



INTERNATIONAL FIRE
CONSULTANTS LIMITED

PRIVATE & CONFIDENTIAL

IFC ENGINEERING ASSESSMENT REPORT

PAR/16986/01

Engineering Assessment of Door Frame Installation Using the Blue 60 System for FD30 and FD60 Timber Door Assemblies

Fire Resistance Standard: BS476: Part 22: 1987

Prepared on behalf of:

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NOTE: This report should not be manipulated, abridged or otherwise presented without the written consent of International Fire Consultants Ltd

Issue Date – April 2017
Valid Until – April 2022

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ISSUE AND AMENDMENT RECORD

Revision	Issue Date	Author	Reviewer	Amendments
PAR/16986/01	April 2017	WL/RA	DC	–

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1. INTRODUCTION

This report has been produced by International Fire Consultants Ltd (IFC) to provide an engineering assessment of door frame installation using the Blue 60 system, comprising Blue 60 foam used in conjunction with Blue 60 packers. The report will consider the systems use on the installation of otherwise tested, assessed or Third Party Certified door assemblies into their supporting construction. IFC have prepared this report on the instruction of Craylon Ltd.

Fire resisting assemblies are rarely installed in an identical form to that which was tested. The specification will invariably require their installation into supporting construction that has not been formed to in the same way that was tested. The result of a fire resistance test can apply to variations in configuration/construction, as long as they do not reduce the performance to one which is below that specified. The influence of those variations is covered by a judgement, sometimes made by the approving authority.

Where the approving authority does not feel technically able to make such judgements, or, does not wish to take responsibility for them, then a third party expert opinion is often sought. Such an opinion is often expressed in the form of an assessment of the performance, which may be supported by numerical/quantifiable methods or may be purely an expert judgement.

When establishing the variations in the construction that can achieve the required fire resistance performance, IFC follow the guidance in BS ISO/TR 12470: 1998; *'Fire resistance tests - Guidance on the application and extension of results'*.

2. DOOR ASSEMBLIES

Fire resisting door assemblies must have one of the following forms of evidence for their fire resisting performance:

- Fire resistance test evidence
- Engineering Assessment
- Third Party Certification

Many fire resisting assemblies will have more than one of the above, and some have all three.

It is the assumption of this report that fire resisting door assembly has the relevant evidence of performance within the supporting construction into which it is to be installed.

3. TEST EVIDENCE

Test evidence is available to support the use of the Blue 60 system with timber door assemblies are summarised in Appendix A.

4. GUIDANCE ON INSTALLATION

In order to maintain the fire resistance of a fire-resisting wall or partition when fitted with a door assembly, the junction between the two elements should be adequately sealed.

Ideally a wall or partition should be built up to the rear of the door frame without gaps. This is not always possible, and to ensure easy installation of the door assembly, the opening should be made within the permissible tolerance. The gap between door frame and wall opening can vary greatly and is usually masked with an architrave.

This guidance assumes that no feature rebates or shadow gaps are intended at the junction of the frame and wall, and that the face of the frame does not project beyond the face of the wall.

The following sections give guidance on the frame installation and filling of the gap between door frame and supporting construction.

4.1 Frame Installation

Unless evidence for the respective door assembly gives more restrictive specifications the frames must be fixed back to suitable fixing points within the supporting construction with steel fixings at centres not exceeding 600mm on the vertical edges; (minimum 200mm from the top and bottom of each jamb). Screws shall be of sufficient length to penetrate the wall by at least 40mm, and shall be positioned such that they are not exploited by charring of the frame, irrespective of the direction of test exposure; (this may necessitate a twin line of screws). Blue 60 Packers shall be used at all fixing positions.

Frame depth for FD30 assemblies must be a minimum of 80mm and a minimum of 100mm for FD60 assemblies, unless the evidence for the respective door assembly requires deeper frames. Frames must meet or exceed all other required specifications detailed for their use with the associated leaf for each assembly.

4.2 FD30 Timber Door Assemblies

For each of the following constructions, used in conjunction with FD30 assemblies, the Blue 60 System may be used to fill a gap, minimum width of 5mm and maximum width of 30mm, between the supporting construction and rear of the door frame. The gap must be filled for its complete width and the complete depth of the door frame, minimum 80mm.

For each of the following constructions, it is not necessary that an architrave be fitted, overlapping the door frame and supporting construction, however, as an option architraves may be installed should they be required.

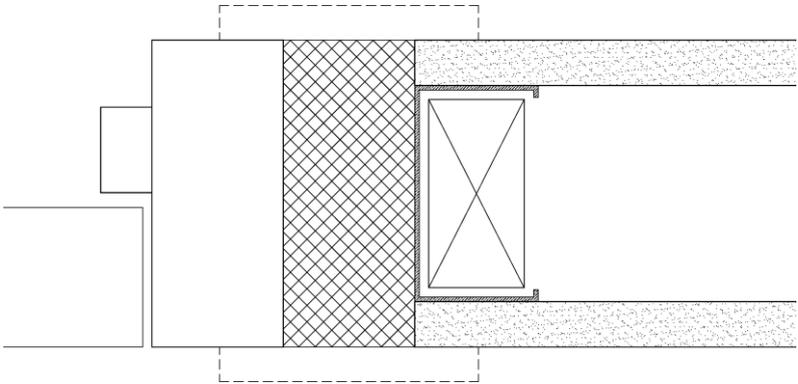
The Blue 60 System may be used for sealing the gaps of existing FD30 assemblies, whereby an intumescent seal is found to be fitted to the rear of the door frame, assuming that all other criteria of this assessment are met.

4.2.1 Timber stud partition

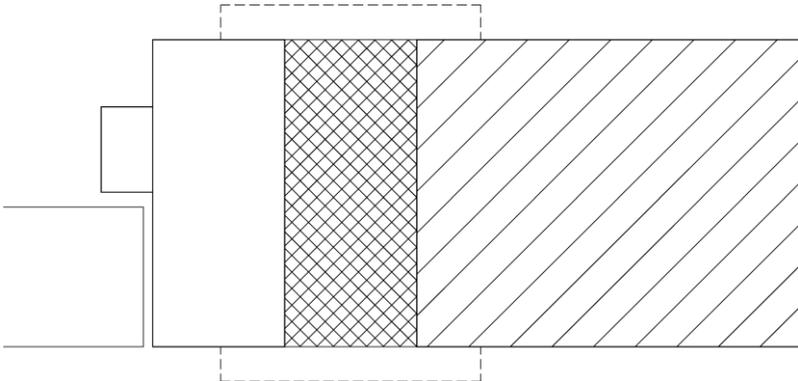
Supporting Construction	Figure
Unlined timber stud	
Lined timber stud <i>Note 1</i>	

Note 1 The lining of the timber stud must use the same board, of the same thickness, as used in the construction of the wall.

4.2.2 Steel stud partition

Supporting Construction	Figure
Standard steel stud	

4.2.3 Masonry wall

Supporting Construction	Figure
Masonry	

4.3 FD60 Timber Door Assemblies

For each of the following constructions, used in conjunction with FD60 assemblies, the Blue 60 System may be used to fill a gap, minimum width of 5mm and maximum width of 30mm, between the supporting construction and rear of the door frame. The gap must be filled for its complete width and the complete depth of the door frame, minimum 100mm.

For each of the following constructions, it is not necessary that an architrave be fitted, overlapping the door frame and supporting construction, however, as an option architraves may be installed should they be required.

The Blue 60 System may be used for sealing the gaps of existing FD60 assemblies, whereby an intumescent seal is found to be fitted to the rear of the door frame, assuming that all other criteria of this assessment are met.

4.3.1 Timber stud partition

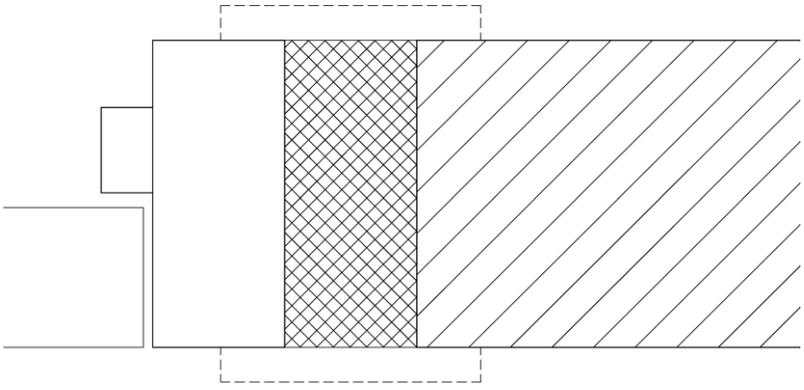
Supporting Construction	Figure
Unlined timber stud	
Lined timber stud <i>Note 2</i>	

Note 2 The lining of the timber stud must use the same board, of the same thickness, as used in the construction of the wall.

4.3.2 Steel stud partition

Supporting Construction	Figure
Standard steel stud	

4.3.3 Masonry wall

Supporting Construction	Figure
Masonry	

5. CONCLUSION

It is the opinion of International Fire Consultants Ltd that if the door frame installation using the Blue 60 system, and otherwise tested, assessed or Third Party Certified door assemblies were installed in accordance with the guidance and limitations of this engineering assessment report and tested for fire resistance, they would satisfy the integrity criteria of BS476: Part 22: 1987 for 30 or 60 minutes, as required.

6. LIMITATIONS

This engineering Assessment Report, which is only valid for timber door frame installation, using Blue 60 foam in conjunction with Blue 60 packers, with otherwise tested, assessed or Third Party Certificated door assemblies, addresses itself solely to the ability of the assemblies described to satisfy the criteria of the fire resistance test. It does not imply any suitability for use with respect to other unspecified criteria.

This document only considers the assemblies described, herein, and assumes that the surrounding construction will provide no less restraint than the tested assembly, and that it will remain in place and be substantially intact for the full fire resistance period.

The analysis and conclusions within this report are based upon the likely fire resisting performance of complete assemblies that is manufactured and installed in accordance with the relevant performance documentation for the door assembly in question, and offered for fire resistance testing in 'perfect' condition. In practice, management procedures must be in place in the building where the assemblies are installed, to ensure that no parts are damaged or faulty.

Where the assessed constructions have not been subject to an on-site audit by International Fire Consultants Ltd, it is the responsibility of anyone using this report to confirm that all aspects of the assemblies fully comply with the descriptions and limitations, herein.

When establishing the variations in the construction that can achieve the required fire resistance performance, International Fire Consultants Ltd. follow the guidance given in BS.ISO/TR12470: 1998, "*Fire resistance tests - Guidance on the application and extension of results*". This report does not purport to follow the guidance regarding direct or extended application of test results outlined in EN product standards, and the approvals herein should not be used as supporting evidence for CE marking.

Where the constructional information in this report is taken from details provided to International Fire Consultants Ltd (IFC) and/or from fire resistance test reports referenced herein, it is, therefore, limited to the information given in those documents. It is necessarily dependent upon the accuracy and completeness of that information. Where constructional or manufacturing details are not specified, or discussed herein, it should not, therefore, be taken to infer approval of variation in such details from those tested or otherwise approved.

Any materials specified in this report have been selected and judged primarily on their fire performance. IFC do not claim expertise in areas other than fire safety. Whilst observing all possible care in the specification of solutions, we would draw the reader's attention to the fact that during the construction and procurement process, the materials used should be subjected to more general examination regarding the wider Health and Safety, and CoSHH Regulations.

This Report is provided to the sponsor on the basis that it is a professional independent engineering opinion as to what the fire performance of the construction/system would be should it to be tested to the named standard. It is IFC's experience that such an opinion is normally acceptable in support of an application for building approvals, certainly throughout the UK and in many parts of Europe and the rest of the world.

However, unless IFC have been commissioned to liaise with the Authorities that have jurisdiction for the building in question for the purpose of obtaining the necessary approvals, IFC cannot assure that the document will satisfy the requirements of the particular building regulations for any building being constructed.

It is, therefore, the responsibility of the sponsor to establish whether this evidence is appropriate for the application for which it is being supplied and IFC cannot take responsibility for any costs incurred as a result of any rejection of the document for reasons outside of our control. Early submittal of the Report to the Authorities will minimise any risks in this respect.

7. VALIDITY

This Field of Application Report has been prepared based on International Fire Consultants Ltd's present knowledge of the products described, the stated testing regime and the submitted test evidence. For this reason, anyone using this document after April 2022 should confirm its ongoing validity.

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APPENDIX A

Summary of Fire Test Evidence

Test Report	Core	Frame/Blue 60 Depth	Gap between Frame and Supporting Construction	Supporting Construction	Test Standard	Relevant Integrity at supporting construction/frame
CFR 1703171	Vicaima	80mm	18mm at closing jamb, 30mm at hanging jamb, 20mm at head	Timber stud partition	BS 476: Part 22: 1987	51 minutes
	Strebord	80mm	28mm at closing jamb	Timber stud partition	BS 476: Part 22: 1987	51 minutes
CFR 1604131	Flamebreak	100mm	25mm	Flexible wall in accordance with EN1363-1:2012	BS EN 1634-1: 2014	39 minutes
CFR 1606031	Jeld Wen	100mm	18mm at top, 7.5mm at sides	Timber stud partition	BS 476: Part 22: 1987	37 minutes
	Jeld Wen	100mm	18mm at top, 7.5mm at sides	Timber stud partition	BS 476: Part 22: 1987	37 minutes
CFR 1603081	Halspan	101mm	7mm	Flexible wall in accordance with EN1363-1:2012	BS EN 1634-1: 2014	39 minutes
CFR 1603241	Vicaima	100mm	25mm	Flexible wall in accordance with EN1363-1:2012	BS EN 1634-1: 2014	36 minutes
CFR 1603041	Strebord	101mm	7mm	Flexible wall in accordance with EN1363-1:2012	BS EN 1634-1: 2014	41 minutes
CFR 1604291	Strebord	102mm	28mm	Timber stud partition	BS 476: Part 22: 1987	44 minutes
	Strebord	102mm	28mm	Timber stud partition	BS 476: Part 22: 1987	39 minutes
CFR 1604211	Strebord	101mm	25mm	Flexible wall in accordance with EN1363-1:2012	BS EN 1634-1: 2014	60 minutes

Test Report	Core	Frame/Blue 60 Depth	Gap between Frame and Supporting Construction	Supporting Construction	Test Standard	Relevant Integrity at supporting construction/frame
CFR 1608261	Halspan	102mm	30mm left jamb, 20mm right jamb	Flexible wall in accordance with EN1363-1:2012	BS EN 1634-1: 2014	65 minutes
CFR 1604281	Strebord	100mm	25mm	Timber stud partition	BS 476: Part 22: 1987	67 minutes
	Strebord	100mm	25mm	Timber stud partition	BS 476: Part 22: 1987	67 minutes
CFR 1608251	Strebord	102mm	24mm at jambs, 20mm at head	Flexible wall in accordance with EN1363-1:2012	BS EN 1634-1: 2014	62 minutes
CFR 1703211	Strebord	80mm	25mm	Timber stud partition	BS 476: Part 22: 1987	64 minutes
	Vicaima	80mm	25mm	Timber stud partition	BS 476: Part 22: 1987	69 minutes