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Testing. Advising. Assuring.

**Title:**

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

**WF Report No:**

198409

**Prepared for:**

**Corinthian Industries  
(Asia) Sdn Bhd**

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Malaysia

**Date: 20<sup>th</sup> October 2010**

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## Executive Summary

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<b>Objective</b>	This report presents an appraisal of the fire resistance performance of single-acting, single-leaf, timber doorsets incorporating intumescent strip seals in the door leaf edges.
<b>Report Sponsor</b>	<b>Corinthian Industries (Asia) Sdn Bhd</b>
<b>Address</b>	Lot 37217, Jalan Genting Off 4th Mile Jalan Kapar 42100 Rantau Panjang Klang Selangor Darul Ehsan Malaysia
<b>Summary of Conclusions</b>	Should the recommendations given in this report be followed, it can be concluded that the proposed timber doorsets should provide 30 minutes integrity and insulation performance, if tested in accordance with Clause 6 of BS 476: Part 22: 1987.
<b>Valid until</b>	1 <sup>st</sup> November 2015

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## Introduction

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This report presents an appraisal of the fire resistance performance of single-acting, single-leaf, timber doorsets, which are similar in construction to that previously fire tested under the reference WF No. 188517 – Doorset B, but incorporate intumescent strips seals in the door leaf edges rather than in the reveal of the frame.

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

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

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### General Construction

It is assumed that the doorsets shall be constructed and installed in an identical manner to the previously fire tested doorsets 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

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It is proposed that timber based doorsets, similar to that previously fire tested under the reference WF No. 188517 – Doorset B, but with intumescent strips seals installed within the leaf edges, rather than the reveal of the frame, will provide 30 minutes integrity and insulation performance.

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## Basic Test Evidence

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### WF No. 188517

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

For the purpose of the test the doorsets were referenced Doorset A and Doorset B, both were installed such that their leaves opened towards the heating conditions of the test. This assessment only considers the specimen referenced Doorset B.

The doorset included a door leaf of overall dimensions 2040 mm high by 926 mm wide by 35 mm thick and was of a grooved pattern design. The door leaf was hung within a softwood door frame on three steel hinges.

The door leaf comprised particleboard stiles, rails and panels with veneer facings. Joints between panels and to the stiles and rails were formed with hardwood sections including a groove detail.

Test Results:

Integrity 34 minutes

Insulation 34 minutes

The test was discontinued after a period of 35 minutes.

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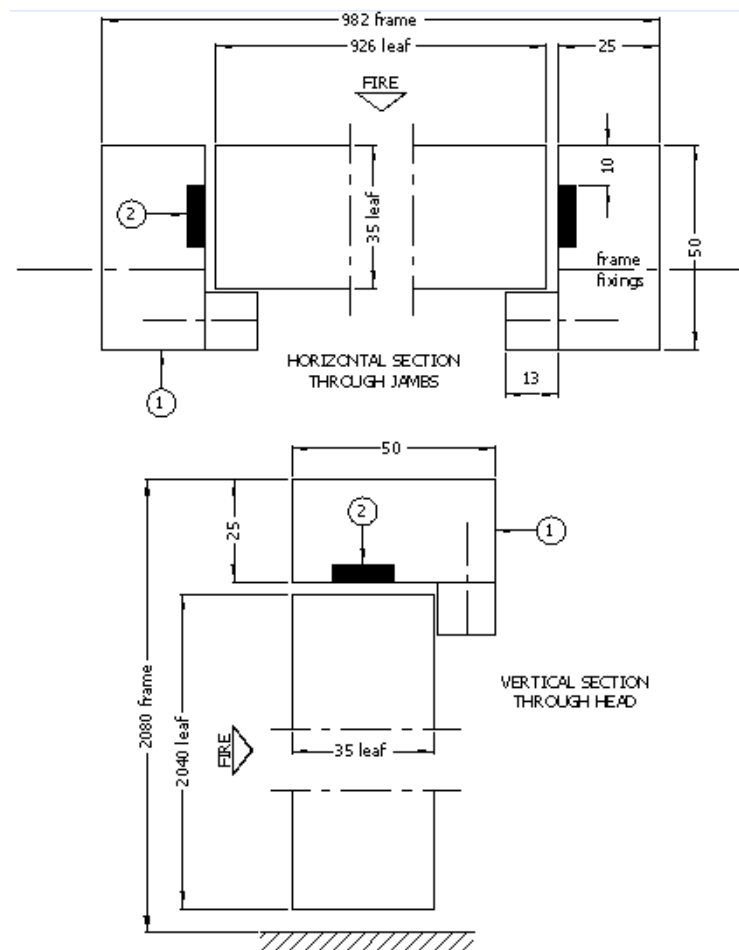
## Assessed Performance

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The specimen referenced Doorset B in the test referenced WF No. 188517 was of a timber based construction, briefly comprising as softwood door frame, and 35 mm thick, simulated panelled door leaf.

The doorset incorporated a single 15 x 4 mm, Lorient LP1504 (Type 617) intumescent strip seal, fitted approximately central within the reveal of the door frame, to the head and both jambs, as illustrated in Figure 1 below:

Figure 1



The specimen demonstrated its ability to provide 34 minutes integrity and insulation performance, after which time a cotton pad ignited when applied to the horizontal joint between the leaf core and top rail.

It is proposed that the intumescent strip seals may be omitted from the reveal of the frame as tested and repositioned within the edges of the leaf, again positioned centrally.

The quantity of intumescent material will therefore remain essentially the same as tested, with a marginal reduction in material in the top corners due to the slightly reduced strip length, the frame being longer than the leaf.

Empirical evidence and test experience suggests that there is minimal difference in fire resistance performance between fitting of identical intumescent seals within the reveal of the frame or within the leaf edge and the 34 minutes performance achieved by the tested door, 13% in excess of that required, provides adequate confidence that this modification can be made without compromising the 30 minutes integrity and insulation performance of the doorset.

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## Conclusions

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Timber based doorsets, as discussed in this report, should provide at least 30 minutes integrity and insulation performance, if tested in accordance with Clause 6 of BS 476: Part 22: 1987.

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## Validity

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This assessment is issued on the basis of test data and information available at the time of issue. If contradictory evidence becomes available to **Exova Warringtonfire** the assessment will be unconditionally withdrawn and **Corinthian Industries (Asia) Sdn Bhd** 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 1<sup>st</sup> November 2015, 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.

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## Summary of Supporting Data

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### **WF No. 188517**

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

For the purpose of the test the doorsets were referenced Doorset A and Doorset B, both were installed such that their leaves opened towards the heating conditions of the test. This assessment only considers the specimen referenced Doorset B.

The doorset included a door leaf of overall dimensions 2040 mm high by 926 mm wide by 35 mm thick and was of a grooved pattern design. The door leaf was hung within a softwood door frame on three steel hinges.

The door leaf comprised particleboard stiles, rails and panels with veneer facings. Joints between panels and to the stiles and rails were formed with hardwood sections including a groove detail.

Test Results:

Integrity 34 minutes

Insulation 34 minutes

The test was discontinued after a period of 35 minutes.

Test Date : 26<sup>th</sup> November 2009

Test Sponsor : Corinthian Industries (Asia) Sdn Bhd



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## Declaration by Corinthian Industries (Asia) Sdn Bhd

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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 **Exova Warringtonfire** to withdraw the assessment.

Signed:

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For and on behalf of:  
\_\_\_\_\_

## Signatories

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Responsible Officer

C Johnson\* - Principal Certification Engineer



Approved

D Hankinson\* - - Principal Certification Engineer

\* For and on behalf of **Exova Warringtonfire**

Report Issued: 20<sup>th</sup> October 2010

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

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