load of 600N was applied, no damage was observed, and the doorset continued to operate normally.</p> <p>The sample met the requirements of Class 2. The deflection under full load was 3.11mm, and the residual deflection was 0.67mm.</p>	PASS CLASS 2
BS6375-2 6.3.2 Static torsion	<p>The doorset was tested in accordance with EN 948, under a load of 250N as required by Class 2 of EN 1192, with a preload of 200N. To achieve the requirements of the class the resultant residual deformation should not exceed 2mm, and the specimen should continue to operate normally.</p> <p>A load of 250N was applied, no damage was observed, and the doorset continued to operate normally.</p> <p>The sample met the requirements of Class 2. The deflection under full load was 28.32mm, and the residual deflection was 0.67mm.</p>	PASS CLASS 2

Clause	Result	Pass/Fail
BS6375-2 6.3.3 Soft & heavy body impact	<p>The doorset was tested in accordance with EN 949, a soft & heavy body impact of 60J was applied as required for class 2. To achieve the requirements of the class the resultant residual deformation in flatness should not exceed 2mm, and the specimen shall continue to operate normally.</p> <p>The sample met the requirements of class 2, with a residual deformation of 0mm on the internal face, and a residual deformation of 0mm on the external face.</p> <p>No damage was observed during the test</p>	PASS CLASS 2
BS6375-2 6.3.4 Hard body impact	<p>The doorleaf was tested in accordance with EN 950, hard body impacts of 3J were applied as required for class 2.</p> <p>To achieve the requirements of the class the mean value of the diameters of indentation should not exceed 20mm, and the mean values of the depths of indentation should not exceed 1.0mm, with the maximum depth not exceeding 1.5mm.</p> <p>The sample met the requirements of class 2. The mean value of the depth of indentation was 0.12mm. The maximum value of the depth of indentation was 0.22mm. The mean value of the diameter of indentation was 7.6mm.</p> <p>No damage was observed during the test.</p>	PASS CLASS 2
BS6375-2 6.4 Load-bearing capacity of safety devices	<p>This test was not carried out as no such device was fitted to the doorset.</p>	N/A
BS6375-2 6.5 Resistance to repeated opening and closing	<p>Prior to the cyclic operation test, when tested in accordance with EN 12046-2, the sample met the requirements for Class 2.</p> <p>The sample met the requirements of Class 2.</p> <p>An average force of 13.37N was required to latch the sample An average force of 44.7N was required to disengage. An average torque of 0.12Nm was required to lock and 0.12Nm was required to unlock the doorset. An average force of 11.97N was required to commence and maintain motion.</p>	PASS

Clause	Result	Pass/Fail
	<p>The number of cycles completed by the doorset was 50,000, as required by Class 4 of the standard, for medium duty. The stroke of the doorleaf was 90 degrees. Observations and measurement were carried out at intervals of 25% of the total cycles. No lubrication or adjustment was specified by the client.</p> <p>The weight of the tested doorleaf was approximately 31 to 32 kg, and the dead load applied on the leaf by the operating equipment 0.65kg.</p> <p>No damage after test</p>	PASS CLASS 4
	<p>Following the cyclic operation test, when tested in accordance with EN 12046-2, the sample continued to meet the requirements for Class 2.</p> <p>The sample met the requirements of Class 1.</p> <p>An average force of 12.6N (V=-6%) was required to latch the sample. An average force of 50.67N (V=40%) was required to disengage and 1N (V=0%) was required to engage the hardware. An average torque of 0.11Nm (V=-11)% was required to lock and 0.11Nm (V=-6%) was required to unlock the doorset. An average force of 14.33N (V=20%) was required to commence and maintain motion.</p>	PASS
BS6375-3 Annex A Basic security	<p>Attacks were made with the craft knife to try and remove the material from around the hinge and try to gain access to the hinge fixings. Some of the material was removed, but no further damage was made. Total attack time was 3 minutes. Entry not achieved .</p>	PASS
BS6375-3 Annex C Closure against obstruction	<p>No visible damage was observed under the application of a 200N load with the bottom hinge corner obstructed from closing.</p> <p>The doorset continued to latch and the operating forces met the requirements of Class 2.</p> <p>An average force of 13.8N was required to latch the sample.</p> <p>An average force of 33.6N was required to disengage and 0N was required to engage the hardware.</p> <p>An average torque of 0.12Nm was required to lock and 0.12Nm was required to unlock the doorset.</p> <p>An average force of 14.5N was required to commence and maintain motion.</p>	PASS

CONCLUSIONS

Evaluation against objective

The sample as provided by the client was subjected to operational & strength testing in accordance with BS 6375-2:2009 and achieved the requirements for a UK category of use of medium duty.

The sample was also subjected to closure against obstruction testing in accordance with BS 6375-3:2009 Annex A & Annex C and achieved the requirements

Observations & comments

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 door assemblies covered by this report

It is our opinion that the range of door 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.

The standard specifies the following tolerances

- Forces: $\pm 2\%$
 - Distances: $\pm 1\text{mm}$ for tape measures $\pm 0.01\text{mm}$ for dial gauges
 - Times: $\pm 5\text{s}$
-

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