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Title:

The Fire Resistance Performance of Single-Acting, Single-Leaf, Panelled Timber Doorsets

WF Report No:

362490 Issue 2

Prepared for:

Rohden UK Ltd
Unit 2
Hayleys Manor Farm
Upland Road
Epping Upland
Essex
CM16 6PQ

Date:

4th March 2016

Warringtonfire Testing and Certification Limited
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Company Registration No: 11371436

Foreword

This assessment report has been commissioned by Rohden UK Ltd and relates to the fire resistance of Single-Acting, Single-Leaf, Panelled Timber Doorsets.

This assessment is for National Application and has been written in accordance with the general principles outlined in BS EN 15725: 2010; *Extended application reports on the fire performance of construction products and building elements*, as appropriate.

This assessment uses established empirical methods of extrapolation and experience of fire testing similar assemblies, in order to extend the scope of application by determining the limits for the design based on the tested constructions and performances obtained. The assessment is an evaluation of the potential fire resistance performance, if the elements were to be tested in accordance with Clause 6 of BS 476: Part 22: 1987. This assessment cannot therefore be considered for a CE marking application nor can the conclusion be used to establish a formal classification against EN13501-2.

This assessment has been written using appropriate test evidence generated at an appropriately accredited laboratory to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturers stated design and is summarised in the Supporting data section of this report.

The defined scope presented in this assessment report relates to the behaviour of the proposed design under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the assembly in use.

This assessment has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the PFPF guidelines to undertaking technical assessments of the fire performance of construction products based on fire test evidence. The aim of the PFPF guidelines is to give confidence to end-users that assessments based on fire test evidence that exist in the UK are of a satisfactory standard for building control and other purposes.

The PFPF guidelines are produced by the UK Fire Test Study Group (FTSG) an association of the major fire testing laboratories in the UK and are published by the PFPF, the representative body for the passive fire protection industry in the UK.

TABLE OF CONTENTS

SECTION PAGE

Executive Summary

Objective

This report presents an appraisal of the fire resistance performance of single-acting, single-leaf, panelled timber doorsets.

The proposed doorsets, which are described in the Proposals section of this report, are required to provide 30 minutes integrity and insulation performance if subjected to a fire resistance test in accordance with Clause 6 of BS 476: Part 22: 1987.

Report Sponsor

Rohden UK Ltd

Address

Unit 2
Hayleys Manor Farm
Upland Road
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Summary of Conclusions

Should the recommendations given in this report be followed, it can be concluded that the proposed timber doorsets should provide at least 30 minutes integrity and insulation performance, if tested in accordance with Clause 6 of BS 476: Part 22: 1987.

This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with Clause 6 of BS 476: Part 22: 1987, on the basis of the evidence referred to above. We express no opinion as to whether that evidence, and/or this assessment, would be regarded by any Building Control authority as sufficient for that or any other purpose. This assessment is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

Valid until

1st April 2026

Introduction

This report presents an appraisal of the fire resistance performance of single-acting, single-leaf, panelled timber doorsets, which are similar in construction to a previously fire tested assembly.

The proposed doorsets are required to provide a fire resistance performance of 30 minutes integrity and insulation, if subjected to a fire resistance test in accordance with Clause 6 of BS 476: Part 22: 1987.

FTSG/PFPF

The data referred to in the supporting data section has been considered for the purpose of this appraisal which has been prepared in accordance with the Fire Test Study Group Resolution No. 82: 2001 and the Passive Fire Protection Federation (PFPF) Guide to Undertaking Technical Assessments of Fire Performance of Construction Products Based on Fire Test Evidence 2021.

Assumptions

General Construction

It is assumed that the doorsets shall be constructed and installed in an identical manner to the previously fire tested doorset described in this report, unless otherwise specified.

Supporting Construction

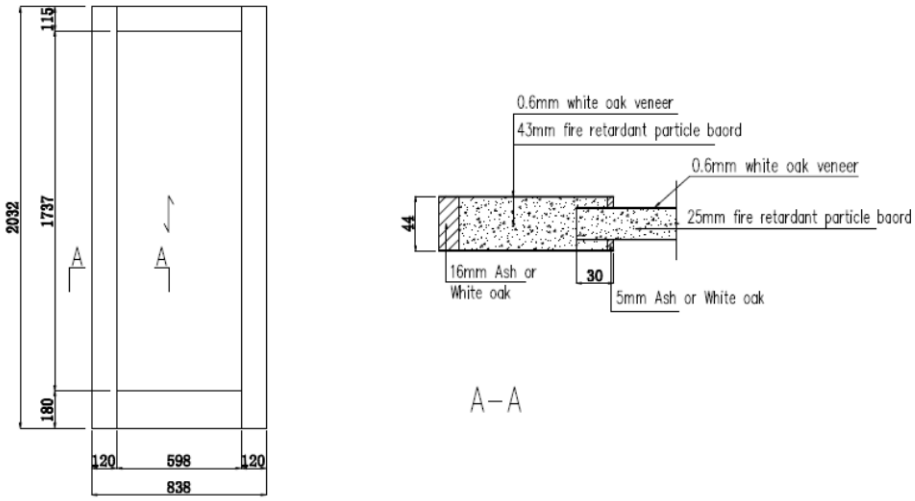
It is assumed that the doorsets shall be installed within a fire rated supporting construction, which has separately proven to be capable of supporting the doorsets for the required period of 30 minutes.

Clearance Gaps

Door leaf to frame clearance gaps can have a significant effect on the overall fire performance of a doorset. It is therefore assumed that the leaf to leaf and leaf to frame clearance gaps will not exceed those of the fire tested assemblies, and in no case shall exceed 3 mm.

Proposals

WF Test Report No. 360994 Issue 2 describes a fire resistance test performed on a single-acting, single-leaf timber doorset as shown below:



Tested Door Assembly

It is proposed that the doorsets may incorporate the following modifications.

- Doorset to incorporate a single muntin bar bonded vertically to the panel at mid-span, on both sides of the doorset. Model to be referenced ***Hitchin.***
- Doorset to incorporate a two decorative muntin bars bonded vertically to the panel on both sides of the doorset, the depth of the top rail is be increased to 120 mm and the Panel aperture lining changed to a decorative moulded profile. Model to be referenced ***York.***
- Doorset to incorporate three additional muntin bars evenly spaced and bonded horizontally to the panel on both sides of the doorset, creating a four panel appearance. Model to be referenced ***Marlow.***

Its required the above changes will not detract from the previously achieved fire performance of 30 minutes integrity and insulation, with respect to Clause 6 of BS 476: Part 22: 1987.

Basic Test Evidence

WF Test Report No. 360994 Issue 2

A fire resistance test in accordance with BS 476: Part 22: 1987, Clause 6, on a specimen of a fully insulated single-acting, single-leaf doorset.

The doorset had overall nominal dimensions 2075 mm high by 910 mm wide incorporating a door leaf with overall dimensions 2032mm high by 837 mm wide by 44 mm thick. The door leaf was constructed of a central panel of 25 mm thick fire retardant particle board with 43 mm fire retardant particle board stiles and rails with 16 mm white oak lippings to all four edges all coated with a 0.6 mm white oak vaneer.

The leaf was hung within a softwood frame on three Royde and Tucker stainless steel hinges referenced ‘Hi-Load 102’ and incorporated a Magnet tubular mortice latch referenced ‘64076804 Vic straight’ and a Ingersoll Rand Architectural Hardware surface mounted door closer referenced ‘Briton 121’.

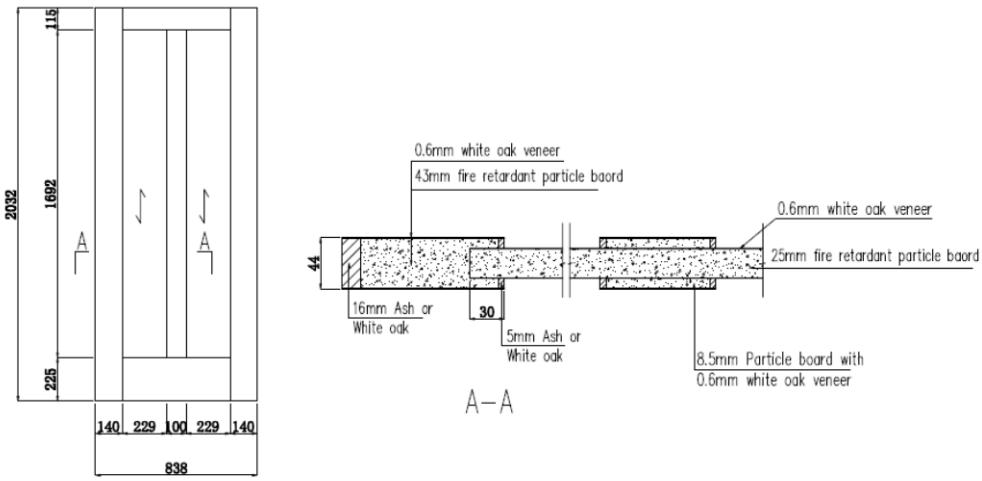
The doorset was un-latched and was installed so that it opened towards the heating conditions of the test.

The Doorset satisfied the integrity and insulation performance criteria for a period of 36 minutes.

Assessed Performance

Hitchin

The proposed design is identical to the doorset previously tested under WF 360994 Issue 2, with the following exceptions: the width of the outer stiles are increased by 20 mm; the depth of the bottom rail is increased by 45 mm and vertical muntin bars are bonded to the panel at mid-span, on both sides of the doorset.



Proposed Hitchin Design

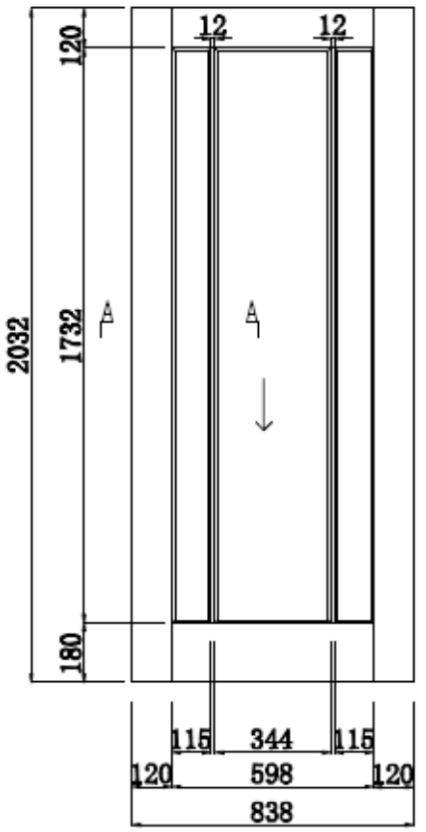
The perimeter framing details of the proposed design are structural identical to the doorset previously tested under WF Test Report No. 360994 Issue 2, which have already proven to be capable of contributing to the required fire performance. However it's proposed that the width of the bottom rail is increased to 225 mm from the tested 180 mm and the width of the outer stiles are increased to 140 mm from the tested 120 mm. The proposed increases in size of the perimeter frame members can be expected to be beneficial in terms of the required fire performance, it's anticipated that the increase in size will provide increased stability of door leaf under test conditions leading to smaller deflections during the required 30 minute test period, contributing positively to the required fire performance.

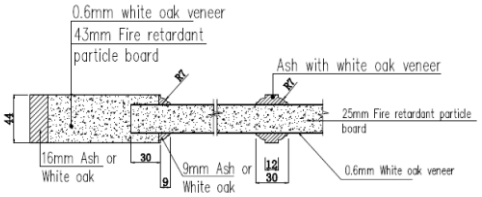
It's anticipated that the addition of the proposed centrally located and vertically orientated muntin bars will not detract from the required fire performance and may even provide some additional restraint to panel, contributing to the required fire performance.

The proposed 'Hitchin' door design may therefore be positively appraised.

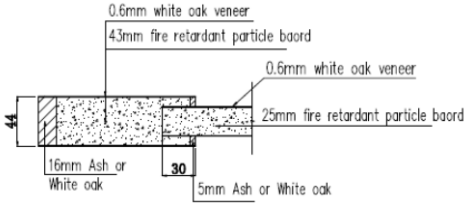
York

The proposed design is identical to door tested under WF 360994 Issue 2 with the following exceptions: Two decorative vertically orientated muntin bar are bonded to the panel; the depth of the top rail is increased to 120 mm and the square finish panel aperture lining is replaced with a moulded aperture lining.





York Aperture Lining



Tested Aperture Lining

<u>Proposed York Design</u>

The perimeter framing details of the proposed design are identical to the doorset previously tested under WF Test Report No. 360994 Issue 2, which have already proven to be capable of contributing to the required fire performance. However it's proposed that the width of the top rail is increased to 120 mm from the tested 115 mm. The increase in the depth of the top rail can only be beneficial in terms of the required fire performance since this would be expected to provide increased stability across the head of the door leaf.

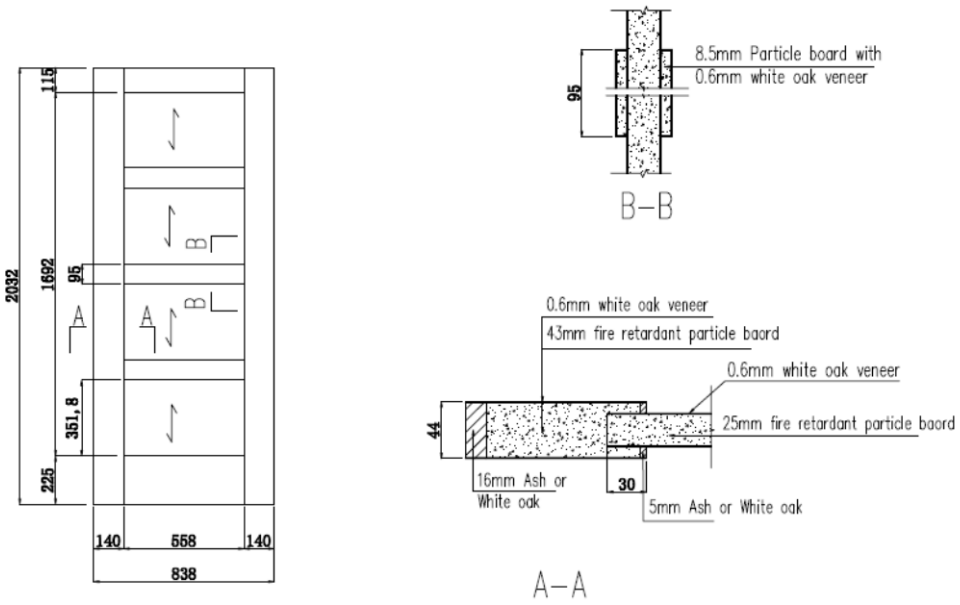
It's anticipated that the proposed decorative muntin bars will not detract from the required fire performance and may even provide some additional restraint to panel, contributing to the required fire performance.

The tested panel aperture linings were formed from 5 mm thick white Oak sections bonded to the inside edges of the framework. It's proposed that this lining is replaced with a 9 mm white Oak moulding. A review of the observations from WF Test Report No. 360994 Issue 2, reveals that there were no integrity failures associated with panel aperture lining of the doorset for the entire test duration of 36 minutes, providing confidence in this joint detail. Although the proposed linings have a different profile the overall size is increase and could therefore be expected to positively contribute to the required fire performance.

The proposed 'York' door design may therefore be positively appraised.

Marlow

The proposed design is identical to the doorset previously tested under WF 360994 Issue 2, with the following exceptions: the width of the outer stiles are increased by 20 mm; the depth of the bottom rail is increased by 45 mm and additionally three additional muntin bars are bonded horizontally to the panel on both sides of the doorset, creating a four panel appearance.



Proposed Marlow Design

The proposed increase in the width of the stiles and in the depth of the bottom rail would be expected to produce a more dimensionally stable leaf which could be expected to experience smaller deflections/distortions during the required 30 minute test period, contributing positively to the required fire performance.

It's anticipated that the addition of the proposed horizontally orientated muntin bars will not detract from the required fire performance and may even provide some additional restraint to the panel, contributing to the required fire performance.

The proposed 'Marlow' door design may therefore be positively appraised.

Conclusions

The doorsets considered within this report would be expected to provide 30 minutes integrity and insulation performance, if subjected to a fire resistance test in accordance with Clause 6 of BS 476: Part 22: 1987.

This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with Clause 6 of BS 476: Part 22: 1987, on the basis of the evidence referred to above. We express no opinion as to whether that evidence, and/or this assessment, would be regarded by any Building Control authority as sufficient for that or any other purpose. This assessment is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

Review

It has been confirmed by Rohden UK Ltd that there have been no changes to the specification, materials or manufacturing location of the Single-Acting, Single-Leaf, Panelled Timber Doorsets considered in the original appraisal referenced WF Assessment Report No. 362490 issued 4th March 2016.

The original assessment has been written using appropriate test evidence generated at accredited test laboratories. The supporting test evidence has been deemed appropriate to support the manufacturers stated design.

The defined scope presented in the original assessment report relates to the behaviour of the proposed design under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the doorsets in use.

This revalidation has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the PFPF guidelines to undertaking technical assessments of the fire performance of construction products based on fire test evidence. The aim of the PFPF guidelines is to give confidence to end-users that assessments based on fire test evidence that exist in the UK are of a satisfactory standard for building control and other purposes.

The PFPF guidelines are produced by the UK Fire Test Study Group (FTSG) an association of the major fire testing laboratories in the UK and are published by the PFPF, the representative body for the passive fire protection industry in the UK.

The data used for the original appraisal has been re-examined and found to be satisfactory. The procedures adopted for the original assessment have also been re-examined and are similar to those currently in use.

Therefore, with respect to the assessment of performance given in WF Assessment Report No. 362490 Issue 2, the contents should remain valid for a further 5 years.

This review is based on information used to formulate the original assessment. No other information or data has been provided by Rohden UK Ltd which could affect this review.

The original appraisal report was performed in accordance with the principles of the UK Fire Test Study Group Resolution 82: 2001. This review has therefore also been conducted using the principles of Resolution 82: 2001.

Validity

This assessment is issued on the basis of test data and information available at the time of issue. If contradictory evidence becomes available to Warringtonfire the assessment will be unconditionally withdrawn and Rohden UK Ltd will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested because actual test data is deemed to take precedence over an expressed opinion. The assessment is valid initially for a period of five years i.e. until 1st April 2026, after which time it is recommended that it be returned for re-appraisal.

The appraisal is only valid provided that no other modifications are made to the tested construction other than those described in this report.

Summary of Supporting Data

WF Test Report No. 360994 Issue 2

A fire resistance test in accordance with BS 476: Part 22: 1987, Clause 6, on a specimen of a fully insulated single-acting, single-leaf doorset.

The doorset had overall nominal dimensions 2075 mm high by 910 mm wide incorporating a door leaf with overall dimensions 2032mm high by 837 mm wide by 44 mm thick. The door leaf was constructed of a central panel of 25 mm thick fire retardant particle board with 43 mm fire retardant particle board stiles and rails with 16 mm white oak lippings to all four edges all coated with a 0.6 mm white oak vaneer.

The leaf was hung within a softwood frame on three Royde and Tucker stainless steel hinges referenced ‘Hi-Load 102’ and incorporated a Magnet tubular mortice latch referenced ‘64076804 Vic straight’ and a Ingersoll Rand Architectural Hardware surface mounted door closer referenced ‘Briton 121’.

The doorset was un-latched and was installed so that it opened towards the heating conditions of the test.

Test Results:

Integrity	36 minutes
Insulation	36 minutes

The test was discontinued after a period of 36 minutes.

Test Date : 1st February 2016

Test Sponsor : Rohden UK Ltd

Declaration by Rohden UK Ltd.

We the undersigned confirm that we have read and complied with the obligations placed on us by the UK Fire Test Study Group Resolution No. 82: 2001.

We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which the assessment is being made.

We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.

We are not aware of any information that could adversely affect the conclusions of this assessment.

If we subsequently become aware of any such information we agree to cease using the assessment and ask Warringtonfire to withdraw the assessment.

Signed:

_____

For and on behalf of:

_____

Signatories

Responsible Officer

S Gilfedder* - Certification Engineer

Approved

A Kearns* - Technical Manager

* For and on behalf of Warringtonfire

Report Issued: 4th March 2016

The assessment report is not valid unless it incorporates the declaration duly signed by the applicant.

Revision History

Issue No: 1	Re-issue Date: 4th March 2016
Revised By: S. Gilfedder	Approved By: A. Kearns
Reason for Revision: Original issue of assessment.	

Issue No: 2	Re-issue Date: 18th March 2021
Revised By: K. Sullivan	Approved By: A. Kearns
Reason for Revision: Review and revalidation for a further five years.	