

Warringtonfire
Chiltern House
Stocking Lane
High Wycombe
HP14 4ND
United Kingdom
T: +44 (0)1494 569750
W: www.warringtonfire.com



Title:

Scope of Application for:

The Installation of Timber
Based Doorsets for:
30 & 60 Minutes Fire
Resistance

WF Report No:

WF419831

Valid From:

11th March 2020

Valid Until:

11th March 2025

Prepared For:

STS Ltd.
Derwent House
Station Road Industrial Estate
Low Prudhoe
Northumberland
NE42 6PN

Contents

	Page No.
1 Foreword	3
2 Proposal	3
3 Test Evidence.....	4
4 Sealed Tight Solutions Ltd Materials.....	14
5 Timber Based Doorsets.....	14
6 Sealing to Structural Opening	15
7 Smoke Sealing	19
8 Structural Opening	21
9 Fixings	21
10 Conclusion.....	21
11 Declaration by the Applicant.....	22
12 Limitations	23
13 Validity.....	24
Appendix A Revisions	25

1 Foreword

This field of application report has been commissioned by Sealed Tight Solutions Ltd (STS) and relates to the application of fire stopping products and methods intended to maintain the fire resistance integrity performance of 30 and 60 minute, timber based, fire resisting doorset designs.

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 door assemblies, 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 and therefore can neither be considered for a CE marking application nor can the conclusion be used to establish a formal classification against EN13501-2.

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.

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.

2 Proposal

It is proposed to consider the fire resistance performance of timber based doorsets installed utilising Sealed Tight Solutions Ltd ST88 intumescent mastic and ST99 Fire Foam, as described in the technical specification in section 4 of this report for 30 and 60 minutes integrity performance, if the design was to be tested to the requirements of BS 476: Part 22:1987, *Fire tests on building materials and structures – Part 22: Method for determination of the fire resistance of non-load bearing elements of construction*.

The field of application defined in this report is based on the fire resistance test evidence for the doorset design which is summarised in section 3. Analysis of specific construction details that require assessment are given within this report against the relevant element of construction, as appropriate.

3 Test Evidence

The test evidence summarised below has been generated to support the fire resistance performance of the door design that is the subject of this field of application.

Note: dimensions are in mm unless otherwise stated.

Abbreviations: (h) = height; (w) = width; (t) = thickness; (d) = deep.

Latches fitted but disengaged for the test, are reported as 'unlatched'.

3.1 Test Report WF391843

The referenced test report, the essential details of which are summarised below, is supporting data for the use of ST88 mastic in timber door frames for up to 30 minutes integrity performance.

Date of test	11 th November 2017	
Identification of test body:	Exova Warringtonfire, now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.	
Sponsor:	Falcon Panel Products Ltd, Clock House Station approach, Shepperton, Middlesex, TW17 8AN	
Tested Product:	2No Falcon Panel Products Ltd Strebord44 based, latched, single acting, single leaf, timber based flush and glazed doorsets.	
Summary of test specimen (mm):	<p>Specimens A & B comprised: a particleboard core with integral facings. All leaf edges were lipped with 6(t) Sapele of nominal density 640kg/m³. Leaves were glazed, apertures were 784 (h) x 234 (w).</p> <p>Leaf Size: A: 2235(h) x 1050(w) x 44(t); B: 2140(h) x 916(w) x 44(t).</p> <p>Leaf Edge Intumescent Seals: 2No STS STS104FO perimeter intumescent seals were centrally fitted in the frame reveals of the head and jambs.</p> <p>Door frame: European Redwood of nominal density 510kg/m³ 29mm wide with 18 thick Redwood architraves on both faces.</p> <p>Hardware – both doorsets:</p> <p>The doorset was hung on 3No H101 lift of type steel hinges; an Astra 4000 series jamb mounted closer was fitted at approximately mid height of the door leaf with an ERA Surefire MPL multipoint latch with a 1630mm high forend (engaged at all 3 points for the test).</p> <p>Installation:</p> <p>The doorsets were oriented to open in towards the furnace, installed within a plasterboard clad, timber stud partition. A bead of ST88 mastic 10-15 deep and 12.5mm wide was installed to both faces leaving a void between the beads.</p>	
Test Standard:	BS 476: Part 22: 1987	
Performance	Specimen A	Specimen B
	Integrity: 51 minutes Insulation: 36 minutes	Integrity: 47 minutes Insulation: 39 minutes

3.2 Test Report WF391545 Revision A

The referenced test report, the essential details of which are summarised below, is primary data for the use of ST88 mastic in timber door frames for up to 30 minutes integrity performance.

Date of test	3 rd November 2017
Identification of test body:	Exova Warringtonfire, now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.
Sponsor:	Sealed Tight Solutions Ltd
Tested Product:	A VicaimaFD30 based, latched, single acting, single leaf, timber based flush doorset.
Summary of test specimen (mm):	<p>Specimen B comprised: a flaxboard core with 3 thick MDF facings. Vertical leaf edges, only, were lipped with 6(t) Oak of nominal density 770kg/m³.</p> <p>Leaf Size: 2040 (h) x 926 (w) x 45 (t).</p> <p>Leaf Edge Intumescent Seals: 1No STS ST154FO perimeter intumescent seal was centrally fitted in the frame reveals of the head and jambs with a ST1009 environmental seals on the upstand of the stop and a ST422 drop seal in the threshold of the leaf.</p> <p>Door frame: Engineered softwood of nominal density 510kg/m³ 32mm wide with 18 thick engineered softwood architrave on exposed face only.</p> <p>Hardware: The doorset was hung on 3No bearing butt steel hinges; a Rutland TS9205 overhead closer was fitted with a Winkhaus AV2 multipoint latch with a 1770mm high forend (engaged for the test) and a Winkhaus cable loop mounted in the leaf hanging edge.</p> <p>Installation: The doorset was oriented to open in towards the furnace, installed within a plasterboard clad, timber stud partition. Tightly packed mineral fibre was capped with a 10-15 deep bead of ST88 mastic filling the full depth of the structural opening.</p>
Test Standard:	BS 476: Part 22: 1987
Performance	Integrity: 42 minutes Insulation: 42 minutes

3.3 Test Report WF384630 Revision A

The referenced test report, the essential details of which are summarised below, is primary data for the use of ST88 mastic in timber door frames for up to 30 minutes integrity performance.

Date of test	15 th June 2017
Identification of test body:	Exova Warringtonfire, now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.
Sponsor:	Falcon Panel Products Ltd
Tested Product:	A Strebord44 based, latched, single acting, double leaf, timber based flush doorset.
Summary of test specimen (mm):	<p>Specimen A comprised: a flaxboard core with 3 thick MDF facings. All leaf edges were lipped with 8(t) Sapele of nominal density 640kg/m³.</p> <p>Leaf Size: 2440 (h) x 1050/400 (w) x 44 (t).</p> <p>Leaf Edge Intumescent Seals: 2No STS ST104FO perimeter intumescent seals were centrally fitted in the reveal of the frame head and 2No STS ST1504FO perimeter intumescent seals were centrally fitted in the frame jambs.</p> <p>Door frame: Engineered softwood of nominal density 510kg/m³ 32mm wide with 18 thick engineered softwood architrave on exposed face only.</p> <p>Hardware: The doorset was hung on 4No H101 lift off steel hinges; a Rutland TS5204 overhead closer was fitted to one leaf with an Arrone AR1500 to the other. A Laidlaw DIN latch with a 235 high forend was fitted and engaged for the test with an electric strike plate.</p> <p>Installation: The doorset was oriented to open in towards the furnace, installed within a plasterboard clad, timber stud partition. Tightly packed mineral fibre was capped with a 10 x 10 bead of ST88 mastic filling the full depth of the structural opening.</p>
Test Standard:	BS 476: Part 22: 1987
Performance	Integrity: 43 minutes Insulation: 43 minutes

3.4 Test Report WF385685

The referenced test report, the essential details of which are summarised below, is primary data for the use of ST99 Fire Foam in timber door frames for up to 30 minutes integrity performance.

Date of test	13 th July 2017
Identification of test body:	Exova Warringtonfire, now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.
Sponsor:	Sealed Tight Solutions Ltd
Tested Product:	A Falcon Stredor FD30 based, unlatched, single acting, double leaf, timber based flush doorset.
Summary of test specimen (mm):	<p>Specimen comprised: a 3 layer plywood lamel core with 8 thick MDF facings. All leaf edges were lipped with 6(t) Sapele of nominal density 640kg/m³.</p> <p>Leaf Size: 2400 (h) x 950/950 (w) x 44 (t).</p> <p>Leaf Edge Intumescent Seals: 2No STS ST104FO perimeter intumescent seals were centrally fitted in the reveal of the frame head and 1No STS ST1504FO perimeter intumescent seal was centrally fitted in the frame jambs.</p> <p>Door frame: Engineered softwood of nominal density 510kg/m³ 32mm wide with 15 thick engineered softwood architrave on both faces.</p> <p>Hardware: The doorset was hung on 3No H101 lift off steel hinges; an Arrone AR1500 face fitted closer was installed on both leaves. A Zoo Hardware steel latch with a 235 high forend was fitted disengaged for the test.</p> <p>Installation: The doorset was oriented to open in towards the furnace, installed within a plasterboard clad, steel stud partition. 10mm thick ST99 Fire Foam was installed filling the full depth of the structural opening. Un-named plastic packers were installed at all frame fixing points, the full width of the frame with no protection applied to the faces of the packers.</p>
Test Standard:	BS 476: Part 22: 1987
Performance	Integrity: 40 minutes Insulation: 40 minutes

3.5 Test Report WF396750 AR1

The referenced test report, the essential details of which are summarised below, is primary data for the use of ST99 Fire Foam in timber door frames for up to 60 minutes integrity performance.

Date of test	28 th February 2018
Identification of test body:	Exova Warringtonfire, now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.
Sponsor:	Sealed Tight Solutions Ltd
Tested Product:	A Falcon Panel Products Ltd Strebord60 based, unlatched, single acting, single leaf, timber based flush and glazed doorset.
Summary of test specimen (mm):	<p>Specimen B comprised: a particleboard core with integral facings. Vertical leaf edges, only, were lipped with 6(t) Sapele of nominal density 640kg/m³. Leaf was glazed, aperture was 1142 (h) x 445 (w). Leaf Size: 2040 (h) x 929 (w) x 54 (t). Leaf Edge Intumescent Seals: 2No STS ST1504 perimeter intumescent seals were centrally fitted in the frame reveals of the head and jambs. Door frame: Sapele of nominal density 640kg/m³ 32mm wide with 15 thick MDF architraves on both faces. Hardware: The doorset was hung on 3No bearing butt steel hinges; an Arrone AR1500 overhead closer was fitted with a Zoo hardware latch with a 234mm high forend (disengaged for the test). Installation: The doorset was oriented to open in towards the furnace, installed within a plasterboard clad, steel stud partition. ST99 Fire Foam was installed filling the 15mm wide gap behind the door frame jambs and head for the full width of the gap between architraves. TIMco plastic packers were installed at all frame fixing points, the full width of the frame with no protection applied to the faces of the packers.</p>
Test Standard:	BS 476: Part 22: 1987
Performance	Integrity: 62 minutes Insulation: 32 minutes

3.6 Test Report WF392155

The referenced test report, the essential details of which are summarised below, is primary data for the use of ST99 Fire Foam in timber door frames for up to 60 minutes integrity performance.

Date of test	24 th November 2017
Identification of test body:	Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.
Sponsor:	Falcon Panel Products Ltd
Tested Product:	A Falcon Stredor FD60 based, unlatched, single acting, double leaf, timber based flush doorset.
Summary of test specimen (mm):	<p>Specimen comprised: a 3 layer plywood lamel core with 10 thick plywood facings. All leaf edges were lipped with 8(t) Sapele of nominal density 640kg/m³.</p> <p>Leaf Size: 2400 (h) x 952/952 (w) x 54 (t).</p> <p>Leaf Edge Intumescent Seals: 2No STS ST154FO perimeter intumescent seals were centrally fitted in the reveal of the frame head, jambs and one meeting edge.</p> <p>Door frame: Sapele of nominal density 640kg/m³ 32mm wide with 18 thick MDF architrave on both faces.</p> <p>Hardware: The doorset was hung on 4No H101 lift off steel hinges; a Rutland Size 3 11352 cam action slide arm overhead closer was installed on both leaves. An Arrone steel latch with a 235 high forend was fitted disengaged for the test.</p> <p>Installation: The doorset was oriented to open in towards the furnace, installed within a plasterboard clad, timber stud partition. 7 – 14 mm thick ST99 Fire Foam was installed filling the full depth of the structural opening. TiMco plastic packers were installed at all frame fixing points, the full width of the frame with no protection applied to the faces of the packers.</p>
Test Standard:	BS 476: Part 22: 1987
Performance	Integrity: 57 minutes* Insulation: 57 minutes

* Initial integrity failure was recorded 300mm up from the threshold on the meeting edges. No further failures were recorded prior to 68 minutes. It is the opinion of Warringtonfire that the initial failure is remote from the installation details herein and may therefore be ignored.

3.7 Test Report WF386959

The referenced test report, the essential details of which are summarised below, is supporting data for the use of ST88 mastic capping ST99 Fire Foam in timber door frames for up to 60 minutes integrity performance.

Date of test	18 th August 2017	
Identification of test body:	Exova Warringtonfire, now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.	
Sponsor:	Falcon Panel Products Ltd	
Summary of test specimens (mm):	<p>Specimen A comprised: a single leaf Strebord 44 particleboard core with integral facings. All leaf edges were lipped with 8(t) Sapele of nominal density 640kg/m³.</p> <p>Leaf Size: 2438(h) x 950(w) x 44(t).</p> <p>Leaf Edge Intumescent Seals: 1No STS STS154FO perimeter intumescent seals were centrally fitted in the frame reveals of the head and jambs.</p> <p>Door frame: European Redwood of nominal density 510kg/m³ 31mm wide with 15 thick MDF architraves on both faces.</p> <p>Hardware: The doorset was hung on 4No H101 lift of type steel hinges; a Rutland ITS11024 concealed head mounted closer with a Porta DIN sashlock with a 230mm high forend (disengaged for the test) and an Abloy EA280 cable loop in the hanging edge.</p> <p>Specimen B comprised: a double leaf Strebord FD60 particleboard core with integral facings, a 10mm diameter hole was drilled horizontally across the full width of the core. All leaf edges were lipped with 8(t) Sapele of nominal density 640kg/m³.</p> <p>Leaf Size: 2438(h) x 1050/400(w) x 54(t).</p> <p>Leaf Edge Intumescent Seals: 2No STS STS154FO perimeter intumescent seals were centrally fitted in the frame reveals of the head and jambs and one meeting edge.</p> <p>Door frame: Sapele of nominal density 640kg/m³ 31mm wide with 15 thick MDF architraves on both faces.</p> <p>Hardware: The doorset was hung on 4No H101 lift of type steel hinges; a Rutland TS52014 surface mounted closer with a Winkhaus mortice latch with a 310mm high forend (disengaged for the test) and GEM electric strike and an Abloy EA280 cable loop in the hanging edge.</p> <p>Installation A & B: The doorsets were oriented to open in towards the furnace, installed within a plasterboard clad, timber stud partition. A bead of ST88 mastic 15 deep and 12.5mm wide was installed to both faces capping a full depth of ST99 Fire Foam. Broadfix plastic packers were installed at all frame fixing points with their faces capped by ST88 mastic.</p>	
Test Standard:	BS 476: Part 22: 1987	
Performance	Specimen A	Specimen B
	Integrity: 32 minutes Insulation: 32 minutes	Integrity: 61 minutes Insulation: 61 minutes

3.8 Test Report WF372245

The referenced test report, the essential details of which are summarised below, is supporting data for the use of ST99 Fire Foam in timber door frames for up to 60 minutes integrity performance.

Date of test	11 th November 2016
Identification of test body:	Exova Warringtonfire, now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.
Sponsor:	Sealed Tight Solutions Ltd
Tested Product:	A Falcon Panel Products Ltd Strebord60 based, unlatched, single acting, double leaf, timber based flush and glazed doorset.
Summary of test specimen:	<p>Specimen comprised: a particleboard core with integral facings. Vertical leaf edges, only, were lipped with 6(t) sapele of nominal density 640kg/m³. Both leaves were glazed, both apertures were 998 (h) x 195 (w).</p> <p>Leaf Size: 1310 (h) x 635/640 (w) x 54 (t).</p> <p>Leaf Edge Intumescent Seals: 2No STS ST1504 perimeter intumescent seals were centrally fitted in the frame reveals of the hanging edges and head, and within one closing jamb, together with a 10 x 3 ST1009 environmental seal against the upstand of the frame stops.</p> <p>Door frame: Sapele of nominal density 640kg/m³ 32mm wide with 18 thick Sapele architraves on both faces.</p> <p>Hardware: The doorset was hung on 2No bearing butt steel hinge per leaf; an Arrone AR1500 overhead closer was fitted to both leaves. Zoo hardware flush bolts were fitted top and bottom of one leaf.</p> <p>Installation: The doorset was oriented to open in towards the furnace, installed within a plasterboard clad, timber stud partition. ST99 Fire Foam was installed filling the 20mm wide gap behind the door frame jambs and head for the full width of the gap behind one architrave.</p>
Test Standard:	Principles of BS 476: Part 22: 1987
Performance	Integrity: 44 minutes ¹ Insulation: 0 minutes ²

¹ The initial failure at 44 minutes due to continuous flaming at the meeting edges is considered to be remote to the effects of the installation method of the door frame. No failures at the hanging edges, leaf head or the rear of the frame were recorded prior to termination the test at 65 minutes.

² In accordance with Section 8.6.1 of BS 476: Part 22: 1987, the specimen was not evaluated for insulation.

3.9 Test Report RF14207 Revision B

The referenced test report, the essential details of which are summarised below, is supporting data for the use of ST422 drop seal in timber based door leaves for up to 60 minutes integrity performance.

Date of test	14 th August 2014
Identification of test body:	BMTRADA, now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.
Sponsor:	Sealed Tight Solutions Ltd
Tested Product:	A Falcon Panel Products Ltd Strebord60 based, latched, single acting, single leaf, timber based flush doorset.
Summary of test specimen:	<p>Specimen A comprised: a particleboard core with integral facings. All leaf edges were lipped with 8(t) Oak of nominal density 720kg/m³. Specimen was unglazed.</p> <p>Leaf Size: 2040 (h) x 922 (w) x 54 (t).</p> <p>Leaf Edge Intumescent Seals: 2No STS ST15x4 perimeter intumescent seals were centrally fitted in the frame reveals of the hanging edges and head, together with a 10 x 3 ST1009 environmental seal against the upstand of the frame stops and an ST422 drop seal fitted centrally in the leaf threshold.</p> <p>Door frame: MDF of nominal density 750kg/m³ 32mm wide with 18 thick MDF architrave on fire exposed face only.</p> <p>Hardware: The doorset was hung on 3No bearing butt steel hinges; a Rutland TS3204 overhead closer was fitted and a Winkhaus AV2 lockset was installed.</p> <p>Installation: The doorset was oriented to open in towards the furnace, installed within a plasterboard clad, timber stud partition. Rockwool mineral fibre was installed filling the 10-15mm wide gap behind the door frame jambs and head capped with intumescent mastic.</p>
Test Standard:	Principles of BS 476: Part 22: 1987
Performance	Integrity: 65 minutes Insulation: 65 minutes

3.10 Test Report WF173658A

The referenced test report, the essential details of which are summarised below, is supporting data for the use of ST88 mastic as required by reference to BS8214: 2016 'Timber-based fire door assemblies – Code of practice'. See section 6.4 for additional installation options.

Date of test		22 nd May 2008					
Identification of test body:		Bodycote, now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 0249.					
Sponsor:		Held in confidence					
Tested Product:		ST88 mastic utilised as a linear gap seal product in an autoclaved blockwork wall					
Summary of test specimen:		<p>Supporting Construction: Autoclaved blockwork wall with overall dimensions 3050mm wide x 3035mm high x 200mm thick incorporating 12No gaps, 6 of which utilised the ST88 mastic product as a linear gap seal. Each aperture was nominally 1000mm long and for specimens they were:</p> <p>A & B 30mm wide C & D 10mm wide I & K 20mm wide.</p> <p>ST88 Installation details:</p> <p>A – 30 x 25, exposed face only B – 30 x 20, both faces C – 10 x 10, exposed face only D – 10 x 10, both faces I – 20 x 20, exposed face only K – 20 x 10, both faces</p>					
Test Standard:		BS EN 1366-3: 2004 and BS EN 1366-4: 2006					
Seal Reference		A	B	C	D	I	K
Test Results (minutes)	Cotton Pad	252	264	257	264	264	264
	Sustained Flaming	264	264	264	264	264	264
	Insulation	71	264	216	264	114	264

4 Sealed Tight Solutions Ltd Materials

Sealed Tight Solutions Ltd sealing products ST88 and ST99 Fire Foam are manufactured utilising proprietary compounds, which expand multi directionally in volume when exposed to elevated temperatures, thereby forming a fire resistant seal for door frame installations in 30 & 60 minute, timber based, fire resisting doorsets.

5 Timber Based Doorsets

The installation details herein may only be applied to timber based door leaves mounted in timber based door frames which have:

- been previously successfully fire tested at a UKAS accredited laboratory, for a minimum of 30 or 60 minutes integrity performance, as appropriate, to BS476: Part22: 1987 or BSEN 1634-1
- been assessed by Warringtonfire as suitable to provide a minimum of 30 or 60 minutes integrity performance, as appropriate, to BS476: Part22: 1987 or BSEN 1634-1.

Other than for the specific installation requirements detailed herein, the relevant supporting documentation for the specified doorset must be referred to for all construction details.

6 Sealing to Structural Opening

The door frame to structural opening gap must be protected using one of the following methods. Door frame material must be as required by reference to the supporting documentation for the specified doorset.

6.1 Sealing Options – 30 Minute Applications

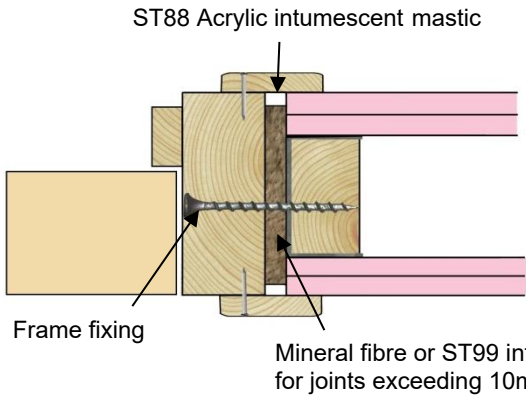
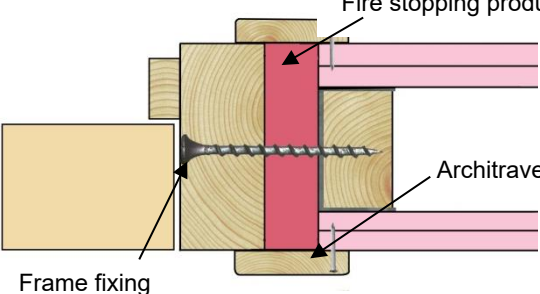
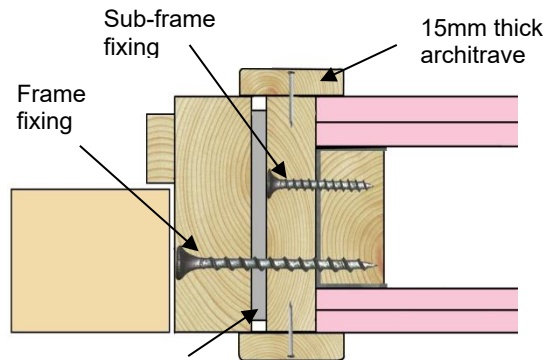
For 30 minutes integrity performance, gaps up to a maximum of 20mm between the frame and structural opening may be protected as illustrated below.

Architrave material in all cases may be MDF, softwood or hardwood, of a minimum density of 510kg/m³, irrespective of the door frame material. Where fitted, architraves must overlap at least 15mm each side. Architraves may always be fitted to both faces if required.

For option 1 and 2 an architrave may be installed on the fire exposed face only, if required. See section 6.4 for further options.

Very small gaps, i.e. ≤5mm between the rear of frame and supporting construction may be protected as follows:

A bead of mastic must be gunned into the gap, pushed into the gap as far as practicable - aiming to achieve a 10mm deep bead of mastic which is then protected by architraves on both faces.

<p>1. Gaps up to 10mm must be sealed on both sides with a minimum 10mm depth of ST88 intumescent mastic. The use of mineral fibre or ST99 Fire Foam between the mastic beads is optional</p>	
<p>2. Gaps between 10mm and 20mm must be tightly packed with mineral fibre or ST99 Fire Foam, capped on both sides with a, minimum, 10mm depth of ST88 acrylic intumescent mastic.</p>	
<p>3. Gaps up to 20mm may be filled with proprietary fire stopping product (i.e. ST99 Fire Foam), additional mastic capping is not required. Joint must be fitted with architraves</p>	

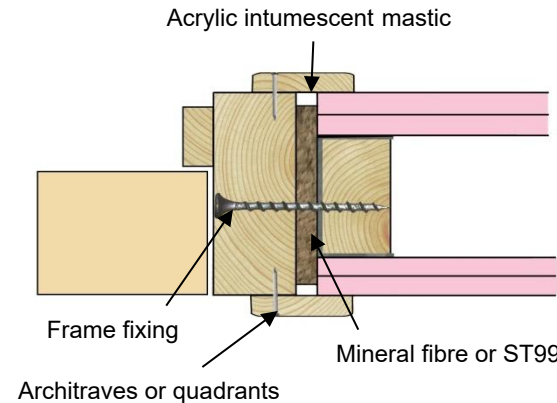
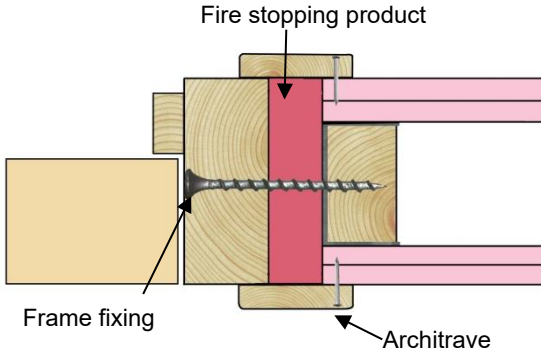
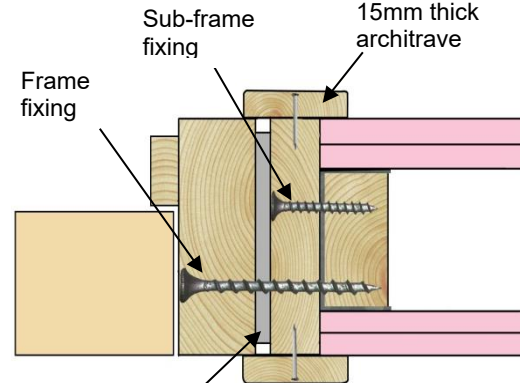
6.2 Sealing Options – 60 Minute Applications

For 60 minutes integrity performance, gaps up to a maximum of 20mm between the frame and structural opening may be protected as illustrated below.

Architrave material in all cases may be MDF, softwood or hardwood, of a minimum density of 510kg/m³, irrespective of the door frame material. Architraves must overlap at least 15mm each side. Architraves must always be fitted to both faces. See section 6.4 for further options.

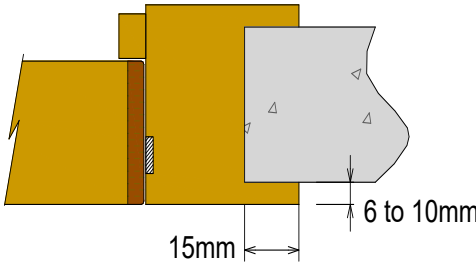
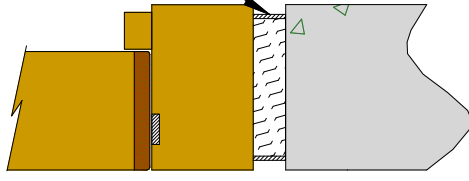
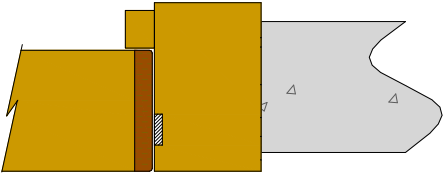
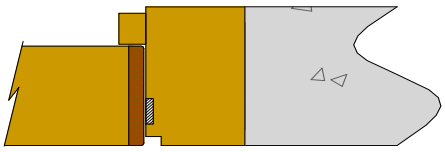
Very small gaps, i.e. ≤5mm between the rear of frame and supporting construction may be protected as follows:

A bead of mastic must be gunned into the gap, pushed into the gap as far as practicable - aiming to achieve a 10mm deep bead of mastic which is then protected by architraves.

<p>1. Gaps up to 20mm must be tightly packed with mineral fibre or ST99 Fire Foam, capped on both sides with a, minimum, 10mm depth of ST88 acrylic intumescent mastic.</p>	 <p>Acrylic intumescent mastic</p> <p>Frame fixing</p> <p>Mineral fibre or ST99 infill</p> <p>Architraves or quadrants</p>
<p>2. Gaps up to 20mm must be filled with proprietary fire stopping product (i.e. ST99 Fire Foam), additional mastic capping is not required. Joint must be fitted with architraves</p>	 <p>Fire stopping product</p> <p>Frame fixing</p> <p>Architrave</p>
<p>3. Timber based or non-combustible sub-frame up to 50mm thick, with gaps up to 10mm between the components filled on both sides with 10mm depth of acrylic intumescent mastic (i.e. ST88) or full depth expanding PU foam (i.e. ST99 Fire Foam).</p>	 <p>Sub-frame fixing</p> <p>15mm thick architrave</p> <p>Frame fixing</p> <p>10mm of acrylic intumescent mastic (i.e. ST88) or full depth expanding PU foam (i.e. ST99 Fire Foam).</p>

6.3 Door Frame Installation

The following diagrams indicate acceptable and unacceptable door frame installations, fire-stopping details are not shown – refer to sections 6.1 and 6.2 for required details.

Installation Not Permitted	Installation Permitted
 <p>6-10mm is the maximum a frame is permitted to be proud of the structural surround when combined with a 15mm bolection return. Projecting frames outside these dimensions will require specific test evidence or assessment.</p>	<p>Max 10 x 10mm shadow gap with 2mm intumescent mastic capping or 10 x 4mm PVC encased intumescent seal</p>  <p>Shadow gaps are permitted as shown in the above diagram providing the frame to structural surround is infilled with timber of the same density as the frame or a non-combustible material such as plasterboard. Other shadow gap dimensions will require specific test evidence or assessment.</p>
Installation Not Permitted	Installation Not Permitted
 <p>Projecting frames without bolection returns are not permitted without specific test evidence or assessment due to the potential for increased charring to the back of the frame.</p>	 <p>Quirks between the leaf and frame are not permitted without specific test evidence or assessment due to the potential for increased charring of the leaf to frame gap.</p>

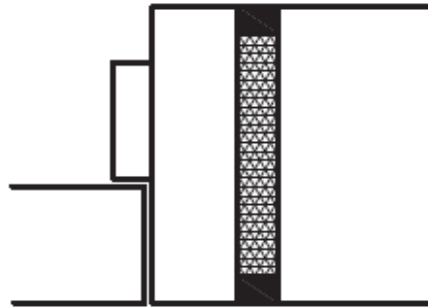
Guidance for various methods of sealing the frame to structural opening gap is also given in BS 8214: 2016, “*Timber-based fire door assemblies. Code of Practice*”, which may be referred to where appropriate.

6.4 Additional Installation Details

The use of plastic packers has been proven in the testing cited in section 3 at both 30 and 60 minutes integrity performance (WF385685, WF396750AR1, WF392155 & WF386959). Packers may be installed with their faces exposed (i.e. it is not necessary to hide the edges of the packers with mastic or foam), prior to installation of any architraves.

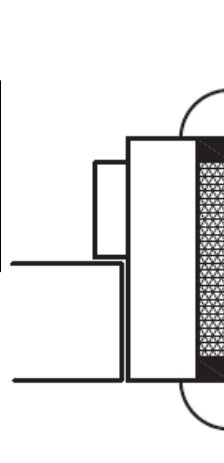
In line with the requirements of section 9.4.2 of BS8214: 2016 '*Timber-based fire door assemblies – Code of practice*', the ST88 mastic product has been tested in accordance with the requirements of BS EN 1366-4 within test WF173658A as a linear gap seal in addition to the testing undertaken in accordance with the requirements of BS476: Part22: 1987 as detailed in the test reports in section 3 (specifically section 3.8 for test WF372245). Therefore the option below from BS8214: 2016 for installation of door frames without architraves is permitted in both 30 and 60 minute applications. Installation is permitted into all wall types permitted by reference to section 8 herein, whether they are likely to exhibit significant distortion or not.

Gaps up to 15mm must be tightly packed with mineral fibre and capped on both sides with a, minimum, 10mm depth of ST88 acrylic intumescent mastic.



Frames may also be installed as illustrated below. Gaps up to 20mm are permitted provided the supporting construction to frame gap is protected as required in section 6.1 or 6.2.

Quadrant beads as shown must be installed. They must be hardwood of minimum density 640kg/m³ and must overlap the frame by a minimum of 15mm and be a minimum of 10mm thick.



7 Smoke Sealing

7.1 General

Sealed Tight Solutions Ltd smoke sealing systems have been successfully tested within tests W18087, 17621-2 and WYC378793-b to both BS476: Part 31: Section 31.1: 1983 or BSEN 1634-3: 2001 and may be incorporated within proprietary doorsets in order to provide a smoke control function. For specific test evidence refer to Sealed Tight Solutions Ltd for further information.

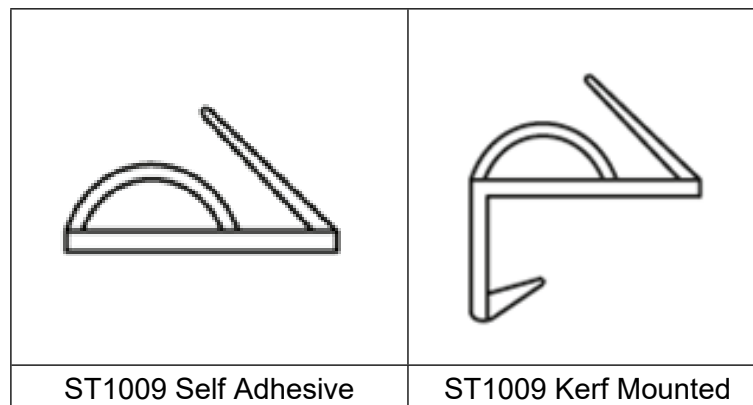
7.2 Smoke Control

If the specified doorset design is required to provide a smoke control function to comply with Building Regulations, in the absence of a suitable pressurisation system, the doorset must meet one of the following criteria:

- (a) have a leakage rate not exceeding $3\text{m}^3/\text{m}/\text{hour}$ (head and jambs only) when tested at 25Pa under BS 476 *Fire tests on building materials and structures, Section 31.1 – Methods for measuring smoke penetration through doorsets and shutter assemblies, Method of measurement under ambient temperature conditions*; or
- (b) meet the additional classification requirement of Sa when tested to BS EN 1634-3: 2004 – *Fire resistance tests for door and shutter assemblies, Part 3 – Smoke control doors*.

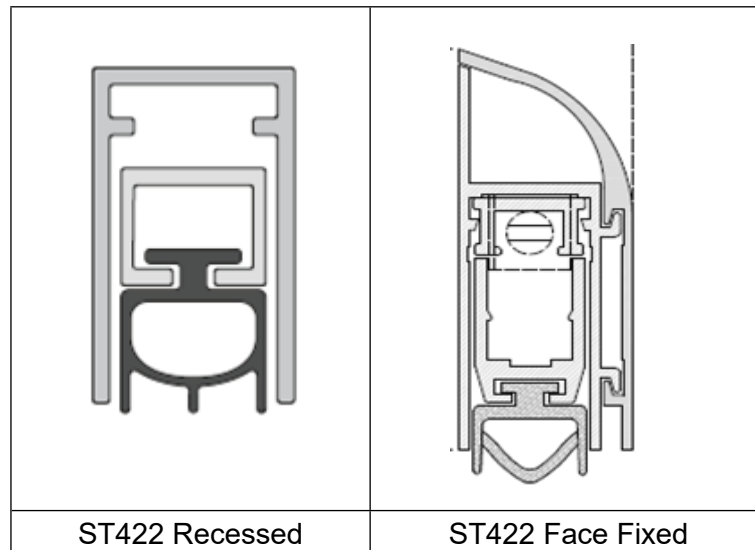
7.3 Sealed Tight Solutions Ltd Smoke Control Seals

Seals must be installed fully in compliance with Sealed Tight Solutions Ltd installation requirements derived from relevant test data. In general this will require that seals are installed uninterrupted in both vertical edges and across the head and threshold of doorsets; and additionally at the meeting edges of double doorsets. Drawings below illustrate the range of available Sealed Tight Solutions Ltd smoke seals.



7.4 Drop Seals

Seals must be installed fully in compliance with Sealed Tight Solutions Ltd installation requirements derived from relevant test data (test PF14207 Revision B). Where the specified doorset design, as approved in section 5 of this report, permits the use of drop seals, they may be rebated into the leaf threshold as detailed within PF14207 Revision B, or face fixed, without compromising the integrity performance of the. Drawings below illustrate the range of available Sealed Tight Solutions Ltd drop seals.



7.5 Further Considerations

Providing the smoke seals, any interruptions, door gaps, and the type/configuration of the doorset are consistent with the detail tested, the doorset will comply with current smoke control legislation. Any other components installed where smoke leakage may occur must also be taken into account.

Note: The incorrect specification and fitting of smoke seals may impair the operation of a doorset and therefore compromise the fire resistance performance. Advice should be sought from the seal manufacturers regarding the correct specification and installation of smoke seals or combined smoke and intumescent seals.

7.5.1 Other Guidance

Other guidance is available, including BS EN 9999-2017 - *Code of practice for fire safety in the design, management and use of buildings*, which may impose different or additional requirements.

It is the responsibility of the relevant parties to stipulate the precise smoke control specification, prior to commencing manufacture and/or installation.

8 Structural Opening

Door assemblies discussed herein are approved for installation within standard rigid and flexible supporting constructions (masonry, steel stud and timber stud variations) that have demonstrated a minimum of 30 or 60 minutes fire resistance, as appropriate, when tested to BS 476: Part 22: 1987. Consideration must be given to the suitability of the supporting construction for supporting the proposed door assemblies.

9 Fixings

Door assemblies must be fixed back to the supporting structure using steel screw fixings appropriate for the substrate. The fixings are to be inserted at 500mm centres to all edges, with a fixing no more than 150mm from any corner and they must penetrate the supporting structure to a depth of 50mm. The fixings must be positioned to avoid exposure during fire conditions, which may necessitate a twin line of screws. Packers must be inserted at the fixing locations.

10 Conclusion

This scope of application considers the installation of timber based doorsets as defined in section 5, utilising Sealed Tight Solutions products to be fitted protecting the installation of timber based doorset designs.

Providing the installation details provided in this scope of application document, and all other details as given in the relevant supporting doorset documentation are followed, it is the opinion of Warringtonfire that the relevant doorset will provide a minimum 30 or 60 minutes fire resistance, as appropriate, if tested in accordance with BS 476: Part 22: 1987.

11 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 field of application, has not to our knowledge been subjected to a fire test to the Standard against which this field of application report is being made.
3. We agree to withdraw this field of application report from circulation should the component or element of structure be the subject of a fire test to the Standard against which this field of application is being made.
4. We are not aware of any information that could adversely affect the conclusions of this field of application report.
5. If we subsequently become aware of any such information we agree to ask the assessing authority to withdraw the field of application report.

Signed:



Name: Jim Kelly

For and on behalf of: Sealed Tight Solutions Ltd


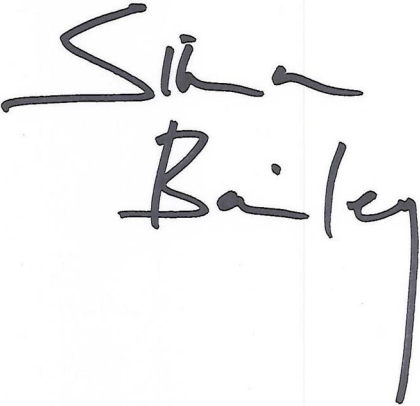
12 Limitations

The following limitations apply to this field of application report:

1. This field of application 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 detailed in this report.
2. This field of application 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 field of application report unconditionally but not retrospectively.
3. This field of application 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 field of application 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 field of application report, the element is suitable for its intended purpose.
6. This field of application report 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 evidence referred to herein. We express no opinion as to whether that evidence, and/or this report, would be regarded by any Building Control authority as sufficient for that or any other purpose. This field of application report 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.

13 Validity

- 1) The field of application report is valid for the period shown the front cover, after which it must be submitted to Warringtonfire for technical review and revalidation.
- 2) This field of application report is not valid unless it incorporates the declaration given in Section 11 duly signed by the applicant.

Signature:		
Name:	A M Winning	S Bailey
Title:	Senior Product Assessor	Senior Product Assessor

