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**Title**

**Field of Application for:  
Fire & Acoustic Seals Ltd  
'Fire Door Foam'**

For use as a fire stopping seal:  
30, 60 and up to 120 Minute Fire  
Resisting Timber Doorsets

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## 1 Foreword

This field of application report has been commissioned by Fire and Acoustic Seals Ltd and relates to 'Fire Door Foam', for use as a fire stopping seal when used with timber joinery and timber-based fire resisting doorsets for 30, 60 and up to 120-minute applications.

The report 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*.

This field of application (scope) uses established empirical methods of extrapolation and experience of fire testing similar doorsets, in order to extend the scope of application by determining the limits for the designs based on the tested constructions and performances obtained. The scope is an evaluation of the potential fire resistance performance, if the variations specified herein were to be tested in accordance with BS 476: Part 22: 1987.

This field of application has been written using appropriate test evidence generated at UKAS accredited laboratories, to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturers stated door design and is summarised in Section 3.

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

This field of application has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the Passive Fire Protection Forum (PFPF) guidelines to undertaking assessments. The aim of the PFPF guidelines is to give confidence to end-users that assessments that exist in the UK are of a satisfactory standard to be used for building control and other purposes.

## 2 Proposal

The proposal is to consider the use of Fire & Acoustic Seals Ltd, Fire Door Foam with specified generic types of doorset design based on the performance data summarised in Section 3 of this report.

The report summarises the scope of application of the Fire & Acoustic Seals Ltd, Fire Door Foam product when utilised as a fire stopping seal between structural openings and proven frame systems used in conjunction with timber joinery and timber-based fire resisting doorsets.

The assessment uses established extrapolation and interpretation techniques 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 BS 476-22:1987.

The assessment is conducted in terms of performance against fire resistance test standard BS 476-22:1987, and considers test evidence based on this standard, together with test evidence based on BS EN 1634-1:2014. Further analysis in relation to this point can be found in Section 4.1.

### 3 Performance Data

The assessment considers performance data from various fire tests which are summarised in sections 3.1-3.3, below. The tests prefixed 'WF' were undertaken by Warringtonfire under UKAS Notified Body number 1762. The tests prefixed 'CFR' were undertaken by Cambridge Fire Research under UKAS Notified Body number 4319. All tests were sponsored by Fire and Acoustic Seals Ltd unless stated otherwise.

#### 3.1 Evidence in support of 30 minutes integrity performance

##### 3.1.1 Fire Resistance Test WF386228 AR1 (Specimen A only)

The fire resistance performance of 2No single leaf single acting timber based doorsets when tested in accordance with BS 476-20:1987 and BS 476-22:1987. Only specimen A is relevant to this assessment report.

The left doorset was designated doorset A and the leaf measured 2040mm high x 926mm wide x 44mm thick. The doorset was hung to open in towards the furnace. The results of this test were obtained from the doorset fitted with a latch that was engaged for the test.

The 25mm wide gap between the door frame and the timber stud supporting construction was filled with Fire & Acoustic Seals Ltd Fire Door Foam. MDF architraves were fitted to the exposed face only.

When tested in accordance with BS 476-22:1987, *Method 6, determination of fire resistance of fully insulated doorsets and shutter assemblies*, the requirements of the standard was satisfied for the following periods:

Integrity	Insulation
53 minutes	53 minutes

##### 3.1.2 Fire Resistance Test WF411193

The fire resistance performance of 2No single leaf single acting timber based doorsets with associated side panels and fanlights when tested in accordance with BS 476-20:1987 and BS 476-22:1987.

Both leaves measured 2040mm high x 926mm wide x 44mm thick. The entire specimen measured 2540mm high x 2560mm wide x 100mm deep. The door leaves were orientated so one was hung to open in towards the furnace and other opening away. The results of this test were obtained from the doors fitted with a latch that was engaged for the test.

The 16-23mm wide gap between the door frame and the timber stud supporting construction was filled with Fire & Acoustic Seals Ltd Fire Door Foam. No architrave was fitted to either face.

When tested in accordance with BS 476-22:1987, *Method 8, determination of fire resistance of uninsulated doorsets and shutter assemblies*, the requirements of the standard was satisfied for the following periods:

Integrity	Insulation
37 minutes	0 minutes*

\* In accordance with the note to clause 8.6.1 of BS 476-22:1987, the specimen was not evaluated for insulation.

### 3.1.3 Fire Resistance Test WF379163 (Specimen A only)

The fire resistance performance of a glazed single leaf single acting timber based doorset and a one and a half leaf single acting timber based doorset, when tested in accordance with BS 476-20:1987 and BS 476-22:1987. Only specimen A is relevant to this assessment report. This test was sponsored by Pyroplex Ltd.

The left doorset was designated doorset A and the leaf measured 2040mm high x 926mm wide x 44mm thick. The doorset was hung to open in towards the furnace. The results of this test were obtained from the doorset fitted with a latch that was disengaged for the test.

The nominally 15mm wide gap between the door frame and the timber stud supporting construction was filled with Fire & Acoustic Seals Ltd, Fire Door Foam. Both faces of the doorset were fitted with softwood architraves. The architraves were 45mm wide x 18mm thick, of nominal density 510Kg/m<sup>3</sup> on the exposed face, and 25mm wide x 18mm thick on the unexposed face.

When tested in accordance with BS 476-22:1987, *Method 7, determination of fire resistance of partially insulated doorsets and shutter assemblies*, the requirements of the standard was satisfied for the following periods:

Integrity	Insulation
37 minutes	37 minutes*

\* In accordance with the note to clause 7.6.1.1 of BS 476-22:1987, the glazing was not evaluated for insulation.

### 3.1.4 Fire Resistance Test CFR1803081-1 (Specimen B only)

The fire resistance performance of 2No single leaf single acting timber based doorsets when tested in accordance with BS 476-20:1987 and BS 476-22:1987. Only specimen B is relevant for 30 minutes performance.

The right doorset was designated doorset B and the leaf measured 2013mm high x 913mm wide x 45mm thick. The doorset was hung to open in towards the furnace. The results of this test were obtained from the doorset fitted with a latch that was engaged for the test.

The 7.4-11mm wide gap between the door frame and the timber stud supporting construction was filled with Fire & Acoustic Seals Ltd Fire Door Foam. No architrave was fitted to either face.

When tested in accordance with BS 476-22:1987, *Method 6, determination of fire resistance of fully insulated doorsets and shutter assemblies*, the requirements of the standard was satisfied for the following periods:

Integrity	Insulation
43 minutes	29 minutes

### 3.1.5 Fire Resistance Test WF413375

The fire resistance performance of a glazed single leaf single acting timber based doorset and a one and a half leaf glazed single acting doorset, when tested in accordance with BS 476-20:1987 and BS 476-22:1987.

The left doorset was designated doorset A and the active leaf measured 2040mm high x 926mm wide x 44mm thick. The passive leaf measured 2040mm high x 426mm wide x 44mm thick. The right doorset was designated doorset B and the leaf measured 2040mm high x 826mm wide x 44mm thick. Both doorsets were hung to open in towards the furnace. The results of this test were obtained from doorset A fitted with a latch that was disengaged for the test but engaged flush bolts. Doorset B was not fitted with a latch.

The typical 20mm gap between the door frames and the steel stud supporting construction, was filled with Fire & Acoustic Seals Ltd Fire Door Foam. However, the bottom edge of a jamb to both door assemblies was fitted in such a way that the gap between the back edge of the door frame and the supporting construction reduced to between 5-9mm. Due to the reduction in gap, a bead of Fire and Acoustic Seals Ltd. Intumescent and Acoustic Sealant was used to seal the gap, fitted to both faces. This was undertaken for a length of between 600-625mm, and in this area replaced the use of Fire Door Foam.

When doorset A was tested in accordance with BS 476-22: 1987, *Method 8, determination of fire resistance of uninsulated doorsets and shutter assemblies*, and when doorset B was tested in accordance with BS 476-22: 1987, *Method 7, determination of fire resistance of partially insulated doorsets and shutter assemblies* the requirements of the standard was satisfied for the following periods:

Specimen	Integrity	Insulation
Doorset A	27 minutes <sup>1</sup>	0 minutes <sup>3</sup>
Doorset B	27 minutes <sup>2</sup>	27 minutes

<sup>1</sup> Initial integrity failure due to continuous flaming from the glazing.

<sup>2</sup> Initial integrity failure due to continuous flaming from the glazing.

<sup>3</sup> In accordance with the note to clause 8.6.1 of BS 476-22:1987, the specimen was not evaluated for insulation.

Failures were not connected to the performance of the Fire & Acoustic Seals Ltd, Fire Door Foam seal and can be disregarded for the purposes of this report. No failures of the Fire and Acoustic Seals Ltd, Fire Door Foam fire stopping seal had been recorded on termination of the test at 30 minutes.

## 3.2 Evidence in support of 60 minutes integrity performance

### 3.2.1 Fire Resistance Test WF389582 (Specimen A only)

The fire resistance performance of a single leaf single acting timber based doorset and a double leaf single acting timber based doorset, when tested in accordance with BS EN 1634-1:2014 and BS EN 1363-1:1999. Only specimen A is relevant to this assessment report.

The doorset was designated doorset A and the leaf measured 2038mm high x 924mm wide x 59mm thick. The doorset was hung to open in towards the furnace and had an engaged latch.

The 25-33mm gap between the door frames and the steel stud supporting construction was filled with Fire and Acoustic Seals Ltd, Fire Door Foam. MDF architrave was fitted to the exposed face only.

When the doorset was tested in accordance with BS EN 1634-1:2014, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware. Fire resistance test for door and shutter assemblies and openable windows* the requirements of the standard were satisfied for the following periods:

Integrity	Insulation
62 minutes <sup>1</sup>	62 minutes

<sup>1</sup> Initial integrity failure due to a cotton pad test on the fire stopping, adjacent to the hanging edge.

### 3.2.2 Fire Resistance Test CFR1803081-1 (Specimen A only)

The fire resistance performance of 2No single leaf single acting timber based doorsets when tested in accordance with BS 476-20:1987 and BS 476-22:1987. Only specimen A is relevant for 60 minutes performance.

The left doorset was designated doorset A and the leaf measured 2041mm high x 1101mm wide x 54mm thick. The doorset was hung to open in towards the furnace. The results of this test were obtained from the doorset fitted with a latch that was engaged for the test.

The 4.6-8.1mm wide gap between the door frame and the timber stud supporting construction was filled with Fire & Acoustic Seals Ltd Fire Door Foam. No architrave was fitted to either face.

When tested in accordance with BS 476-22:1987, *Method 6, determination of fire resistance of fully insulated doorsets and shutter assemblies*, the requirements of the standard was satisfied for the following periods:

Integrity	Insulation
49 minutes <sup>1</sup>	49 minutes

<sup>1</sup> Initial integrity failure due to a cotton pad test above the letter plate.

Failures were not connected to the performance of the Fire & Acoustic Seals Ltd, Fire Door Foam seal and can be disregarded for the purposes of this report. No failures of the Fire and Acoustic Seals Ltd, Fire Door Foam fire stopping seal had been recorded on termination of the test at 68 minutes.

### 3.2.3 Fire Resistance Test WF384623

The fire resistance performance of a glazed single leaf single acting timber based doorset and a one and a half leaf single acting timber based doorset, when tested in accordance with BS EN 1634-1:2014 and BS EN 1363-1:1999.

The left doorset was designated doorset A and the leaf measured 2040mm high x 926mm wide x 54mm thick. The right doorset was designated doorset B and the left leaf measured 2040mm high x 926mm wide x 54mm thick and the right leaf measured 2040mm high x 425mm wide x 44mm thick. Both doorsets were hung to open in towards the furnace. The results of this test were obtained from doorsets fitted with a latch that was disengaged for the test.

The nominally 20mm gap between the door frames and the steel stud supporting construction, was filled with Fire & Acoustic Seals Ltd Fire Door Foam. Half of each doorset was additionally fitted with an MDF architrave; half of each doorset had no architrave fitted.

When doorsets A and B were tested in accordance with BS EN 1634-1:2014, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware. Fire resistance test for door and shutter assemblies and openable windows*, the requirements of the standard were satisfied for the following periods:

Specimen	Integrity	Insulation
Doorset A	49 minutes <sup>1</sup>	49 minutes
Doorset B	5 minutes <sup>2</sup>	5 minutes

<sup>1</sup> Initial integrity failure due to cotton pad test at threshold.

<sup>2</sup> Initial integrity failure due to cotton pad test at the bottom meeting edge.

Failures were not connected to the performance of the Fire & Acoustic Seals Ltd, Fire Door Foam seal and can be disregarded for the purposes of this report. No failures of the Fire and Acoustic Seals Ltd, Fire Door Foam fire stopping seal had been recorded on termination of the test at 62 minutes.

### 3.2.4 Fire Resistance Test CFR1908301

The fire resistance performance of a double leaf double acting doorset with side panel and fanlight when tested in accordance with BS 476-20:1987 and BS 476-22:1987.

The door leaves measured 2040mm high x 925mm wide x 55mm thick. The overall specimen measured 2126mm wide x 1925mm high x 119mm thick.

The 16.4-23.7mm wide gap between the door frame jambs and the timber stud supporting construction was filled with Fire & Acoustic Seals Ltd Fire Door Foam. No architrave was fitted to either face.



When tested in accordance with BS 476-22:1987, *Method 6, determination of fire resistance of fully insulated doorsets and shutter assemblies*, the requirements of the standard was satisfied for the following periods:

Integrity	Insulation
43 minutes <sup>1</sup>	37 minutes

<sup>1</sup> Initial integrity failure due to sustained flaming at the top left corner of left leaf.

Failures were not connected to the performance of the Fire & Acoustic Seals Ltd, Fire Door Foam seal and can be disregarded for the purposes of this report. No failures of the Fire and Acoustic Seals Ltd, Fire Door Foam fire stopping seal had been recorded on termination of the test at 66 minutes.

### 3.3 Evidence in support of 120 minutes integrity performance

#### 3.3.1 Fire Resistance Test CFR1911291

The fire resistance performance of 2No single leaf single acting doorsets when tested in accordance with BS EN 1634-1:2014 and BS EN 1363-1:1999.

The left doorset was designated doorset A and the leaf measured 2350mm high x 1000mm wide x 62mm thick. The right doorset was designated doorset B and the leaf measured 2350mm high x 1000mm wide x 64mm thick. Both doorsets were hung to open in towards the furnace. The results of this test were obtained from doorsets fitted with a latch that was engaged for the test.

The nominally 7.1-23.9mm gap between the door frames and the steel stud supporting construction was filled with Fire & Acoustic Seals Ltd Fire Door Foam. No architraves were fitted to either doorset.

When doorsets A and B were tested in accordance with BS EN 1634-1:2014, *Fire resistance and smoke control tests for door and shutter assemblies, openable windows and elements of building hardware. Fire resistance test for door and shutter assemblies and openable windows*, the requirements of the standard were satisfied for the following periods:

Specimen	Integrity	Insulation
Doorset A	103 minutes <sup>1</sup>	103 minutes
Doorset B	91 minutes <sup>2</sup>	91 minutes

<sup>1</sup> Initial integrity failure due to continuous flaming at the closing corner

<sup>2</sup> Initial integrity failure due to continuous flaming at the handle.

Failures were not connected to the performance of the Fire & Acoustic Seals Ltd, Fire Door Foam seal and can be disregarded for the purposes of this report. No failures of the Fire and Acoustic Seals Ltd, Fire Door Foam fire stopping seal had been recorded on termination of the test at 91 minutes for specimen B and 120 minutes for specimen A. Photographic and video footage has been reviewed as part of this conclusion.

## 4 Analysis

### 4.1 General

Test standard BS EN 1634-1: 2014 utilises the same time temperature curve and has similar test conditions to the BS 476-22 test, with two key differences: (a) the neutral pressure point is set at 500mm above the threshold, rather than 1000mm above the threshold as used for the BS 476-22 test, thus creating higher positive furnace pressures above 500mm, (b) the use of plate thermocouples for furnace temperature control, which test data has shown renders the BS EN test more onerous due to the higher thermal inertia required for the plate thermocouple to read the same temperature as the probe thermocouple used for the BS 476-22 test, particularly during the early stages of the test. It is therefore considered that the use of test data from BS EN 1634-1 tests will be at least as valid as data from BS 476-22 tests.

The methodologies adopted in this assessment are for UK national application and other jurisdictions accepting this approach. The assessment should not be used for European classification, CE marking purposes, or for claiming compliance with regulations outside the aforementioned areas of jurisdiction.

### 4.2 Tested Performances

Unless specifically stated otherwise, the performance data summarised in Section 3 demonstrates that when fully filling the frame to structural surround gap across the width of the frame, Fire & Acoustic Seals Ltd, 'Fire Door Foam' is capable of successfully maintaining the integrity of the junction between the following combinations of door frame and structural surround.

#### 4.2.1 30 Minutes Integrity Performance

Test report	Supporting construction	Frame material	Stated frame density	Frame depth (mm)	Gap width (mm)	Architrave	Frame packers
CFR1803081-1 (specimen B)	TSP*	Softwood	510kg/m <sup>3</sup>	78	7.4-11	None	Timber and plastic
WF413375 (specimen A)	TSP*	Softwood	510-550kg/m <sup>3</sup>	100	9-25**	None	Plastic
WF413375 (specimen B)	TSP*	Softwood	510-550kg/m <sup>3</sup>	100	5-20**	None	Plastic
386228 AR1 (specimen A)	TSP*	Beech	720kg/m <sup>3</sup>	78	25	MDF on the exposed face only	Plastic
WF411193	TSP*	MDF / softwood	510-750kg/m <sup>3</sup>	100	16-23	None	Plastic
WF379163 (specimen A)	TSP*	European redwood	510kg/m <sup>3</sup>	70	12.5-15	European redwood to both faces	Unknown

\*TSP = Timber stud partition – apertures not lined

\*\* The typical gap was 20mm, however, the bottom edge of a jamb to both door assemblies was fitted in such a way that the gap between the back edge of the door frame and the supporting construction reduced to between 5-9mm. Due to the reduction in gap, a bead of Fire and Acoustic Seals Ltd. Intumescent and Acoustic Sealant was used to seal the gap, fitted to both faces. This was undertaken for a length of between 600-625mm, and in this area replaced the use of Fire Door Foam.

The testing has therefore proven the ability of Fire Door Foam to provide fire stopping across a range of different scenarios, including in combination with Fire and Acoustic Seals Intumescent and Acoustic Sealant. The majority of the testing did not include either an architrave or a sealant ‘cap’ applied over the foam, which therefore provided a more onerous testing condition because the Fire Door Foam will have been exposed to the furnace heating conditions immediately.

Plastic packers were predominantly used to support the door for the installation and the foam was tested at various widths and depths.

#### 4.2.2 60 Minutes Integrity Performance

Test report	Supporting construction	Frame material	Stated frame density	Frame depth (mm)	Gap width (mm)	Architrave	Frame packers
WF389582 (specimen A)	SSP*	Sapele	640kg/m <sup>3</sup>	90	25-33	MDF on exposed face only	Plastic
WF384623 (specimen A)	SSP*	MDF	700kg/m <sup>3</sup>	81	20	Half MDF to both faces	Unknown
WF384623 (specimen B)	SSP*	Sapele	640kg/m <sup>3</sup>	96	20	Half MDF to both faces	Unknown
CFR1803081-1 (specimen A)	TSP*	Sapele	620kg/m <sup>3</sup>	90	4.6-8.1	None	Timber and plastic
CFR190830-1	TSP*	Sapele	536-546kg/m <sup>3</sup>	119	16.4-23.7mm	None	Plastic

\*TSP = Timber stud partition – apertures not lined

\*SSP = Steel stud partition – apertures not lined

The testing has therefore proven the ability of Fire Door Foam to provide fire stopping across a range of different scenarios for 60 minutes integrity performance. As for the 30-minute evidence, the testing has, in most cases, proven the foam product when immediately exposed to fire exposure, with no architrave or sealant applied over the face of the foam.

Plastic packers were used to support the door for the installation of some of the doors successfully tested and the foam was tested at various widths and depths.

#### 4.2.3 Up to 120 Minutes Integrity Performance

Test report	Supporting construction	Frame material	Stated frame density	Frame depth (mm)	Gap width (mm)	Architrave	Frame packers
CFR1911291 (specimen A)	SSP*	Sapele	640kg/m <sup>3</sup>	132	7.1-11.5	None	Plastic
CFR1911291 (specimen B)	SSP*	Sapele	640kg/m <sup>3</sup>	132	15.3-23.9	None	Plastic

\*SSP = Steel stud partition – apertures not lined

In the above testing, the Fire Door Foam was ‘scraped back’ by 10mm, on all edges other than the unexposed face of doorset B. The void created was filled with Fire and Acoustic Seals Ltd Intumescent and Acoustic Sealant.

### 4.3 Assessed Fire Door Foam Parameters

Based on the performances detailed in Section 4.2, assessment is made that Fire & Acoustic Seals Ltd 'Fire Door Foam' would also be capable of maintaining the integrity of the junction between the combinations of door frame and structural surround detailed in sections 4.3.1 - 4.3.3 below, within the following parameters:

1. Gaps between the frame and structural surround are assessed up to a maximum width of 25mm.
2. For up to 60 minutes - Gaps must be fully filled, across the whole width of the frame, with Fire & Acoustic Seals Ltd Fire Door Foam. When architraves are fitted to one or both faces, the minimum depth of Fire Door Foam may be 70mm. The architraves must be a minimum of 18mm thick x 45mm wide and must be timber or MDF based. When architraves are not fitted, the minimum depth of Fire Door Foam must be 100mm.

In addition to the above, for up to 30 minutes integrity fire resistance, gaps up to 10mm wide may be filled with minimum 10mm deep Fire and Acoustic Seals Intumescent and Acoustic Acrylic Sealant to both faces, as a replacement for Fire Door Foam. However, for gaps increasing to more than 10mm wide, there must be a minimum overlap of 100mm where the Acrylic Intumescent Sealant system and the Fire Door Foam system meet (with the foam scraped back by a depth of 10mm and the sealant applied over the foam), to ensure continuity of the overall fire seal.

For up to 120 minutes - Gaps must be fully filled, across the whole width of the frame, with Fire & Acoustic Seals Ltd, 'Fire Door Foam', which is then scraped back by a minimum of 10mm to both faces, with the resulting void sealed using Fire and Acoustic Seals Intumescent and Acoustic Acrylic Sealant. The foam/sealant combination must be fitted to a total minimum depth of 132mm and may be fitted with or without architraves.

3. Fire & Acoustic Seals Ltd Fire Door Foam may be utilised with the following structural surrounds, however, the surround must be proven to provide no less fire resistance than the door/fire stopping seal. The structural surround aperture must provide a flat surface/face in order that the Fire Door Foam may be fitted with a rectangular cross sectional area.
  - timber stud partitions, with or without plasterboard linings
  - steel stud partitions, with or without plasterboard linings
  - blockwork walls
  - masonry walls
  - low and high density concrete walls
4. For both 30 and 60 minutes performance, the timber, engineered timber or MDF frames, must be proven for use with the chosen doorset design, for the applicable integrity performance, and at the frame dimensions to be used.
5. Beech, *Fagus sylvatica*, is not permitted for 60-minute, and above, applications.
6. Fire Door Foam is a cartridge gun applied product that when installed, expands during the initial reaction phase before curing as a 'set' mass of material. On the basis of this installation characteristic, the foam has the potential to expand beyond the face of the frame/supporting construction. It is considered acceptable to remove any surplus foam material once cured, using a sharp bladed instrument, provided the limitations of this assessment are maintained with respect to minimum foam depth and width requirements. Furthermore, the installation of the product must provide a consistent mass of material. Care should therefore be taken to ensure this is achieved. Any air pockets must be filled with additional Fire Door Foam, if found during installation.

### 4.3.1 30 Minutes Integrity Performance

Based upon the experience of testing, the following types of frame materials are approved for doorsets required to achieve a minimum of 30 minutes fire resistance integrity performance if tested in accordance with BS 476-22: 1987 or BS EN 1634-1.

1. Softwood timber of nominal density  $\geq 510 \text{ kg/m}^3$
2. Hardwood timber of nominal density  $\geq 510 \text{ kg/m}^3$
3. Engineered timber for 30-minute applications
4. MDF of nominal density  $\geq 700 \text{ kg/m}^3$

### 4.3.2 60 Minutes Integrity Performance

Based upon the experience of testing, the following types of frame materials are approved for doorsets required to achieve a minimum of 60 minutes fire resistance integrity performance if tested in accordance with BS 476-22:1987 or BS EN 1634-1.

1. Hardwood timber of nominal density  $\geq 640 \text{ kg/m}^3$
2. Engineered timber proven for 60-minute applications
3. MDF of nominal density  $\geq 700 \text{ kg/m}^3$

### 4.3.3 Up to 120 Minutes Integrity Performance

The frame material and construction/arrangement required to achieve up to 120 minutes fire resistance performance must be as tested for the specific doorset design and have been tested in accordance with BS 476-22:1987 or BS EN 1634-1. The frame must be of a solid, rectangular construction and be timber or mineral/non-combustible core based. As noted in Section 4.3, the minimum frame depth/fire stopping seal must be not less than 132mm.

## 4.4 Plastic packers – for use with 30 and 60-minute doorsets only

### 4.4.1 Tested plastic packers

Based upon the performance documented in Section 4.2, a number of tests included the use of plastic packers between the door frame and the supporting construction. For example, test reference WF389582 has proven that polypropylene, rectangular plastic packers, 100mm long x 28mm wide x 1-6mm thick, as distributed by Broadfix, may be utilised for both 30 and 60 minutes performance, providing:

- The packers are packed using the varying thicknesses available to tightly fill the frame to structural surround gap, across the full width of the frame.
- Packers are fitted such that when tightly packed they are firmly held in position by the frame to structural surround fixings.
- When fitted, packers proud of the frame are trimmed back flush with the frame.
- The packers are fully encased by Fire and Acoustic Seals 'Fire Door Foam' on both sides (top and bottom) of the packers and across the full width of the frame.
- Timber or MDF based architraves, where required, cover the frame to structural surround gap.
- The doorset construction complies with section 4.3, as applicable.

Not all supporting test evidence documents the specific type of plastic packer, but Warringtonfire believe it is reasonable to assume that they would be similar to the construction of the Broadfix packer, noted above.

#### 4.4.2 Alternative types of plastic packers

Alternative rectangular packers to the tested Broadfix packers may be used for 30 or 60-minute doorset applications providing:

- They are manufactured from polypropylene and are no wider than 28mm.
- Their design does not include a hollow internal section penetrating entirely across the frame width which might allow flames or hot gases to reach the unexposed face of the doorset.
- They are fitted as described in section 4.4.1 above.
- The doorset construction complies with section 4.3, as applicable.

'Horseshoe' shaped plastic packers are also considered an acceptable alternative and may be used for 30 or 60-minute doorset applications providing:

- They are manufactured from polypropylene with each 'leg' no more than 28mm apart.
- Their design does not include a hollow internal section penetrating entirely across the frame width which might allow flames or hot gases to reach the unexposed face of the doorset.
- The internal void between the 2No 'legs' is fully filled using Fire and Acoustic Seals 'Fire Door Foam'.
- They are fitted as described in section 4.4.1 above.
- The doorset construction complies with section 4.3, as applicable.

#### 4.5 Timber-based packers – for use with 30 and 60-minute doorsets only

Based upon the performance documented in Section 4.2, it has been proven that the use of timber-based packers do not adversely affect the performance of the Fire Door Foam sealing system. Timber packers should be fitted with the following limitations:

- The packers are packed using the varying thicknesses available to tightly fill the frame to structural surround gap, across the full width of the frame.
- The density of the packer should be equal to or greater than that of the door frame. However, provided this is the case, the timber species and/or type of timber product may be different from that of the frame. For example, MDF packers may be used to support a door assembly fitted with a European redwood frame, provided the density restrictions above, are met.
- Packers are fitted such that when tightly packed they are firmly held in position by the frame to structural surround fixings.
- When fitted, packers proud of the frame are trimmed back flush with the frame.
- The packers are fully encased by Fire and Acoustic Seals 'Fire Door Foam' on both sides of the packers and across the full width of the frame.
- Timber or MDF based architraves, where required, cover the frame to structural surround gap.
- The doorset construction complies with section 4.3, as applicable

## 4.6 Packers to be used for up to 120-minute doorsets

The packer type and material required to achieve up to 120 minutes fire resistance performance must be as tested for the specific doorset design and have been tested in accordance with BS 476-22:1987 or BS EN 1634-1.

### 4.6.1 Tested plastic packers

Based upon the performance documented in Section 4.2, test referenced CFR1911291 included the use of rectangular plastic packers between the door frame and the supporting construction. The test evidence does not document the specific type of plastic packer, but Warringtonfire believe it is reasonable to assume that they would be similar to the construction of the rectangular Broadfix packer, noted previously. Plastic packers must follow the following limitations:

- They are manufactured from polypropylene and are no wider than 28mm.
- The packers are packed using the varying thicknesses available to tightly fill the frame to structural surround gap, across the full width of the frame.
- Packers are fitted such that when tightly packed they are firmly held in position by the frame to structural surround fixings.
- Their design does not include a hollow internal section penetrating entirely across the frame width which might allow flames or hot gases to reach the unexposed face of the doorset.
- When fitted, packers proud of the frame are trimmed back recessed beyond the face of the frame by 10mm and sealed using Fire and Acoustic Seals Intumescent and Acoustic Acrylic Sealant.
- The packers are fully encased by Fire and Acoustic Seals 'Fire Door Foam' on both sides (top and bottom) of the packers to ensure there are no voids which might allow flames and hot gases to reach the unexposed face of the doorset.
- Timber or MDF based architraves, where required, cover the frame to structural surround gap, as tested.
- The doorset construction complies with section 4.3, as applicable.

## 4.7 Doorset Types

This scope of application is valid for doorsets of the following generic types which have been successfully tested or assessed in terms of fire resistance integrity to the requirements of BS 476-22:1987 and/or BS EN 1634-1 for the required 30, 60 or up to 120 minutes performance, as applicable.

- Timber based flush doorsets
- Joinery timber doorsets

The doorset may include associated constructions such as side panels, fanlights or screen elements, provided they meet the test or assessment criteria noted above. However, the maximum height of the construction sealed using Fire Door Foam may be no greater than 2800mm from the finished floor level.

This scope of application document only considers the fire stopping between the frame and structural surround, as documented in Sections 4.3-4.6. All other details for the doorset design must meet the requirements of the test or supporting documentation for the relevant doorset design. It must also be ensured that the requirements within this report, for elements such as minimum frame depth and density etc, are compatible with the scope of application provided by the applicable test or supporting documentation for the relevant doorset design.

## 5 Conclusion

Providing that Fire & Acoustic Seals Ltd Fire Door Foam, and where applicable, Fire and Acoustic Seals Intumescent and Acoustic Acrylic Sealant, is utilised in accordance with the specifications in this document and all other construction and installation details are compliant with the relevant supporting doorset fire resistance test or assessment documentation, it is the opinion of Warringtonfire that the resulting doorset will provide a minimum 30, 60 or up to 120 minutes fire resistance integrity, as appropriate, if tested in accordance with BS 476-22:1987.



## 6 Declaration by the Applicant

1. We the undersigned confirm that we have read and comply with obligations placed on us by FTSG Resolution No 82: 2001.
2. 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 this assessment is being made.
3. 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.
4. We are not aware of any information that could adversely affect the conclusions of this assessment.
5. If we subsequently become aware of any such information, we agree to ask the assessing authority to withdraw the assessment.

Signed:



Name:

JULIAN VOLLANS

For and on behalf of: Fire & Acoustic Seals Ltd.



## 7 Limitations

The following limitations apply to this assessment:

1. This assessment addresses itself solely to the elements and subjects discussed and does not cover any other criteria. All other details not specifically referred to should remain as tested or assessed.
2. This assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available, Warringtonfire reserves the right to withdraw the assessment unconditionally but not retrospectively.
3. This assessment has been carried out in accordance with Fire Test Study Group Resolution No 82: 2001.
4. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
5. This assessment relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions. It does not purport to be a complete specification ensuring fitness for purpose and long-term serviceability. It is the responsibility of the client to ensure that the element conforms to recognised good practice in all other respects and that, with the incorporation of the guidance given in this assessment, the element is suitable for its intended purpose.
6. This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with BS 476: Part 22: 1987, on the basis of the test evidence referred to in this report. 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.
7. This report may only be reproduced in full. Extracts or abridgements of reports shall not be published without permission of Warringtonfire. All work and services carried out by Warringtonfire Testing and Certification Limited are subject to, and conducted in accordance with, the Standard Terms and Conditions of Warringtonfire Testing and Certification Limited, which are available at <https://www.element.com/terms/terms-and-conditions> or upon request.
8. The version/revision stated on the front of this field of application supersedes all previous versions/revisions and must be used to manufacture doorsets from the stated validity date on this front cover. Previous revisions of the Field of Application cannot be used once an updated Field of Application has been issued under a new revision.

## 8 Validity

- 1) The assessment is valid for the period shown the front cover, after which time it must be submitted to Warringtonfire for technical review.
- 2) This assessment report is not valid unless it incorporates the declaration given in Section 6 duly signed by the applicant.

<b>Signature:</b>		
<b>Name:</b>	<b>R Axe</b>	<b>A Winning</b>
<b>Title:</b>	Technical Manager	Senior Product Assessor

## Appendix A

### Revisions

Revision	Warringtonfire Reference	Date	Details
A	WF422786	03.04.2020	Amendment to assess the use of plastic packers and up to 120 minutes fire resistance based on relevant evidence
B	502117	29.03.2021	Clarification added to section 4.3 to confirm that excess foam generated during installation is able to be cut back, providing the limitations of the assessment are met.

## Appendix B

### Fire Door Foam Data Sheet Supplied by Fire and Acoustic Seals Ltd



## FIRE DOOR FOAM – PRODUCT OVERVIEW



Buildings are compartmentalised to delay the spread of fire from one area to another. These compartments are usually linked by fire doors to allow the flow of traffic around the building. Fire doors have two important functions in a fire; when closed they form a barrier to stop the spread of fire and when opened they provide a means of escape. Unprotected cavities between the door frame and the supporting construction can be easily exploited by fire and if not adequately sealed or protected, can undermine the fire performance of the fire door assembly.

Fire and Acoustic Fire Door Foam is a proprietary fire sealing media which has been specifically formulated to reinstate the fire resistance of cavities and gaps between pedestrian fire door assemblies and supporting constructions, for use in flexible partitions and masonry walls. The product has been extensively tested in accordance for 30 and 60 minutes fire resistance in accordance with BS 476:Part 22:1987 and BS EN 1634-1.

#### FIELD OF APPLICATION

Fire Door Foam is suitable for use in a wide range of construction and building fire stopping solutions, including:

- Cavity gap filling and perimeter pointing around fire doors
- Timber frames, softwood, hardwood and including MDF
- Up to 60 minutes fire resistance

#### PRODUCT FEATURES

- Suitable for use in Slim-line framing
- Compatible with plastic packers
- Does not require any additional backing and capping media

#### PRODUCT DATA

Gap width	Gap depth	Fire Resistance
0-33mm	Minimum frame depth of 70mm - Flexible or Solid Supporting Construction	Up to 60 minutes fire performance

Further information and guidance refer to Assessment Report Number WF385912

#### TEST DATA INFORMATION

Report Reference	Body	Fire Rating	Door Type	Test Standard
CFR1803082	Cambridge Fire Research	FD30	GRP – Composite doorset	BS 476: Part 20/22: 1987
CFR1803081	Cambridge Fire Research	FD30	Fire rated timber doorset	BS 476: Part 20/22: 1987
CFR1803081	Cambridge Fire Research	FD60	Fire rated timber doorset	BS 476: Part 20/22: 1987
WF389582	Exova	FD60	Fire rated timber doorset	BS EN 1634-1:2014 & BS EN 1363-1:2012
WF386228	Exova	FD30	Fire rated timber doorset	BS 476: Part 20/22: 1987
WF384623	Exova	FD60	Fire rated timber doorset	BS EN 1634-1:2014 & BS EN 1363-1:2012

#### INSTALLATION INSTRUCTIONS

1. Surfaces must be firm, clean, free of dust and loose particles. The cavity or voided area to be filled must be well moistened with water, this will aid installation adhesion to the substrate. It may be necessary to use a primer, prior to the application of the foam.
2. Optimum application temperature +10°C > +30°C [+20°C ideal].

3. Cans should not be left in an over-heated environment, temperatures above +50°C or exposed to direct sunlight.
4. Prior to application, ensure that the surrounding area is protected, in particular when using the foam in retrofit applications. It may also be necessary to mask and protect the surrounding area of the cavity, particularly in areas where the compartment may be decorated or furnished.
5. Shake the can for two minutes, until the foam inside becomes liquid. This is essential to ensure the performance of the product. Then attach the adapter or gun to the canister.
6. Fill the cavity from the base of the aperture slowly and build up the layers of the foam, ensuring that the void is filled. Take care not to over-fill the cavity.
7. Allow the foam to cure and using a sharp bladed instrument cut-off the expanded 'cured' foam.
8. Ensure that empty cans are disposed of by reference to local regulations.

#### PACKAGING INFORMATION

Fire Door Foam is available in:



#### OTHER INFORMATION

The information contained herein is based upon the present state of our knowledge. Recipients of our products must take responsibility for observing existing laws and regulations.

Due to our policy of continuous improvement, Fire & Acoustic Seals Limited reserves the right to amend specifications without prior notice.

Please scan here or visit [www.firedoorfoam.com](http://www.firedoorfoam.com) for the full technical datasheet



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