

BS 6375-2&3:2009



Test of: FD60 Single Doorset with Winkhaus Lock

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

A Report To:

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

Document Reference:
WIL 418724

Date: 25/03/2020

Copy: 1

Issue No.: 1

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TEST CONCLUSIONS

Samples of:
 Manufacturer Pacific Rim Wood Limited
 Product Doorset
 Model FD60 Single Doorset with Winkhaus Lock

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
Macauley Buchan, Trainee Test Engineer

Report issued by: Josh Ratcliffe, Test Engineer

Signed



Date 24/03/2020

For and on behalf of Element Materials Technology

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

Signed



Date 25/03/2020

For and on behalf of Element Materials Technology

Report issued: 25 March 2020



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 Limited
Address Ground Floor Suite
Block B
The Old Kelways
Somerton Road
Langport
Somerset
TA10 9SJ

Contact Lisa-Marie McGee

ORDER DETAILS

Order number "PRW/Flamebreak/Pas24/Sep19"
Dated 29/08/2019

SAMPLE DETAILS

Outer frame 1000 x 2115 x 90mm
Opening leaves 928 x 2033 x 54mm
Configuration Single doorset/ open-in
Material Timber
Details of Hardware
Hinges 3No. Eurospec Butt Hinges. Ref: Hln 1433
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 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 06/09/2020
Test started 10/09/2020
Test completed 18/02/2020

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 5 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 21.6-23.6°C and 50.6-56.4% humidity for the duration of the test.</p>

INITIAL OBSERVATIONS

**The internal face
of the sample**



Sample Handle



Sample Cylinder



Sample Keep



Sample Keep



Sample Keep



**Sample Internal
face of hinge**



Sample Locking



Sample Locking

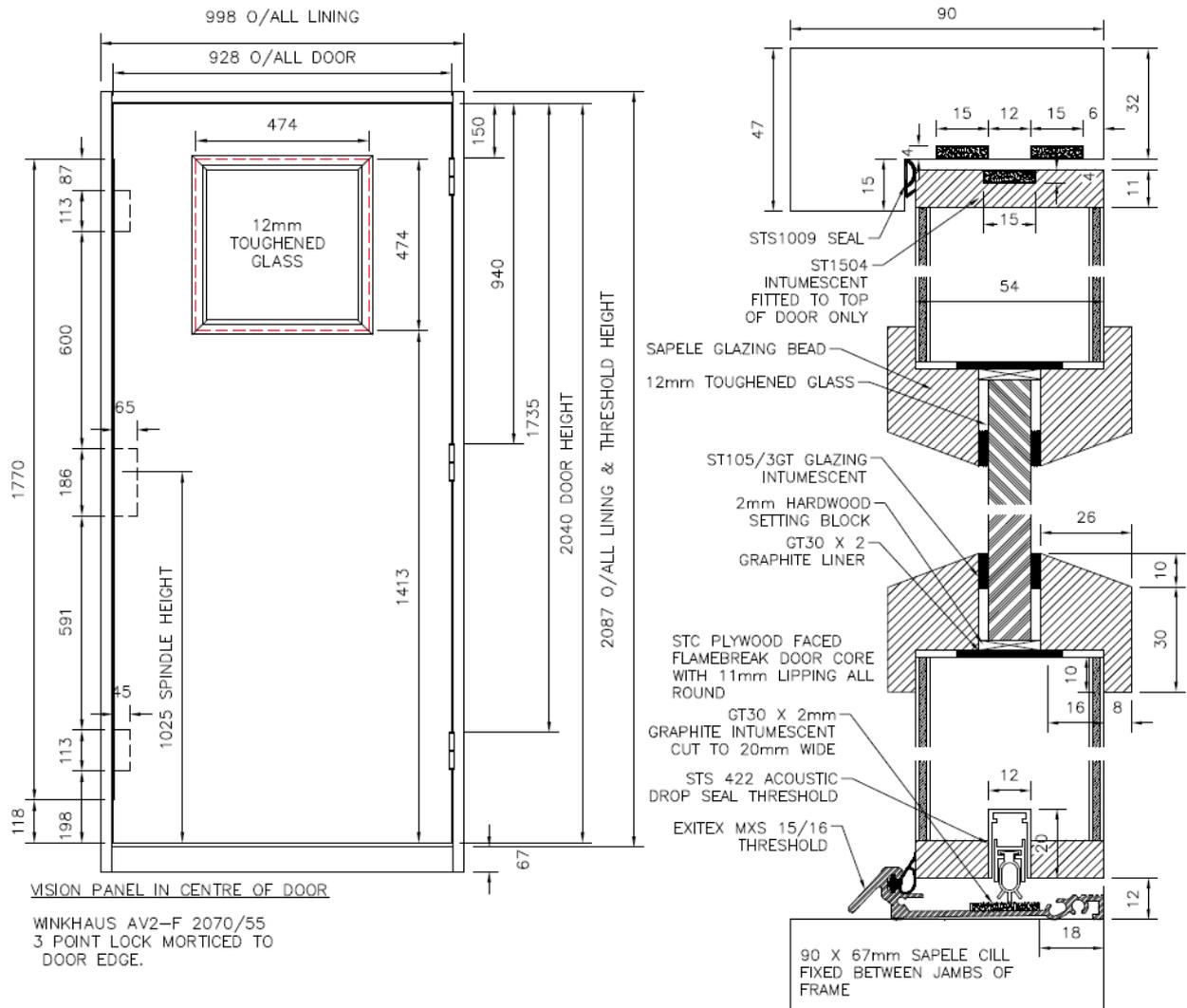


Sample Locking



TEST SPECIMEN

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



Do not scale. All dimensions are in mm

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

<u>Item</u>	<u>Description</u>
1. Door frame head	
Material	: Sapele
Density	: >640kg/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	: Sapele
Material	: >640 kg/m ³ (stated)
Density	: 90 x 47mm
Section size	: 15mm
3. Door frame sill	
Reference	:
Material	: Sapele
Density	: >640 kg/m ³ (stated)
Section size	: 67 x 90mm
Rebate	:
Fixing jamb to sill joints	: Screwed through jambs
Details of adhesive	: PVA
4. Door frame weather seals	
Description	: MXS 15/16
Manufacturer	: Exitex
Reference	: MXS 15/16
Fixing method	: Screw fixing to floor level
Position	: Threshold – in between jambs
Continuity	: Uninterrupted by hardware
5. Door frame intumescent seals	
Description	: 2x ST1504
Manufacturer	: Sealed Tight solutions
Reference	: ST1504
Fixing method	: Connection bonded with instant adhesive
Position	: Three edges – jambs and head
Continuity	: Uninterrupted by hardware

<u>Item</u>	<u>Description</u>
6. 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
7. Door leaf	
Supplier/manufacturer	: Flamebreak Type 660 – Plywood faced
Overall leaf size	: 928 x 2040 x 54mm
8. Door leaf core	
Supplier/manufacturer	: Flamebreak Type 660
Thickness	: 54mm
9. Door leaf lippings	
Position	: Fitted to four edges
Material	: Sapele
Density	: >640kg/m3 (stated)
Section size	: 11mm
Details of adhesive	: PUR glue, Tehcnomelt PUR Henkel
10. Door leaf weather seals	
Description	: MXS 15/16
Manufacturer	: Exitex
Reference	: MXS 15/16
Fixing method	: Screw fixing to floor level
Position	: Threshold – in between jambs
Continuity	: Uninterrupted by hardware
11. Door leaf intumescent seals	
Description	: ST1504 x 2
Manufacturer	: Sealed Tight solutions
Reference	: ST1504
Fixing method	: Connection bonded with instant adhesive
Position	: 1 Centrally along head of door leaf only
Continuity	: Uninterrupted by hardware
12. Door leaf glazed panel	
Supplier	: AGC Pyrobelite
Thickness/configuration	: 12mm toughened glass
Overall size	: 474 x 474mm
Nominal edge clearance	: 12No. overall
13. Glazing setting blocks	
Supplier	: Blumsons Timber
Material	: Sapele
Thickness	: 2mm
Overall size	: 2 x 20 x 25mm

<u>Item</u>	<u>Description</u>
14. Glazing tape – Internal face	
Supplier	: Sealed Tight Solutions
Reference	: ST105 3GT
Material	: Silicone
Thickness	: 3mm
Overall size	: 10 x 3mm
Fixing method	: Self-adhesive – then sealed with silicone on top
11a Glazing Liner	
Supplier	: Sealed Tight Solutions
Reference	: ST30 Graphite Liner x 2
Material	: Graphite
Thickness	: 2mm
Overall size	: 30 x 2mm
Fixing method	: Self-adhesive
15. 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
16. Glazing beads	
Glazing method	: Cassette beaded - cloak
Material	: Sapele
Density	: >640kg/m ³ (stated)
Section size	: 40 x 26mm
Fixing method	:
i. type	: Glazing pins
ii. size	: 60mm
iii. quantity	: 16No.
iv. centres	: 150mm

Item

Description

17. Hinges

Supplier/manufacture	:	Eurospec
Description	:	Butt Hinges
Reference	:	HIn 1433
Primary material	:	Stainless Steel
Size of knuckle	:	14mm
Size of blades	:	100 x 29mm
Quantity	:	3No.
Position of hinges		
i. top hinge	:	150mm from top of door to top of hinge
ii. middle hinges	:	940mm from top of door to top of hinge
iii. bottom hinge	:	1735mm from top of door to top of hinge
Fixing hinge to doorleaf		
i. type	:	Screws
ii. size	:	4.8 x 30mm
iii. quantity	:	4No.
Fixing hinge to frame		
i. type	:	Screws
ii. size	:	4.8 x 30mm
iii. quantity	:	4No.

18. Lock

Supplier/manufacture	:	Winkhaus
Description	:	AV2-F 3-point lock
Reference	:	2070-45
Face plate size	:	20 x 1770 x 5mm
Intumescent protection (if applicable)	:	ST30 Graphite Lock Kit & ST10 x 2 along back of plate/strip
Position	:	1070mm to centre of spindle/lock
Fixings		
i. type	:	Woodscrews
ii. size	:	7 x 38mm
iii. quantity	:	12No.

19. Lock Keeps

Supplier/manufacture	:	Winkhaus
Description	:	Keeps
Reference		
i. top & bottom keeps	:	F24-908 – single pocket keep
ii. centre keep	:	F24-908 Centre-keep
Material	:	Heavy duty steel keeps
Intumescent protection (if applicable)	:	STS Graphite FS567 AV2 Kit
Overall size		
i. top & bottom keeps	:	24 x 235 x 2.5mm
Fixing keeps to frame		
i. type	:	Wood screws
ii. size	:	2 x 25mm
iii. quantity	:	7No.

Item

Description

20. Cylinder

Supplier/manufacture : UAP
 Description : Kinetica Cylinder
 TS007 certification ref (if applicable) : KM 561977
 Reference : KIN35T/35NAS
 Overall size : 82mm
 Intumescent protection (if applicable) :
 Fixings
 i. type : Screw
 ii. size : M5 x 55mm
 iii. quantity : 1No.

21. Lever handles

Supplier/manufacture : 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 : Screws
 ii. size : M5 x 55mm
 iii. quantity : 2No.

22. Door closer

Supplier/manufacture : Rutland
 Description : Face fixed door closer
 Reference : TS 3204
 Overall size : 220 x 59mm
 Fixing device to doorleaf
 i. type : Screws
 ii. size : 10 x 30mm
 iii. quantity : 4No.
 Fixing device to frame
 i. type : Screws
 ii. size : 10 x 38mm
 iii. quantity : 2No.

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 23.6N was required to latch the sample. An average force of 29.1N 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 10.37N 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. The sample met the requirements of Class 2. The deflection under full load was 2.34mm, and the residual deflection was 0.97mm.</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 2.32mm, and the residual deflection was 0.76mm.</p>	PASS CLASS 2
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>	PASS CLASS 2

Clause	Result	Pass/Fail
	<p>The sample met the requirements of Class 2, with a residual deformation of 0.01mm on the internal face, and a residual deformation of 0mm on the external face.</p> <p>No damage was observed during the test</p>	
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 0.08mm. The maximum value of the depth of indentation was 0.12mm. The mean value of the diameter of indentation was 7.79mm.</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>	PASS
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>An average force of 10.13N was required to latch the sample. An average force of 28.17N was required to disengage. An average torque of 0.2Nm was required to lock and 0.18Nm was required to unlock the doorset. An average force of 14.63N was required to commence and maintain motion.</p> <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 46.78 kg/pc, and the dead load applied on the leaf by the operating equipment was 0.5kg.</p> <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>	PASS CLASS 4 PASS

Clause	Result	Pass/Fail
BS6375-3 Annex A Basic security	<p>An average force of 37.77N (V=273%) was required to latch the sample. An average force of 38.53N (V=37%) was required to disengage. An average torque of 0.12Nm (V=-39)% was required to lock and 0.11Nm (V=-39%) was required to unlock the doorset. An average force of 22.8N (V=56%) was required to commence and maintain motion.</p> <p>Testing was carried out on the doorset, the total attack time required was 3 minutes.</p> <p>Attacks were made with the craft knife to try and remove the timber from around the glazing and attempt to lever out, some of the material was able to be removed, but no significant damage was made. Total attack time was 3 minutes. Entry not achieved Entry was not gained and the test was deemed to pass.</p>	PASS
BS6375-3 Annex C Closure against obstruction	<p>Testing was carried out on the doorset.</p> <p>No visible damage was observed under the application of a 200N load with the bottom hinge corner obstructed from closing.</p> <p>Following testing the operating forces met the requirements of Class 2. An average force of 24.7N was required to latch the sample. An average force of 29.9N 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 10.43N 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:	

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

END OF REPORT