

**WFRC Assessment report
No. 139746
The Fire Resistance Performance
of Timber Doorsets With
Modified MDF Frames**

Report for

W. Howard Limited

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Astley
Manchester
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Executive Summary

Objective	This report presents an appraisal of the fire resistance performance of timber doorsets as tested under the reference WARRES No. 139085, when modified to include alternative MDF frame details, if tested in accordance with BS 476: Part 22: 1987.
Report Sponsor	W. Howard Limited
Address	Lower Green Lane, Astley Manchester M29 7JZ
Summary of Conclusions	Should the recommendations given in this report be followed, it can be concluded that the doorsets as tested under the reference WARRES No. 139085 but with modified MDF frame details, should provide up to 30 minutes integrity and insulation performance if tested in accordance with BS 476: Part 22: 1987.
Valid until	1 st June 2009

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Introduction

This report presents an appraisal of the fire resistance performance of timber doorsets as tested under the reference WARRES No. 139085, when modified to include alternative MDF frame details.

The proposed doorsets are required to provide a fire resistance performance of up to 30 minutes integrity and insulation with respect to BS 476: Part 22: 1987.

FTSG

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.

Assumptions

Supporting wall

It is assumed that the construction of the wall, which supports the proposed doorsets, will have been the subject of a separate test and the performance of the wall is such that it will not influence the performance of the doorset for the required period.

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 measured within the test referenced WARRES No. 139085.

Door closers

In addition, it is assumed that the door leaf will be in the fully closed position and the door closer, if fitted, will have the required power rating to fully close the door leaf, overcoming the latch mechanism, when the door leaf is operated from the open position.

Doorset details

It is assumed that the proposed doorset will be as previously tested under the reference WARRES No. 139085, with regards to intumescent specification, ironmongery etc, unless detailed otherwise within this appraisal.

Proposals

General

It is proposed that timber doorsets as tested under the reference WARRES No. 139085, may be modified to include alternative MDF frame details.

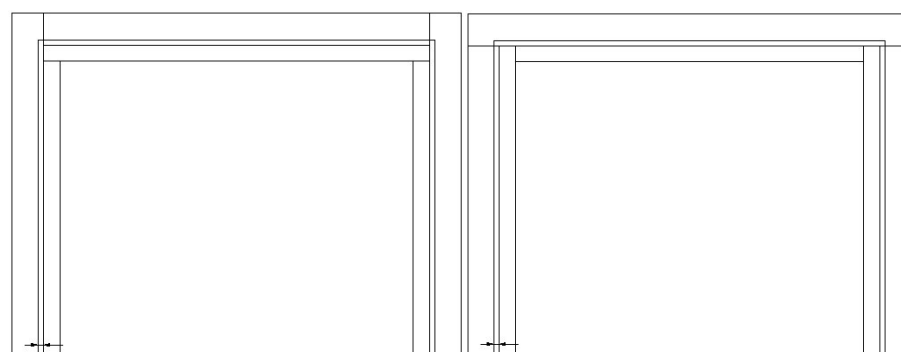
Frame section

It is proposed that sectional dimensions of the frame may be increased from those tested.

Frame jointing

It is proposed that a revised frame jointing configuration may be substituted for that tested, as shown below.

Figure 1



Tested joint detail

Proposed joint detail

Rebated stops It is proposed that the doorset frame may include solid rebated stops.

Basic Test Evidence

The test referenced WARRES No. 139085 included a single-acting, single-leaf timber based doorset including an MDF frame.

The doorset was installed such that the door leaf opened towards the heating conditions of the test and was rendered unlatched for the purpose of the test.

The specimen satisfied the integrity and insulation requirements of the test for a period of 37 minutes.

Assessed Performance

Frame section The MDF frame which was included within the test referenced WARRES No. 139085 was of section size 25 mm wide by 75 mm deep with a planted stop of 12 mm wide by 25 mm deep. The test demonstrated the ability of the doorset including this frame to provide in excess of the required 30 minutes integrity and insulation performance.

It is proposed that the width and depth of this frame section may be increased from the tested dimensions without reducing the fire resistance performance of the doorset.

Increases in the section sizes of the frame would be expected to increase the stability, rigidity and strength of the frame and would therefore be expected to have a slightly positive effect on the performance of the doorset rather than any perceived reduction in performance and the use of frames of section width 25 mm and greater and section depth 75 mm and greater is therefore positively appraised.

Frame jointing

The MDF frame which was included within the test referenced WARRES No. 139085 was vertically jointed such that the head was fixed between the two jambs as shown in Figure 1. The door stops were jointed in the opposite manner with horizontal joints where the top horizontal stop was fixed above the two vertical doorstops. The test demonstrated the ability of the doorset including this frame to provide in excess of the required 30 minutes integrity and insulation performance.

It is proposed that the frame may be jointed in an alternative manner such that the head is fixed above the jambs forming horizontal joints and conversely the stops are vertically jointed such that the top stop is fixed between the two vertical stops as shown in Figure 1. The actual method of fixing the frame members together via 2 x woodscrews remains identical.

Since the actual method of retaining the vertical a horizontal sections together will be identical to that tested albeit in a different orientation, the stability and strength of the frame would be expected to be maintained and therefore would be expected to have little or no effect on the fire resistance performance of the doorset. Similarly provided the joints remain tightly closed as per the tested frame then the orientation of the joints is expected to have little influence on the potential to burn through of the frame at these positions and the use of the alternative frame jointing as shown in Figure 1 is therefore positively appraised.

Rebated stops

The MDF frame which was included within the test referenced WARRES No. 139085 included planted stops of dimensions 12 mm by 25 mm fixed via PVA adhesive and 25 mm long steel pins. The test demonstrated the ability of the doorset including this frame to provide in excess of the required 30 minutes integrity and insulation performance.

It is proposed that the frame may include a solid rebated stop of identical dimensions to the tested planted stop.

The influence of the door stop on the fire resistance performance of a timber doorset incorporating intumescent seals is considered to be relatively small and the rebating of the stop from the solid material of the frame, which creates a stronger stop to frame joint and less chance of separation, would not be expected to have any significant effect on the performance of the doorset and is therefore positively appraised.

Conclusions

Doorsets as tested under the reference WARRES No. 139085 but with modified MDF frame details as described in this report, should provide up to 30 minutes integrity and insulation performance if tested in accordance with BS 476: Part 22: 1987.

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 Warrington Fire Research Centre the assessment will be unconditionally withdrawn and W. Howard Limited 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 June 2009, 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 Primary Supporting Data

WARRES No. 139085

Test report concerning a specimen of fully insulated, single-acting, single-leaf, timber doorset, when subjected to a test in accordance with BS 476: Part 22: 1987, to determine its fire resistance performance.

The doorset had overall dimensions of 2020 mm high by 892 mm wide and incorporated a door leaf with dimensions of 1980 mm high by 838 mm wide by 44 mm thick. The door leaf was of a flaxboard core construction with softwood stiles and rails and MDF facings. The door leaf was hung within an MDF frame of overall section size 75 mm by 25 mm and having a nominal density of 750 kg/m³. The frame was fitted with an MDF 'plant on' stop, 25 mm wide by 12 mm deep that was glued and pinned. The frame incorporated a 10 mm x 4 mm 'Pyrostrip 100' intumescent seal.

The doorset incorporated a latch and handles at approximately mid-height and an overhead door closer fitted on the exposed face. For the purpose of the test the doorset was rendered unlatched. The leaf was orientated such that it opened towards the heating conditions.

The specimen satisfied the performance criteria of the test for the following periods:

Integrity : 37 minutes

Insulation : 37 minutes

Test date : 27th April 2004

Test sponsor : W. Howard Limited

Declaration by W. Howard Limited

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 Warrington Fire Research Centre to withdraw the assessment.

Signed:

For and on behalf of:

Signatories

Responsible Officer
C Johnson* - Technical Officer

Approved
D Hankinson* - Technical Consultant

* For and on behalf of Warrington Fire Research Centre.

Report Issued: 26 th May 2004
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The assessment report is not valid unless it incorporates the declaration duly signed by the applicant.

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