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**Title**

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Field of Application for:  
Strebord® & Stredor® Range of  
Doorsets in Timber Based Door  
Frames

For 30 minutes Fire Resistance

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**Report No.:**

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WF407090 Revision C

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**Prepared for:**

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## 1 Foreword

This Field of application report has been commissioned by Falcon Timber Limited and relates to the Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 Doorsets, which are required to provide 30-minute fire resisting performance.

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 476-22: 1987.

This scope document cannot be used as supporting documentation for either a CE/UKCA 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<sup>1</sup>, 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) 'Guide to Undertaking Technical Assessments of the Fire Performance of Construction Products Based on Fire Test Evidence'. 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.

<sup>1</sup> Test evidence from overseas laboratories has also been considered as supporting evidence for the designs in this assessment report. The test evidence is from a laboratory that has been accredited by a national accreditation body that is a signatory of the International Laboratories Accreditation Co-operation (ILAC).

The drawings provided in this report are for guidance and illustrative purposes only. Please note that the written scope of application takes precedence.

## 2 Proposal

It is proposed to consider the fire resistance performance of the specified proprietary Falcon Timber Limited doorset designs, for 30 minutes fire resistance integrity performance (and where appropriate insulation performance), if the doorset designs were to be tested to the requirements of BS 476-22: 1987, *Methods for determination of the fire resistance of non-loadbearing 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.

Whilst specific items are included within this Field of Application report that may be used to provide additional performance characteristics (such as acoustic or smoke control for example), it is beyond the remit of this Field of Application report to provide scope for performance characteristics other than fire resistance integrity and (where applicable) insulation performance. Any other performance requirement for the door designs contained herein is to be subject to a separate analysis.

### 2.1 Assumptions

- All densities referred to in this document are based upon an assumed moisture content of 10-12%.
- It is assumed that unless otherwise documented in the field of application sections of this report, the doorset subject to this report will be constructed in accordance with the test evidence referred to herein.
- For components created using solid timber sections referred to in this assessment, it is assumed that, for all timbers, they will be of a quality deemed to meet or exceed class J30 as specified in BS EN 942: 2007, subject to adequate repairs, other than glazing beads which must meet a minimum class J10. Note that areas under intumescent seals/gaskets are not considered to be concealed faces and defects must be repaired.
- Where timber is referred to within this document it is assumed that the timber element is made from a continuous solid piece, unless specifically detailed otherwise.
- All dimensions detailed herein may be varied by  $\pm 2\%$  except where minimum, maximum or a range of dimensions are given.

### 3 Test Data

The test evidence summarised below has been generated to support the fire resistance performance of the door designs that are the subject of this field of application. The summary details are considered to be the key aspects of the design tested.

#### Note:

1. Dimensions are in mm unless otherwise stated.
2. Abbreviations: (h) = height; (w) = width; (t) = thickness; (d) = deep; (l) = long.
3. Latches fitted but disengaged for the test, are reported as 'unlatched'.

The test evidence has been generated across a number of different doorset configurations, including single leaf, double leaf, latched and unlatched doorsets as well as doorsets.

Some of the test evidence used in the evaluation is over 5 years old. In accordance with industry guidance, the evidence has been reviewed to consider its suitability. Warringtonfire are satisfied that there have been no significant revisions to the relevant test standards which would render the evidence irrelevant.

The evidence has been generated to BS 476 Part 22: 1987 and EN 1634-1. The latter is known to be more onerous than the BS 476: Part 22: 1987 standard, primarily due to the use of plate thermocouples within the furnace to record the furnace temperature.

The same time temperature curve is used to control the temperature within the furnace for both test methods (the heating curve given within ISO 834-1). However, the plate thermocouple used to record the temperature within the furnace for the EN test method, requires a longer thermal exposure to read the same temperature as the probe thermocouple that is used for the BS 476: Part 22: 1987 test, particularly during the early stages of the test. Furthermore, the neutral pressure regime is positioned lower relative to the specimen height in a European fire door test, therefore resulting in greater relative positive pressure conditions than those expected in a BS 476-22: 1987 test, which has the potential to increase hot gases and flaming on the unexposed side. These factors result in more onerous test conditions for doorsets tested to the BS EN 1634-1 test standard compared with the BS 476: Part 22: 1987 test standard, which has been demonstrated by testing the same products to both standards.

It is therefore the opinion of Warringtonfire that the evidence cited in the following section, tested to both named standards referenced above can be utilised in this assessment which will conclude in terms of the fire resistance performance of the Falcon Timber Limited doorset designs if tested in accordance with BS 476: Part 22: 1987.

## 3.1 Primary Test Evidence

### 3.1.1 Test Report WF386959 Revision A

The tested specimen comprised a latched, single acting leaf, specimen opening towards the furnace, referenced specimen A.

<b>Date of Test:</b>	18 <sup>th</sup> August 2017
<b>Identification of Test Body:</b>	Exova Warringtonfire, Now trading as Warringtonfire Testing and Certification Limited. UKAS No. 1762
<b>Sponsor:</b>	Falcon Panel Products Ltd
<b>Tested Product:</b>	Single Leaf Single Acting Doorset.
<b>Tested Orientation:</b>	<b>Doorset A</b> – Towards the heating conditions of the test.
<b>Sampling information:</b>	Prototype test – No sampling information available.
<b>Summary of Test Specimen:</b>	<p><b>Doorset A:</b></p> <p><b>Leaf Size:</b> 950 mm wide by 2438 mm high by 44mm thick</p> <p><b>Core:</b> 44mm thick, Falcon Panel Products Ltd, Strebord® 44, Particle Board, 530kg/m<sup>3</sup></p> <p><b>Lipping:</b> 8mm thick Solid Sapele. 640kg/m<sup>3</sup>, applied on bottom and vertical edges. 20mm thick solid Sapele, 640kg/m<sup>3</sup>, applied to the head of the leaf.</p> <p><b>Frame:</b> European Redwood door frame nominal density 510kg/m<sup>3</sup> (104 mm x 31mm including 12mm x 25mm planted stop)</p> <p><b>Frame Fixing:</b> 4No. Steel masonry fixings (5.5mm x 100mm), positioned local to each vertical jamb.</p> <p><b>Fire Stopping Detail:</b> Sealed Tight Solutions Ltd, Fire Foam ST99 to the full depth and capped with 15mm depth of Sealed Tight Solutions Ltd Intumescent mastic, ST88 to both faces.</p> <p><b>Intumescent and smoke control seals:</b></p> <p><b>Frame:</b></p> <p>1No. Sealed Tight Solutions Ltd, Graphite based, STS 154FO, 15 (w) x 4 (t) applied 14mm from the opening face within the frame reveal.</p> <p><b>Hardware:</b></p> <p><b>Hinge:</b> 4No. Royde &amp; Tucker Hi-Load 101 Lift off hinges</p> <p><b>Closer:</b> Rutland ITS.11204 overhead concealed closer</p> <p><b>Lock/Latch:</b> Porta Din Sashlock, steel construction</p> <p><b>Deadlock:</b> Laidlaw 12 961 Din Deadlock.</p> <p><b>Top Bolt:</b> ERA Door security bolt, 4383G</p> <p><b>Viewer:</b> Sealed Tight Solutions Ltd, ST4008</p> <p><b>Cable Loop:</b> Assa Abloy EA280 cable loop (lead cover)</p> <p><b>Contact Switch:</b> CQR Maximal Flush Contact Switch FC620</p> <p><b>Handle:</b> Steel lever handles</p> <p><b>Hardware Protection:</b></p> <p><b>Hinge:</b> Sealed Tight Solutions Ltd, Graphite, STS 100X25, 1mm (t)</p>

	<p><b>Lock/Latch:</b> Sealed Tight Solutions Ltd, Graphite, STS 302, 2mm (t) fitted lining the back of the lock bodies &amp; under the forend.</p> <p><b>Lock/Latch Keep:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t)</p> <p><b>Top Bolt:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t) fitted to lock bolt body and keep.</p> <p><b>Cable Loop:</b> Sealed Tight Solutions Ltd, Graphite, STS 302, 2mm (t) fitted to the cable loop body (encasing) as well as lining the base of the case.</p> <p><b>Viewer:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t)</p> <p><b>Latching arrangement:</b> Unlatched</p>	
<b>Test Standard:</b>	BS 476-22: 1987	
<b>Performance:</b>	<b>Doorset A</b>	<p><b>Integrity:</b> 32 minutes</p> <p><b>Insulation:</b> 32 minutes</p>



### 3.1.2 Test Report WF391032

The tested specimens comprised 2No latched single acting leaves, both specimens opening towards the furnace, referenced specimens A & B.

<b>Date of Test:</b>	26 <sup>th</sup> October 2017
<b>Identification of Test Body:</b>	Exova Warringtonfire, Now trading as Warringtonfire Testing and Certification Limited. UKAS No. 1762
<b>Sponsor:</b>	Sealed Tight Solutions
<b>Tested Product:</b>	2No. Single Leaf Single Acting Doorsets.
<b>Tested Orientation:</b>	<b>Both Doorsets</b> – Towards the heating conditions of the test.
<b>Sampling information:</b>	Prototype test – No sampling information available.
<b>Summary of Test Specimen:</b>	<p><b><u>Doorset A:</u></b></p> <p><b>Leaf Size:</b> 1180 mm wide by 2395 mm high by 54mm thick</p> <p><b>Core:</b> 54mm thick, Falcon Panel Products Ltd, Stredor® 54, consisting of poplar ply inner core, 530kg/m<sup>3</sup>, 4mm thick, vertically orientated finger jointed spruce lamels outer core, 480kg/m<sup>3</sup>, 20.5mm thick, Cross grain poplar inner facing, 510kg/m<sup>3</sup>, 4mm thick &amp; Long grain beech outer facing, 600kg/m<sup>3</sup>, 0.5mm thick</p> <p><b>Lipping:</b> 8mm thick Solid Sapele. 640kg/m<sup>3</sup>, applied on bottom and vertical edges. 20mm thick solid Sapele, 640kg/m<sup>3</sup>, applied to the head of the leaf.</p> <p><b><u>Doorset B:</u></b></p> <p><b>Leaf Size:</b> 1180 mm wide by 2395 mm high by 54mm thick</p> <p><b>Core:</b> 54mm thick, Falcon Panel Products Ltd, Strebord® 54, Particle Board, 620kg/m<sup>3</sup></p> <p><b>Lipping:</b> 8mm thick Solid Sapele. 640kg/m<sup>3</sup>, applied on bottom and vertical edges. 20mm thick solid Sapele, 640kg/m<sup>3</sup>, applied to the head of the leaf.</p> <p><b><u>Both Doorsets:</u></b></p> <p><b>Frame:</b> Sapele door frame nominal density 640kg/m<sup>3</sup> (80 mm x 32mm including 10mm x 20mm integral stop) Additional 10mm x 20mm stop section pinned across the head of both doorsets.</p> <p><b>Frame Fixing:</b> 4No. Steel masonry fixings (5mm x 100mm), positioned local to each vertical jamb.</p> <p><b>Fire Stopping Detail:</b> Rockwool mineral fibre to the full depth and capped with 10mm depth of Sealed Tight Solutions Ltd Intumescent mastic, ST88 to both faces. MDF architraves 45mm wide x 18mm thick applied to the exposed face only.</p> <p><b>Threshold:</b> Sealed Tight Solutions Ltd, STH004, profiled aluminium profile including 2No. weather seals.</p> <p><b><u>Intumescent and smoke control seals:</u></b></p> <p><b>Frame:</b></p> <p>2No. Sealed Tight Solutions Ltd, Graphite based, STS 154FO, 15 (w) x 4 (t) applied 10mm apart, 7mm from the opening face within the frame reveal.</p> <p>1No. Sealed Tight Solutions Ltd, ST1009 acoustic/smoke seal applied to the upstand of each stop, additional section applied to planted stop at the head.</p>

	<p><b>Hardware:</b>  <b>Hinge:</b> 4No. Royde &amp; Tucker Hi-Load 101 Lift off hinges  <b>Closer:</b> Rutland ITS.11205 overhead concealed closer  <b>Lock/Latch:</b> ERA Surefire Classic 2 Hook complete with electric motor box  <b>Motor Box:</b> ERA Electric Motor, Auto Fire MPL Motorbox Door.  <b>Viewer:</b> Sealed Tight Solutions Ltd, ST4008  <b>Cable Loop:</b> Stainless steel cable loop  <b>Handle:</b> Fab &amp; Fix Blamoral Inline lever lever 1A000  <b>Letterplate:</b> Sealed Tight Solutions Ltd, STS4001  <b>Hardware Protection:</b>  <b>Hinge:</b> Sealed Tight Solutions Ltd, Graphite, STS 100X25, 1mm (t)  <b>Lock/Latch:</b> Sealed Tight Solutions Ltd, Graphite, 50mm wide x 140mm high, 1mm (t) applied to the centre lock body (each side)  <b>Top and bottom lock bodies:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t) fully encased  <b>Motor Box:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t) fully encased  <b>Lock/Latch Keep:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t)  <b>Cable Loop:</b> Sealed Tight Solutions Ltd, Graphite, STS 302, 2mm (t) fitted to the cable loop body (encasing) as well as lining the base of the case.  <b>Viewer:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t)  <b>Letterplate:</b> Sealed Tight Solutions Ltd, Graphite, 2mm (t) fully encased letterplate body &amp; Sealed Tight Solutions Ltd, Graphite, 1mm (t) lining inside of letterplate tunnel.  <b>Cable Run:</b> Sealed Tight Solutions Ltd, Graphite, 10mm (w) x 1mm (t)  <b>Closer:</b> 2mm (t) graphite type intumescent supplied with ITS 11205  <b>Latching arrangement:</b> Latched</p>	
<b>Test Standard:</b>	BS 476-22: 1987	
<b>Performance:</b>	<b>Doorset A</b>	<p><b>Integrity:</b> 43 minutes  <b>Insulation:</b> 19 minutes</p>
	<b>Doorset B</b>	<p><b>Integrity:</b> 37 minutes  <b>Insulation:</b> 19 minutes</p>

### 3.1.3 Test Report WF391843

The tested specimens comprised 2No latched single acting leaves, both specimens opening towards the furnace, referenced specimens A & B.

<b>Date of Test:</b>	11 <sup>th</sup> November 2017
<b>Identification of Test Body:</b>	Exova Warringtonfire, Now trading as Warringtonfire Testing and Certification Limited. UKAS No. 1762
<b>Sponsor:</b>	Falcon Panel Products Ltd
<b>Tested Product:</b>	2No. Single Leaf Single Acting Doorsets.
<b>Tested Orientation:</b>	<b>Both Doorsets</b> – Towards the heating conditions of the test.
<b>Sampling information:</b>	Prototype test – No sampling information available.
<b>Summary of Test Specimen:</b>	<p><b><u>Doorset A:</u></b>  <b>Leaf Size:</b> 1050 mm wide by 2235 mm high by 44mm thick  <b>Core:</b> 44mm thick, Falcon Panel Products Ltd, Strebord® 44, Particle Board, 540-660kg/m<sup>3</sup>  <b>Lipping:</b> 6mm thick Solid Sapele. 640kg/m<sup>3</sup>, applied on bottom, head and hanging edges. 18mm thick solid Sapele, 640kg/m<sup>3</sup>, applied to the closing edge of the leaf.</p> <p><b><u>Doorset B:</u></b>  <b>Leaf Size:</b> 916 mm wide by 2140 mm high by 44mm thick  <b>Core:</b> 44mm thick, Falcon Panel Products Ltd, Stredor® 44, consisting of poplar ply inner core, 510kg/m<sup>3</sup>, 2.1mm thick, vertically orientated finger jointed spruce lamels outer core, 480kg/m<sup>3</sup>, 18mm thick, Cross grain poplar inner facing, 510kg/m<sup>3</sup>, 1.4mm thick &amp; Long grain beech outer facing, 640kg/m<sup>3</sup>, 0.6mm thick  <b>Lipping:</b> 6mm thick Solid Sapele. 640kg/m<sup>3</sup>, applied on all edges.</p> <p><b><u>Both Doorsets:</u></b>  <b>Frame:</b> European Redwood door frame nominal density 510kg/m<sup>3</sup> (100 mm x 44mm including 52mm x 15mm rebate)  <b>Frame Fixing:</b> 4No. Steel masonry fixings (5mm x 100mm), positioned local to each vertical jamb.  <b>Fire Stopping Detail:</b> 10-15mm depth of Sealed Tight Solutions Ltd Intumescent mastic, ST88 to both faces. European Redwood architraves 45mm wide x 18mm thick applied to the exposed face 35 x 18mm to the unexposed face.</p> <p><b><u>Intumescent and smoke control seals:</u></b>  <b>Frame:</b>  2No. Sealed Tight Solutions Ltd, Graphite based, STS 104FO, 10 (w) x 4 (t) applied 8mm apart, 8mm from the opening face within the frame reveal.</p> <p><b><u>Hardware:</u></b>  <b>Hinge:</b> 3No. Royde &amp; Tucker Hi-Load 101 Lift off hinges  <b>Closer:</b> Astra 4000 series jamb mounted closer  <b>Lock/Latch:</b> ERA Surefire MPL DLSF-609-45-85  <b>Handle:</b> Fab &amp; Fix Blamoral Inline lever 1A000  <b>Cylinder:</b> ERA 3* Fortress 70mm BS-FOR-3535-DC-1</p>

	<p><b>Hardware Protection:</b></p> <p><b>Lock/Latch:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t) applied to the centre lock body (encasing)</p> <p><b>Top and bottom lock bodies:</b> None fitted, rebates were greater than required, section of European Redwood (1.8mm thick) was laminated to each face of the hook body.</p> <p><b>Lock/Latch Keep:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t)</p> <p><b>Glazing:</b></p> <p><b>Glass:</b> AGC Flat Glass, Pyrobelite, 12 thick</p> <p><b>Aperture Size:</b> 784 (h) x 234 (w)</p> <p><b>Expansion Allowance:</b> 3mm</p> <p><b>Glazing Liner:</b> (Doorset A Only) Sapele, 640kg/m<sup>3</sup>, 6 thick.</p> <p><b>Beading:</b> Sapele, 640kg/m<sup>3</sup>, 22 (h) x 21 (d) including an 8 x 7 bolection and a 16-degree chamfer.</p> <p><b>Bead Fixing:</b> 40mm long steel pins, fitted at 7-17mm from corners at no greater than 150mm centres at 35 degrees to the face of the glass.</p> <p><b>Glazing System:</b> Sealed Tight Solutions Ltd, STS 105GT-3-DS, 10mm wide x 3mm thick applied between the glass and the bead on both faces.</p> <p><b>Latching arrangement:</b> Latched</p>	
<b>Test Standard:</b>	BS 476-22: 1987	
<b>Performance:</b>	<b>Doorset A</b>	<p><b>Integrity:</b> 51 minutes</p> <p><b>Insulation:</b> 36 minutes</p>
	<b>Doorset B</b>	<p><b>Integrity:</b> 47 minutes</p> <p><b>Insulation:</b> 39 minutes</p>

### 3.1.4 Test Report EFR-18-H-003671

The tested specimens comprised 2No latched single acting leaves, both specimens alternate in opening direction in relation to the furnace, referenced specimens A & B.

<b>Date of Test:</b>	15 <sup>th</sup> November 2018
<b>Identification of Test Body:</b>	EFFECTIS France, Voie Romaine, F-57280 Maizieres-Les-Metz. Certification body No: 1-1762
<b>Sponsor:</b>	Falcon Panel Products Ltd
<b>Tested Product:</b>	2No. Single Leaf Single Acting Doorsets.
<b>Tested Orientation:</b>	<b>Doorset A</b> – Towards the heating conditions of the test. <b>Doorset B</b> – Away from the heating conditions of the test.
<b>Sampling information:</b>	The doorsets subjected to testing were sampled by a representative of BM TRADA on 01/11/2018 under contract reference PS181001.
<b>Summary of Test Specimen:</b>	<p><b>Both Doorsets</b></p> <p><b>Leaf Size:</b> 1047 mm wide by 2402 mm high by 44mm thick</p> <p><b>Core:</b> 44mm thick, Falcon Panel Products Ltd, Stredor® 44, 500kg/m<sup>3</sup></p> <p><b>Lipping:</b> 8mm thick Solid Sapele. 640kg/m<sup>3</sup>, applied on all edges.</p> <p><b>Frame:</b> European Redwood door frame nominal density 510kg/m<sup>3</sup> (90 mm x 44mm including 47mm x 15mm rebate)</p> <p><b>Frame Fixing:</b> 4No. Steel masonry fixings (6mm x 110mm), positioned local to each vertical jamb.</p> <p><b>Intumescent and smoke control seals:</b></p> <p><b>Frame:</b> 2No. Sealed Tight Solutions Ltd, Graphite based, STS 104FO, 10 (w) x 4 (t) applied 10mm apart, 7mm from the opening face within the frame reveal.</p> <p><b>Hardware:</b></p> <p><b>Hinge:</b> 3No. Royde &amp; Tucker H207 hinges</p> <p><b>Closer:</b> Astra 4000 series jamb mounted closer</p> <p><b>Lock/Latch:</b> Multi-point lock, manufacturer not identified within the report.</p> <p><b>Handle:</b> Stanza ZPZ090SC</p> <p><b>Drop Down Seal:</b> Sealed Tight Solutions Ltd, STS 422 Mechanical Drop Seal</p> <p><b>Viewer:</b> Sealed Tight Solutions Ltd, ST4008</p> <p><b>Hardware Protection:</b></p> <p><b>Lock/Latch:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t) applied to the centre lock body (encasing)</p> <p><b>Top and bottom lock bodies:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t) applied to the centre lock body (encasing)</p> <p><b>Lock/Latch Keep:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t)</p> <p><b>Lock Forend:</b> Sealed Tight Solutions Ltd, Graphite, 10 (w) x 1mm (t) applied to the rebate of the locking system.</p> <p><b>Drop Down Seal:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t) applied to each side within the leaf.</p> <p><b>Viewer:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t)</p>

	<p><b>Closer:</b> Sealed Tight Solutions Ltd, Graphite, 1mm (t) applied to forends and encasing closer body.</p> <p><b>Glazing:</b></p> <p><b>Glass:</b> AGC Flat Glass, Pyrobelite 9EG, 12 thick</p> <p><b>Aperture Size:</b> 1540 (h) x 400 (w)</p> <p><b>Expansion Allowance:</b> 3mm</p> <p><b>Glazing Liner:</b> Sapele, 640kg/m<sup>3</sup>, 6 thick.</p> <p><b>Beading:</b> Sapele, 640kg/m<sup>3</sup>, 23 (h) x 19.5 (d) including a 6 x 6 bolection and a 15-degree chamfer.</p> <p><b>Bead Fixing:</b> 50mm long steel screws</p> <p><b>Glazing System:</b> Sealed Tight Solutions Ltd, STS 105GT-3-DS, 10mm wide x 3mm thick applied between the glass and the bead on both faces.</p> <p><b>Latching arrangement:</b> Latched</p>	
<b>Test Standard:</b>	BS EN 1634-1: 2014+ A1: 2018	
<b>Performance:</b>	<b>Doorset A</b>	<p><b>Integrity:</b> 36 minutes</p> <p><b>Insulation (I<sub>1</sub>):</b> 21 minutes</p> <p><b>Insulation (I<sub>2</sub>):</b> 21 minutes</p>
	<b>Doorset B</b>	<p><b>Integrity:</b> 36 minutes</p> <p><b>Insulation (I<sub>1</sub>):</b> 32 minutes</p> <p><b>Insulation (I<sub>2</sub>):</b> 32 minutes</p>

### 3.1.5 Test Report WF402305

The tested specimen comprised 1No latched single acting leaf, opening towards the furnace, referenced specimen A.

<b>Date of Test:</b>	02 <sup>nd</sup> August 2018
<b>Identification of Test Body:</b>	Exova Warringtonfire, Now trading as Warringtonfire Testing and Certification Limited. UKAS No. 1762
<b>Sponsor:</b>	Aynsley Doors
<b>Tested Product:</b>	1No. Single Leaf Single Acting Doorset.
<b>Tested Orientation:</b>	<b>Doorset</b> – Towards the heating conditions of the test.
<b>Sampling information:</b>	Prototype test – No sampling information available.
<b>Summary of Test Specimen:</b>	<p><b>Doorset A:</b></p> <p><b>Leaf Size:</b> 1046 mm wide by 2405 mm high by 43mm thick</p> <p><b>Core:</b> 44mm thick, Falcon Panel Products Ltd, Strebord® 44, Particle Board, 600kg/m<sup>3</sup></p> <p><b>Grooves:</b> Sapele Decorative inlay, 600kg/m<sup>3</sup>, 10mm wide x 10mm deep including a 5 wide x 4 deep groove centrally within width.</p> <p><b>Lipping:</b> 8mm thick Solid Sapele. 640kg/m<sup>3</sup>, applied on all edges.</p> <p><b>Frame:</b> European Redwood door frame nominal density 510kg/m<sup>3</sup> (90 mm x 44mm including 47mm x 15mm rebate)</p> <p><b>Frame Fixing:</b> 4No. Steel masonry fixings (80mm long), positioned local to each vertical jamb.</p> <p><b>Fire Stopping Detail:</b> void fully filled with rock mineral wool and capped with 10mm depth of Intumescent mastic to both faces. European Redwood architraves 45mm wide x 18mm thick applied to the exposed face only.</p> <p><b>Intumescent and smoke control seals:</b></p> <p><b>Frame:</b></p> <p>1No. Pyroplex, Graphite based, 104FS, 10 (w) x 4 (t) applied 9mm from the opening face within the frame reveal.</p> <p>1No. Pyroplex, Graphite based, 104FO, 10 (w) x 4 (t) applied 29mm from the opening face within the frame reveal.</p> <p>1No. Norseal, NOR710s smoke/acoustic, 10 x 11, seal applied to the upstand of the stop</p> <p><b>Hardware:</b></p> <p><b>Hinge:</b> 3No. Royde &amp; Tucker H102 hinges</p> <p><b>Closer:</b> Astra 4000 series jamb mounted closer</p> <p><b>Lock/Latch:</b> Winkhaus AV2 :-A complete with eurocylinder</p> <p><b>Handle:</b> Sapphire Hardware ZAA030 lever type lock &amp; escutcheon plate</p> <p><b>Viewer:</b> Norseal DV160/C</p> <p><b>Drop Down Seal:</b> Norseal, NOR810S applied in the bottom edge of the leaf.</p> <p><b>Hardware Protection:</b></p> <p><b>Hinge:</b> Norseal, NOR910, graphite, 1mm (t)</p>

	<p><b>Lock/Latch:</b> Norseal, NOR910, graphite, 1mm (t)  <b>Top and bottom lock bodies:</b> Norseal, NOR910, graphite, 1mm (t)  <b>Lock/Latch Keep:</b> Norseal, NOR910, graphite, 1mm (t)  <b>Viewer:</b> Norseal, kit supplied with viewer, graphite, 0.5mm (t)  <b>Glazing:</b>  <b>Glass:</b> Pilkington, Pyrodur, 11 thick  <b>Aperture Size:</b> 1610 (h) x 410 (w)  <b>Expansion Allowance:</b> 5mm  <b>Beading:</b> Sapele, 640kg/m<sup>3</sup>, 20 (h) x 20 (d) including a 5 x 5 bolection and a 15-degree chamfer.  <b>Bead Fixing:</b> 58mm long steel wood screws, fitted at 40mm from corners at no greater than 150mm centres.  <b>Glazing System:</b> Pyroplex, 30049, 14.2mm wide x 3.6mm thick applied between the glass and the bead on both faces.  <b>Latching arrangement:</b> Latched</p>	
<b>Test Standard:</b>	BS 476-22: 1987	
<b>Performance:</b>	<b>Doorset A</b>	<p><b>Integrity:</b> 51 minutes  <b>Insulation:</b> 0 minutes</p>



### 3.1.6 Test Report WF416690 Issue 2

The tested specimens comprised 2No latched single acting leaves, specimen A opening away from the furnace, specimen B opening towards the furnace.

<b>Test Date</b>	8 <sup>th</sup> August 2019
<b>Identification of test body:</b>	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
<b>Test Sponsor:</b>	Falcon Panel Products Ltd
<b>Product Tested:</b>	<b>Both Doorsets:</b> Stredor© 44 – latched (3P), single leaf, single acting configuration.
<b>Tested Orientation:</b>	<b>Doorset A</b> – Open out away from the heating conditions of the test. <b>Doorset B</b> – Open in towards the heating conditions of the test.
<b>Sampling Information:</b>	The products tested were sampled by a representative of Warringtonfire under contract reference WF416656 on 31/07/19.
<b>Summary of test constructions (mm)</b>	<p><b>Both Doorsets:</b>  <b>Leaf Size:</b> 2153mm (h) x 933mm (w) x 44mm (t)  Falcon Panel Products Ltd, Stredor 44 EV Ply:  <b>Inner Facing:</b> Poplar Ply, 4.6 (t), 510kg/m<sup>3</sup>,  <b>Outer Facing:</b> EV Venner, 0.4 (t), 600 kg/m<sup>3</sup>,  <b>Inner Core:</b> Poplar Ply, 4 (t), 510 kg/m<sup>3</sup>,  <b>Outer Core:</b> Vertically orientated finger jointed spruce lamels, 15 (t) x 28 (w), 480 kg/m<sup>3</sup>,  <b>Lipping:</b> Sapele, 640kg/m<sup>3</sup>, 10 (t) applied to all edges.  <b>Frame:</b> Sapele, 621kg/m<sup>3</sup>, 80 (d) x 44(w) including a 12 (h) x 33 (w) integral stop.  <b>Frame Fixing:</b> 5No. Steel wood screws applied to each vertical jamb, 500 max centres  <b>Fire Stopping:</b> Rockwool RWA 45 mineral fibre fully filling the void with Everbuild Fire Sealant 300 Intumescent Mastic Capping, 10 (d) fitted to each face.  <b>Intumescent and Weather Control Seals:</b>  2No. Pyroplex Ltd, 8500, Graphite box seals, 10 (w) x 4 (t) fitted 10 apart centrally within the frame.  Norseal Ltd, NOR710, PVC smoke seal, 11 (w) x 10 (d), fitted against the stop.  Norseal, NOR810S, aluminium drop down seal with PVC and co-extruded seal 20 (h) x 12 (w).  <b>Architrave:</b> MDF, 45 (w) x 18 (t) fitted to the exposed face only.  <b>Hardware:</b>  3No. Zoo Ball Bearing Butt Hinges, ZHSS234RS  Hoppe, AR1500 surface mounted overhead closer.  ERA SureFire Classic 2 hook multi-point DoorLock  ERA 1X000 Stainless Steel Handle set.  ERA Fab&amp;Fix Nu Mail Door Letterplate  ERA Fab&amp;Fix Spyhole  ERA PVCu/Timber Door Chain 791-65  ERA Fab&amp;Fix Door Numerals – FFNUM8BC  ERA Ingot Door Knocker – 4A550</p>

	<p><b>Hardware Protection:</b></p> <p><b>Hinges:</b> 1(t) MAP applied to each blade.</p> <p><b>Multi-point latch:</b> Sealed Tight Solutions Ltd, 1 (t) graphite type intumescent applied to each face of all lock bodies, 1 (t) graphite intumescent under all keep locations, 1 (t) graphite type intumescent applied lining the forend. (Branded as Flexifire Universal SureFire Multipoint Lock Kit)</p> <p><b>Letterplate:</b> 2No. wraps of Sealed Tight Solutions Ltd. 40 (w) x 2 (t) Graphite type intumescent</p> <p><b>Viewer:</b> 0.5 (t) graphite type intumescent supplied with spyhole.</p> <p><b>Glazing:</b></p> <p><b>Glass (Both Apertures):</b> Fireglass UK, Pyrobelite 9EG, 11 (t)</p> <p><b>Upper Aperture:</b></p> <p><b>Sight Size:</b> 960 (h) x 205 (w)</p> <p><b>Aperture Size:</b> 990 (h) x 230 (w)</p> <p><b>Lower Aperture:</b></p> <p><b>Sight Size:</b> 610 (h) x 205 (w)</p> <p><b>Aperture Size:</b> 638 (h) x 230 (w)</p> <p><b>Beading:</b> Sapele, 685kg/m<sup>3</sup>, 21 (h) x 19 (d) including a 6 x 6 bolection return and a 15-degree chamfer</p> <p><b>Bead Fixings:</b> Steel pins, 50 (l) at 50 from corners and 145 centres at 25-35 degrees to the face of the glass.</p> <p><b>Glazing System:</b> Sealmaster, Black Glazing Tape (BGT) 10 (w) x 4 (t) applied between the glass and the bead on both faces.</p> <p><b>Latching Status:</b> Engaged</p>	
<b>Test Standard:</b>	EN 1634-1:2014+A1: 2018 and EN 1363-1: 2012	
<b>Test Results</b>	<p>Doorset A:</p> <p>Integrity: 34 minutes</p> <p>Insulation: 33 minutes</p>	<p>Doorset B:</p> <p>Integrity: 50 minutes</p> <p>Insulation: 29 minutes</p>

### 3.1.7 Test Report WF414162

The tested specimens comprised 2No latched single acting leaves, specimen A opening away from the furnace, specimen B opening towards the furnace.

<b>Test Date</b>	14 <sup>th</sup> May 2019	
<b>Identification of test body:</b>	Warringtonfire Testing and Certification Ltd. UKAS No. 1762	
<b>Test Sponsor:</b>	Falcon Panel Products Ltd	
<b>Product Tested:</b>	<b>Both Doorsets:</b> Strebord© 44 – latched (3P), single leaf, single acting configuration.	
<b>Tested Orientation:</b>	<b>Doorset A</b> – Open out away from the heating conditions of the test. <b>Doorset B</b> – Open in towards the heating conditions of the test.	
<b>Sampling Information:</b>	None available – Initial type test – prototype	
<b>Summary of test constructions (mm)</b>	<p><b>Both Doorsets:</b>  <b>Leaf Size:</b> 2045mm (h) x 925mm (w) x 44mm (t)  <b>Core:</b> Falcon Panel Products Ltd, Strebord 44, 630-635kg/m<sup>3</sup>, 44 (t)  <b>Lipping:</b> Ash, 710kg/m<sup>3</sup>, 10 (t) applied to vertical edges only.  <b>Decorative Inserts:</b> Ash, fitted horizontally 50 form top edge of the leaf and at 200mm centres, 10 (w) x 10 (t), including a 3 x 3 “V” Groove.  <b>Frame:</b> Ash, 710kg/m<sup>3</sup>, 143 (d) x 32 (w) plus a 15 (h) x 48 (w) planted stop.  <b>Frame Fixing:</b> 3No. Steel wood screws applied to each vertical jamb, 600 max centres  <b>Fire Stopping:</b> Rockwool mineral fibre fully filling the void with Mann McGowann Pyromas a Mastic Capping, 10 (d) fitted to each face.  <b>Intumescent and Weather Control Seals:</b>  1No. Pyroplex Ltd, 8500 &amp; 1No. Pyroplex Ltd, 30150 Graphite box seals, 10 (w) x 4 (t) fitted 10 apart 8 from the opening face of the frame.  Lorient Polypducts Ltd LAS 1206, weather seal, 14 (w) fitted to the upstand of the stop.  <b>Hardware:</b>  3No. Royde and Tucker Hi-Load 207 Bearing Butt Type Hinges  Arrone AR7383 Concealed Overhead Type Closer.  Winkhaus AV3 Autofire Multipoint lock  Serozzetta Plaza Stainless Steel Lever Type Handle complete with Smith and Locke Escutcheon ref 4378.  Jedo Security viewer JV942  Royde and Tucker LP008 letterplate.  <b>Hardware Protection:</b>  <b>Hinges:</b> 1(t) Sealmaster graphite type intumescent applied to each blade.  <b>Closer:</b> Arrone Intumescent kit, consisting of 2 (t) intumescent.  <b>Multi-point latch:</b> 1 (t) Interdens encasing latch bodies &amp; under keeps.  <b>Letterplate:</b> Royde and Tucker LP008 Kit Supplied with Letterplate.  <b>Eye Viewer:</b> Jedo JV942 Kit – Graphite type intumescent 1 (t)</p>	
<b>Test Standard:</b>	BS 476-22: 1987	
<b>Test Results</b>	Doorset A: Integrity: 36 minutes Insulation: 36 minutes	Doorset B: Integrity: 38 minutes Insulation: 38 minutes

### 3.1.8 Test Report WF414882

The tested specimen comprised an unlatched, double leaf, single acting doorset, the specimen was hung opening towards the furnace. Include to demonstrate performance of items of hardware.

<b>Test Date</b>	11 <sup>th</sup> June 2019
<b>Identification of test body:</b>	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
<b>Test Sponsor:</b>	Falcon Panel Products Ltd
<b>Product Tested:</b>	Strebord© 44 – unlatched, double leaf, single acting configuration.
<b>Tested Orientation:</b>	Open in towards the heating conditions of the test.
<b>Sampling Information:</b>	The products tested were sampled by a representative of Warringtonfire Testing and Certification Ltd under contract reference WF415880 on 07/06/19.
<b>Summary of test constructions (mm)</b>	<p><b>Leaf Size (both leaves):</b> 2040mm (h) x 926mm (w) x 44mm (t)  <b>Core:</b> Falcon Panel Products Ltd, Strebord 44, 450kg/m<sup>3</sup>, 44 (t)  <b>Lipping:</b> Falcon Panel Products Ltd, Streframe®, 450kg/m<sup>3</sup>, 8 (t) applied to all edges.  <b>Frame:</b> European Redwood, 510kg/m<sup>3</sup>, 102 (d) x 32 (w) plus a 12 (h) x 32 (w) planted MDF stop.  <b>Frame Fixing:</b> 4No. Steel wood screws applied to each vertical jamb, 1No. Steel wood screw applied across the head.  <b>Fire Stopping:</b> Fire and Acoustic Seals Ltd Fire Door Foam with Soft Wood Timber Packers local to fixing positions, 2.5-13.8 (w) x full depth of the frame.  <b>Intumescent and Weather Control Seals:</b>  <b>Frame:</b> 1No. Pyroplex Ltd, 8700, 15 (w) x 4 (t) fitted 15 from the opening face of the frame.  <b>Meeting Edge (Left Leaf):</b> 1No. Lorient Polyproducts Ltd LP1004DS, 1No. Pyroplex 8700, both 10 (w) x 4 (t), Fitted 10 apart 6 from the exposed face.  Fire and Acoustic Seals Ltd FAS35, 12 (w) x 5 (h) fitted in the upstand of the stop.  Fire and Acoustic Seals Ltd, FAS45 drop seal, 28 (h) x 12 (w).  <b>Hardware:</b>  3No. Vier (Zoo Hardware) Bearing Butt Type Hinges VHL243RS and VLHR243RS.  Rutland TS.9205 Surface Mounted Overhead Type Closer.  Vier (Zoo Hardware) Stainless Steel Latch, 235 x 22 forend - disengaged  Hoppe Amsterdam Stainless Steel Inline Lever Handle.  Fab &amp; Fix Letterplate reference 3C018 complete with security shield reference 3F005  ZOO Hardware Steel Lever Action flush bolt reference ZAS03RSS.  <b>Hardware Protection:</b>  <b>Hinges:</b> 1(t) Fire and Acoustic Seals Ltd Intumescent Sheet  <b>Latch:</b> 1(t) Fire and Acoustic Seals Ltd Intumescent Sheet encasing latch bodies, under forend &amp; under keeps.  <b>Letterplate:</b> Fire and Acoustic Seals Ltd, Spartan Hardware Protection “FASGP1013”  <b>Dropdown seal:</b> 1(t) Fire and Acoustic Seals Ltd Intumescent Sheet</p>

	<b>Flush bolt:</b> 1(t) Fire and Acoustic Seals Ltd Intumescent Sheet
<b>Test Standard:</b>	EN 1634-1: 2014+A1: 2018
<b>Test Results</b>	Integrity: 32 minutes Insulation: 13 minutes

### 3.1.9 Test Report WF432578 Issue 1

The tested specimens comprised 2No latched single acting leaves, specimen A opening towards the furnace, specimen B opening away from the furnace.

<b>Test Date</b>	02 <sup>nd</sup> September 2020
<b>Identification of test body:</b>	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
<b>Test Sponsor:</b>	Falcon Panel Products Ltd
<b>Product Tested:</b>	<b>Both Doorsets:</b> Stredor® 44 – latched (3P), single leaf, single acting configuration.
<b>Tested Orientation:</b>	<b>Doorset A</b> – Open in towards the heating conditions of the test. <b>Doorset B</b> – Open out away from the heating conditions of the test.
<b>Sampling Information:</b>	The products tested were sampled by a representative of BM TRADA under contract reference SC20148 on 28/08/2020.
<b>Summary of test constructions (mm)</b>	<p><b>Both Doorsets:</b>  <b>Leaf Size:</b> 2040mm (h) x 926mm (w) x 44mm (t)  <b>Core:</b> Falcon Panel Products Ltd, Stredor 44:  <b>Inner Facing:</b> Poplar Ply, 4.6 (t), 510kg/m<sup>3</sup>,  <b>Outer Facing:</b> Beech Venner, 0.4 (t), 600 kg/m<sup>3</sup>,  <b>Inner Core:</b> Poplar Ply, 1.8 (t), 510 kg/m<sup>3</sup>,  <b>Outer Core:</b> Vertically orientated finger jointed spruce lamels, 16 (t), 480 kg/m<sup>3</sup>,  <b>Lipping:</b> Sapele, 640kg/m<sup>3</sup>, 8 (t) applied to all edges.  <b>Decorative Mouldings:</b> Sapele, 70mm wide x 19mm thick, applied with PVA adhesive &amp; 25mm long pins  <b>Doorset and Fanlight Frame:</b> European Redwood, 529kg/m<sup>3</sup>, 80 (d) x 44(w) including a 15 (h) x 33 (w) integral stop.  <b>Threshold:</b> Stormguard, Low height Macclex – Thermally broken, 62 x 15mm complete with 2No. seals, sealed to the rear of the jambs with FireWizard fire rated acrylic sealant.  <b>Frame Fixing:</b> 4No. 100mm long Steel wood screws applied to each vertical jamb, 600 max centres  <b>Fire Stopping:</b> Rockwool Flexi mineral fibre fully filling the void with Mann McGowan, Pyromas A Intumescent Mastic Capping, 10 (d) fitted to each face.  <b>Intumescent and Weather Control Seals:</b>  2No. Lorient Polyproducts Ltd, LP1004, PVC encased sodium silicate box seals, 10 (w) x 4 (t) fitted 10 apart centrally within the frame.  Schlegel, Aquamac 21, 9.1 x 10.7, kerf fitted into the stop.</p>

	<p><b>Hardware:</b>          3No. Eurospec Ball Bearing Butt Hinges, HIN 1433/13          Rutland TS9205 surface mounted overhead closer.          Yale Lockmaster autoengage 2LB Classic 45mm          Yale Platinum 3* Cylinder          Yale 0757-2003-CH-CH Inline Lever          Yale Postmaster Professional Letterplate          Yale DH000768 Viewer          Yale B-WS6-20-SC          Yale Swis721BT-Numbers          Yale 0716-2001-Contemporary-Knocker-No-Spyhole          Stormguard, 32mm Aluminium Rain Deflector.          Sealed Tight Solutions Limited, ST422GT Drop down seal</p> <p><b>Hardware Protection:</b>  <b>Hinges:</b> 1(t) Interdens applied to each blade.  <b>Multi-point latch bodies &amp; keeps:</b> 1(t) Interdens encased  <b>Letterplate:</b> As supplied with letterplate assembly.  <b>Viewer:</b> 0.5 (t) graphite type intumescent supplied with spyhole.</p> <p><b>Fanlight Glazing:</b>  <b>Glass:</b> Fireglass UK, Pyrobelite, 8mm spacer bar, 6.8mm Low E Laminated Glass, 26.8 overall (t)  <b>Aperture Size:</b> 650 (h) x 932 (w)  <b>Expansion Allowance:</b> 3mm  <b>Beading:</b> Sapele, nominally 640kg/m<sup>3</sup>, 15 (h) x 15 (d) including a 2 x 2 quirk  <b>Bead Fixings:</b> Steel pins, 50 (l) x Ø2mm at 50 from corners and 140 centres at 45 degrees to the face of the glass.  <b>Glazing System:</b> Sealed Tight Solutions Ltd, STS 104, 10 (w) x 4 (t) applied between the glass and the bead on both faces.  <b>Glazing liner:</b> Sealed Tight Solutions Ltd, STS 302 Liner, 30 (w) x 2 (t) applied lining the glazed aperture.  <b>Intumescent applied to rear of fanlight frame:</b> 2No. Sealed Tight Solutions Ltd, STS154FO, applied to the top of the fanlight frame only 15mm from each face of the frame.  <b>Latching Status:</b> Engaged</p>	
<b>Test Standard:</b>	EN 1634-1:2014+A1: 2018 and EN 1363-1: 2012	
<b>Test Results</b>	<p>Doorset A:          Integrity: 46 minutes          Insulation (I<sub>2</sub>): 46 minutes</p>	<p>Doorset B:          Integrity: 45 minutes          Insulation (I<sub>2</sub>): 42 minutes</p>

## 4 Technical Specification

### 4.1 General

The technical specification for each of the proposed 4 separate door core door types is given in the following sections and is based on the test evidence for the door designs, summarised in section 3.

### 4.2 Intended Use

The intended use of the proposed door assembly is summarised below:

A pedestrian doorset including any frame, door leaf or leaves which is provided to give a fire resisting capability when used for the closing of permanent openings in fire resisting separating elements, which together with the building hardware and any seals (whether provided for the purpose of fire resistance or smoke control or for other purposes such as draught or acoustics) form the assembly.

### 4.3 General Description of Construction

Doorsets constructed using the different leaf options can include various design features as summarised below.

Specific sections within this assessment must be referred to for design limitations and construction requirements.

Section 5 gives the description of each leaf type in terms of composition and density etc.

#### 4.3.1 Leaf 1 – Strebord® 44 – 44mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings
4. Decorative planted on timber mouldings
5. Feature Grooves
6. Further additional facing materials

#### 4.3.2 Leaf 2 – Stredor® 44 – 44mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings
4. Decorative planted on timber mouldings
5. Further additional facing material



### 4.3.3 Leaf 3 – Strebord® 54 – 54mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings
4. Decorative planted on timber mouldings
5. Feature Grooves
6. Further additional facing material

### 4.3.4 Leaf 4 – Stredor® 54 – 54mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings
4. Decorative planted on timber mouldings
5. Further additional facing material

## 4.4 Door Frames

The construction of the door frames is softwood or hardwood with minimum frame dimensions. For further information on the specification and construction of the door frames see section 7.

Specific sections within this assessment must be referred to for design limitations and construction requirements, where applicable.

## 4.5 Doorset Configurations & Maximum Leaf Sizes

### 4.5.1 General

The evaluation of the leaf size for each door leaf option and frame option and doorset configuration is based on the tests listed in Section 3 and takes into account:

1. The margin of over performance above 30 minutes integrity for the design
2. The characteristics exhibited during test and
3. The doorset configuration tested

The evaluation of the permitted configurations included in this field of application is based on the configuration(s) tested. The principle is that the more components included in testing, for example, double door leaves and an overpanel – the harder it becomes to pass a test. In this specific example it is because the junction between two door leaves or door leaf and overpanel introduces a discontinuity into the doorset which can be a means of failure. This approach leads to the following statements:

1. A test on a double doorset is more onerous than a test on a single doorset
2. A test on an unlatched doorset is more onerous than a test on a latched doorset as the leading edge is unrestrained and will deflect more in fire test conditions



3. A doorset with transomed or modular overpanel is considered to perform comparably to a similar doorset without an overpanel. This is because the transom structurally separates the overpanel from the doorset.


The leaf size for each door leaf option and configuration is linked to the perimeter intumescent specification and frame option. The following section details the maximum leaf size for each door leaf option and configuration based on the intumescent specification and frame details tested.

Doorsets with reduced height and width dimensions from those tested are deemed to be less onerous. Therefore, doors with dimensions less than those given in the leaf size envelopes (for the relevant intumescent specification) in the following sections are covered and may be manufactured.

#### 4.5.2 Configuration

The table below shows the permitted configurations for the Falcon Timber Limited doorset design, with the abbreviation and full description of the configuration.

The following sections details the assessed maximum leaf size envelopes for each permitted configuration based on the intumescent specification and door frame tested.

Doorset Configurations		
Depiction	Abbreviation	Description
	LSASD	Latched Single Acting Single Doorset

#### 4.5.3 Orientation

The primary fire resistance tests for the Strebord® 44, Strebord® 54 and Stredor® 54 doorsets were conducted with the doorset hung such that the door leaf opened towards the fire, which is considered the most onerous orientation in terms of fire resistance performance. Based on this testing, assessment is made that the doorsets to this design may be hung either away from or towards the fire risk side of the doorset. The rationale behind the direction of fire testing timber based doorsets opening towards the fire test conditions is further explained in Annex C of BS EN 1634-1:2014 +A1:2018.

The primary fire resistance tests for the Stredor® 44 doorsets was conducted with samples of the doorset hung such that the door leaves opened both towards and away from the fire risk side. The sample opening away from the fire achieved a superior integrity performance.

Based on this testing, assessment is made that the fire risk may be from either side of the Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 doorsets.

#### 4.5.4 Envelopes for each Configurations

The following sections detail the door leaf envelopes which indicate the permitted leaf sizes for the listed configuration based on the perimeter intumescent, door leaf option and door frame.

A table of essential hardware is given in section 10.3 for each doorset configuration, as a minimum requirement for the doorset described. Changes to hardware can affect the intumescent specification and frame details which are subsequently considered for each specific hardware component, where required.

#### 4.5.4.1 General Note on Intumescent Seals

- Intumescent seals are to be fitted centrally unless stated otherwise.
- Intumescent seals must run the full length of the leaf edge, with tightly formed abutting corner joints where the leaf edges meet, unless stated otherwise.

#### 4.5.4.2 Explanation for following sections

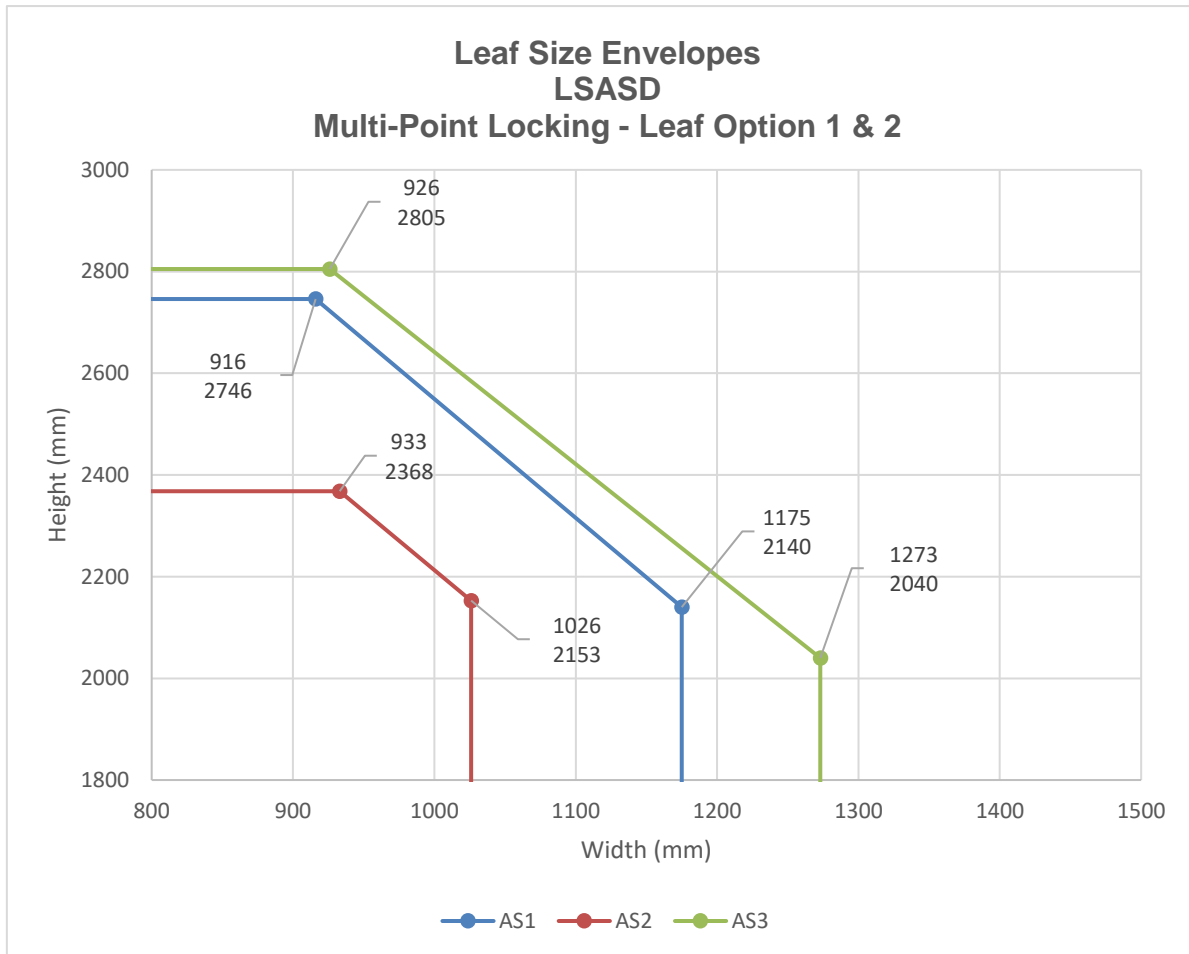
The performance of a doorset in terms of configuration and size is dependent on the leaf type, perimeter intumescent used and frame type. These elements are not automatically interchangeable. The following sections present the envelopes for the 4No. leaf types. Each envelope is linked to a specific perimeter intumescent which is given a unique reference and is based directly on test evidence.

The envelopes are presented as follows: -

- Each leaf size envelope is presented for the different type of door core at the same thickness,
- Each intumescent specification is considered separately, and a unique envelope of permitted leaf sizes is presented based on the configuration, and intumescent and the envelope is directly linked to a unique test.

#### 4.5.5 LSASD Configuration: Leaf Sizes & Intumescent Specification

##### Doorset created from Leaf option 1 or 2

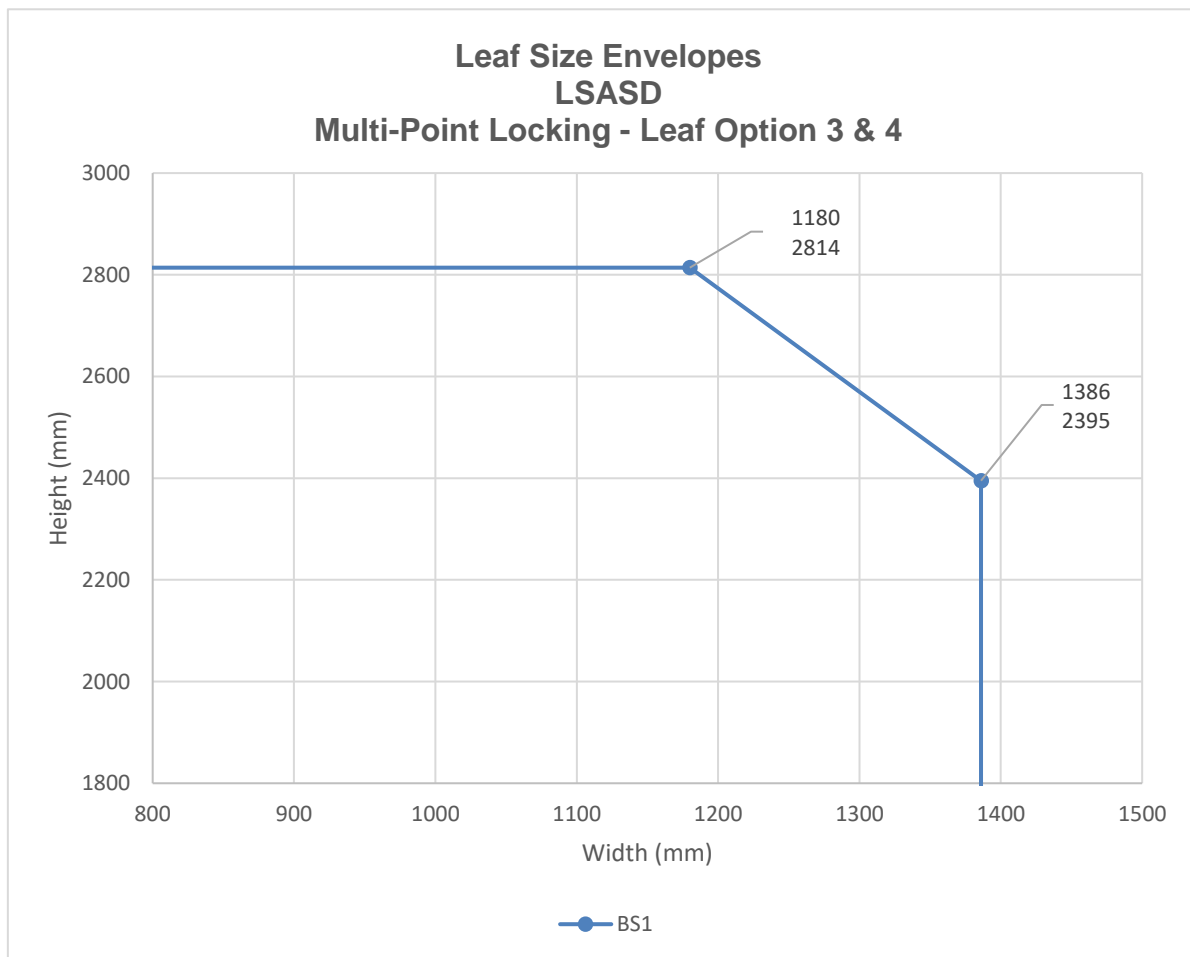


Intumescent Specification for LSASD Leaf 1 (Strebord® 44) & Leaf 2 (Stredor® 44)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS1 (WF391843)	STS104FO 10 (w) x 4 (t)	Sealed Tight Solutions Ltd	<b>Head &amp; Jambs:</b> 2No. fitted 5mm either side of the centre line within the frame reveal
AS2 (WF416690 Issue 2)	8500 10 (w) x 4 (t)	Pyroplex Ltd	<b>Head &amp; Jambs:</b> 2No. fitted 5mm either side of the centre line within the frame reveal

Intumescent Specification for LSASD Leaf 1 (Strebord® 44) & Leaf 2 (Stredor® 44)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS3 (WF432578 Issue 1)	LP1004 10 (w) x 4 (t)	Lorient Polyproducts Ltd	<b>Head &amp; Jambs:</b> 2No. fitted 5mm either side of the centre line within the frame reveal

#### 4.5.6 LSASD Configuration: Leaf Sizes & Intumescent Specification

Doorset created from Leaf option 3 or 4



<b>Intumescent Specification for LSASD Leaf 3 (Strebord® 54) &amp; Leaf 4 (Stredor® 54)</b>			
<b>Intumescent Spec. Reference &amp; (Test Reference)</b>	<b>Make / Type</b>	<b>Manufacturer / Supplier</b>	<b>Location &amp; Size</b>
BS1  (WF391843)	STS154FO	Sealed Tight Solutions Ltd	<b>Head &amp; Jambs:</b> 2No. fitted 5mm either side of the centre line within the frame reveal

## 5 General Description of Construction

### 5.1 Leaf Core Construction

The four door leaf options detailed below are approved by this assessment.

#### 5.1.1 General Description of Construction

The scope of application herein may be applied to each of the following door cores unless otherwise stated. Each of the door cores has been tested in a latched, single leaf, single acting configuration with a multi-point latch installed. Details are given in section 3 of the relevant supporting test data for each core type.

As stated in section 3.1.3, the results for specimen B in test WF391843 are used as the basis to determine the leaf size envelope for 44mm thick designs.

The results for specimen B in test WF391032 (Section 3.1.2) are used as the basis to determine the leaf size envelope for 54mm thick designs.

#### 5.1.2 Strebord® 44

The primary construction for door leaves of this design comprises the following:

- A homogenous solid sheet of 44mm thick Strebord® 44 particleboard (minimum density 570kg/m<sup>3</sup> to maximum density 630kg/m<sup>3</sup>). The leaves are to be lipped with hardwood.

#### Notes:

The leaf must be lipped as specified in section 5.4.

The minimum leaf thickness after calibration is 43mm (i.e., a maximum of 0.5mm from both sides).

The minimum leaf thickness after finishes applied is 44mm.

### 5.1.3 Stredor® 44

The basic tested construction of the Stredor® 44 door design comprises the following.

Element		Material	Dimensions (mm)	Minimum Density (kg/m <sup>3</sup> )
Stiles & rails		None fitted	-	-
Core	Inner core	Cross Grain Poplar	2.1 (t)	510 <sup>1</sup>
	Outer core	Vertically orientated finger-jointed spruce lamels	18.8 (t) x 28 (w) (nominal individual lamel size)	480 <sup>1</sup>
Facings	Inner	Cross grain Poplar	1.4 (t)	510 <sup>1</sup>
	Outer	Long grain Beech	0.6 (t)	600 <sup>1</sup>

<sup>1</sup> Stated nominal densities

#### Notes:

The leaf must be lipped as specified in section 5.4.

The minimum leaf thickness after calibration is 43mm (i.e., a maximum of 0.5mm from both sides).

The minimum leaf thickness after finishes applied is 44mm.

### 5.1.4 Strebord® 54

The primary construction for door leaves of this design comprises the following:

- A solid sheet of 54mm thick Strebord® 54 three layered particleboard (density 520-590kg/m<sup>3</sup>). Where specified the leaves are lipped with hardwood.

#### Notes:

The leaf must be lipped as specified in section 5.4.

The minimum leaf thickness after calibration is 53mm (i.e., a maximum of 0.5mm from both sides).

The minimum leaf thickness after finishes applied is 54mm.

### 5.1.5 Stredor® 54

The basic tested construction of the Stredor® 54 door design comprises the following.

Element		Material	Dimensions (mm)	Minimum Density (kg/m <sup>3</sup> )
Stiles & rails		None fitted	-	-
Core	Inner core	Cross Grain Poplar	4 (t)	510 <sup>1</sup>
	Outer core	Vertically orientated finger-jointed spruce lamels	20.5 (t) x 24 (w) (nominal individual lamel size)	480 <sup>1</sup>
Facings	Inner	Cross grain Poplar	1.4 (t)	510 <sup>1</sup>
	Outer	Long grain Beech	0.6 (t)	600 <sup>1</sup>

<sup>1</sup> Stated nominal densities

#### Notes:

The leaf must be lipped as specified in section 5.4.

The minimum leaf thickness after calibration is 53mm (i.e. a maximum of 0.5mm from both sides).

The minimum leaf thickness after finishes applied is 54mm.

## 5.2 Comparison of Door Core Designs

To provide a comparison of the door core performances two tests were undertaken.

The first of the two tests (Referenced WF391032, Section 3.1.2) included identical doorsets which varied between the core only. Both doorsets opened towards the heating conditions of the test and achieved an integrity failure in excess of 30 minutes, with doorset A (Stredor® 54) achieving 43 minutes and doorset B (Strebord® 54) achieving 37 minutes. Based upon this testing and the limited variation between the tested samples it has been possible to draw the conclusion that the Stredor® 54 is expected to perform slightly better than the Strebord® 54 product in this application.

The second of the two tests (Referenced WF391843, Section 3.1.3) included two single leaf, single acting doorset designs which both achieved an integrity failure in excess of 30 minutes. Doorset A consisted of a Strebord® 44 with dimensions of 2235mm high x 1050mm wide, while Doorset B consisted of a Stredor® 44 with dimensions of 2140mm high x 916mm wide. The increased height and width of Doorset A would usually be considered as a more onerous detail than the dimensions of Doorset B, however, Doorset A achieved a fire resistance integrity period of 51 minutes opposed to the 47 minutes which was achieved by Doorset B. Based upon this testing and considering the more onerous details included within Doorset A it has been possible to determine that the Strebord® 44 is expected to perform slightly better than the Stredor® 44 product in this application.

Upon review of the test evidence contained within section 3 of this report, it can be understood that the lowest integrity period achieved for a single leaf single acting doorset, complete with a multipoint lock was 34 minutes, over 10% above the desired 30-minute objective. With this and the above detailed analysis considered, it is the opinion of Warringtonfire that the leaf sizes of a doorset tested with a Stredor® 44 core are applicable to that with a Strebord® 44 core and the sizes of a doorset tested with a Strebord® 54 are applicable to that with a Stredor® 54 core.



Therefore, leaf sizes determined above (Section 4.5.5 & 4.5.6) for 44 and 54mm variations shall be determined based on the performance of the Stredor® 44 and Strebord® 54 respectively.

### 5.3 Leaf Size Adjustment During Manufacture – All Leaf Options

Door leaves may be altered as follows prior to the machining for hardware.

Pre-Machining Leaf Size Adjustment Specification	
Element	Reduction
Leaf	The size of the leaf may be reduced in height or width without restriction for manufacturing purposes, providing the finished leaf is lipped in accordance with section 5.4
Timber Lipping	The timber lipping thickness can be reduced after it has been glued in place, providing it is not reduced below the minimum stated in section 5.4

### 5.4 Timber Lipping – Leaf Type – All Leaf Options

The testing documented in section 3 has generally been undertaken using 12-15mm thick lippings applied to all edges using hardwood species at varying densities. A number of different adhesives have also been used to seal the lippings.

On the above basis, the Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 door blanks (leaf type 1 - 4) must be lipped with the following specification, for all leaf types and solid panels (overpanels), where appropriate.

Timber Lipping Specification		
Material	Size (mm)	Min Density (kg/m <sup>3</sup> )
Hardwood	1. Flat = 6 – 18 thick	640

#### Notes:

1. All lippings are to have the same width as the thickness of the door core (where decorative/timber substrate facings over sail the lipping) or the same thickness as the finished door leaf (where the decorative/timber substrate facings do not over sail the lipping i.e., the lipping is exposed).
2. Lippings are required to be applied to all edges.
3. Lippings can be bonded with polyurethane or PUR. These may be hand applied or may be applied using an edgebander. With either method it must be ensured that sufficient glue is applied to across the entire surface area between the 2No substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed, for either installation application.
4. For flat lippings it is permitted to apply maximum 8mm radius to the corners of the lipping at vertical edges to create a maximum 2mm edge profiling.
5. Specific requirements for lipping relating to the use of concealed closers can be found within Section 10.7 and must be adhered to.

## 5.5 Decorative & Protective Facings – All Leaf Options

Relatively thin leaf facing materials are deemed to be decorative and their application is not considered to be of detriment to the overall stability or performance of the doorset design. In fact, when applied as an additional component on top of the minimum facing material required by the door blank, they are likely to provide a small enhancement in performance as an additional barrier to fire spread, although, this is likely to be negligible.

The following additional facing materials are therefore permitted for this door design since they would have limited influence under fire resistance test conditions.

Decorative & Protective Facing Specification	
Facing Material	Maximum Permitted Thickness (mm)
Paint	0.5
Timber veneers	2
Plastic laminates	2
PVC	2
Cellulosic and non-metallic foils	0.5

### Notes:

1. Metallic facings are not permitted except for push plates and kick plates
2. The door core thickness may be reduced on both sides by a maximum of 0.6mm for calibration purposes in order to accommodate the chosen finish. The minimum overall leaf thickness must remain at 44mm for leaf types No.1 & No.2 and 54mm for leaf types No.3 & No.4 after finishing has been applied.
3. Materials may over sail lippings but must not return around leaf edges.
4. Materials must not conceal intumescent strips.

Decorative finishes listed above may be painted within the limits for paint finish, above.

## 5.6 Timber Substrate Facings – All Leaf Options

Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 have demonstrated that the application of additional facings, which would be considered structural, have not been detrimental to the fire integrity performance. The materials below may therefore be applied as an additional facing material using PVA/PU/UF adhesive.

Facing Materials	Maximum Permitted Thickness (mm)
MDF	6

### Notes:

1. Materials may over sail lippings but must not return around leaf edges.
2. Facings must be balanced (i.e., the same thickness and material applied to both faces).
3. Decorative facings in section 5.5 may be applied in addition to these timber substrate facings.
4. Hardware incorporated into doorset must be capable of accommodating the adjusted weight and thickness after additional facings are applied.
5. Timber substrate facings may be routed, recessed or machined in any location provided either:
  - a. Machining does not impact the core as described in section 5.1 or
  - b. Any machining that breaches the core surface is in accordance with section 5.8.

## 5.7 Decorative Planted on Timber Mouldings – All Leaf Options

Decorative mouldings were included within test reference WF432578 Issue 1 without being of detriment to the overall performance of the doorset. The doorset they were included within achieved a minimum of 45 minutes integrity performance when tested bi-directionally.

Decorative mouldings can be applied to all door leaf options providing the following criteria is adhered to.

The mouldings:

1. Are surface applied to the door
2. Are no higher than 30mm i.e., proud of the door
3. Are no wider than 70mm
4. Cover no more than 20% of the door leaf area
5. Are no closer than 150mm to the door leaf edge or aperture within the leaf
6. Are bonded into position and may include pneumatically fired steel pins no greater than 25mm long.
7. Are bonded using PVA adhesive.

## 5.8 Feature Grooves

Decorative grooves were included within tests referenced WF391843 & WF414162 without being of detriment to the overall performance of the doorset. The doorset they were included within achieved 51 and 36 minutes respectively.

The following sections detail the leaf options permitted for the application of grooving and the specification to which the door leaf may be grooved to, if a leaf type is not mentioned it is not possible to include grooving within that leaf type.

In all cases, feature grooves cannot be located within 20mm of any mortice for hardware (i.e., any item which requires material to be removed from the door)

### 5.8.1 Strebord® 44 & Strebord® 54

Both sides of the door leaves may be grooved to the following specification.

The following table details the tested grooving arrangement and the limitations associated with each groove option.

Groove Option		
Element	Details	
Max. groove size (mm)	10mm wide x 10mm deep	
Inserts	Hardwood inserts meeting the above detailed dimensions must be fitted within the grooved leaf material (minimum density 640kg/m <sup>3</sup> ). The insert can be grooved to a maximum 5 wide x 4 deep	
Adhesive	See Section 9 (Adhesives)	
Proximity to door edges (mm)	Horizontal Grooves	May extend full width but must remain ≥95mm from top & bottom edges
	Vertical Grooves	May extend full height but must remain ≥95mm from vertical edges
Groove spacing (mm)	No closer than 240mm apart. Vertical and horizontal grooves may intersect each other.	
Orientation	Horizontal and/or Vertical	
Leaf option	Leaf 1 and 3	
Leaf size range (mm)	Maximum 2405mm high x 1046mm wide	

#### Notes:

1. Number of grooves is unlimited, providing all other details meet the specification given in the table above
2. Grooves must not run under glazing beads.

## 5.8.2 Strebord® 54

Both sides of the door leaves may be grooved to the following specification.

The following table details the tested grooving arrangement and the limitations associated with each groove option.

Groove Option		
Element	Details	
Max. groove size (mm)	10mm wide x 5mm deep	
Inserts	Inserts are not required but may be filled with hardwood (minimum density 640kg/m <sup>3</sup> ). The insert can be grooved to a maximum 5 wide x 3 deep	
Adhesive	See Section 9 (Adhesives)	
Proximity to door edges (mm)	Horizontal Grooves	May extend full width but must remain ≥100mm from top & bottom edges
	Vertical Grooves	May extend full height but must remain ≥100mm from vertical edges
Groove spacing (mm)	No closer than 240mm apart. Vertical and horizontal grooves may intersect each other.	
Orientation	Horizontal and/or Vertical	
Leaf option	Leaf 3 only	
Leaf size range (mm)	Maximum 2405mm high x 1046mm wide	

### Notes:

1. A maximum of 4No. vertical and 4No. horizontal grooves are permitted perpendicular to one another, providing all other details meet the specification given in the table above. Grooves may intersect one another.
2. Grooves must not run under glazing beads.

## 6 Glazing within the Leaf

### 6.1 General

The testing conducted on the Falcon Timber Limited door designs has demonstrated that they are capable of tolerating glazed apertures, whilst providing a margin of over performance. For example, test reference EFR-18-H-003671 included a glazed aperture 1540mm high x 400mm wide.

Glazing is therefore acceptable within the following parameters.

The maximum total assessed aperture area for any individual door leaf is 0.6m<sup>2</sup>.

Any single aperture may not be greater than 0.6m<sup>2</sup>.

Multiple apertures are acceptable within the permitted glazed area, with a minimum dimension of 140mm of core between apertures.

Apertures must not be less than 150mm from top and side edges and 150mm from the bottom edge.

Aperture shape must be rectilinear.

Apertures cannot be rotated (e.g., a square to be rotated to create a diamond effect).

### 6.1.1 Single Pane Glass & Glazing Systems – All Leaf Types

The glazing system must be one of the following proprietary tested systems.

The table below specifies the maximum assessed area of glazing for each permitted glass type and glazing system.

The numerical figures in the main body of the table are the maximum area of glass (in m<sup>2</sup>) that is considered acceptable for an individual glazed aperture, based upon the specific system.

The total area of all glazed apertures must not exceed that state in Section 6.1 above.

Glass & Glazing System Specification Maximum Assessed Area (m <sup>2</sup> )		
Glass Type & Manufacturer (Test reference)		Glazing System & Manufacturer (Test reference)
		1. Sealed Tight Solutions Ltd 105GT-3-DS (10mm wide x 3mm thick) (EFR-18-H-003671)
1	Pyrobelite 12 AGC Flat Glass UK (WF391843)	0.6 <sup>4</sup>
2	Pyrobelite 9EG <sup>1</sup> AGC Flat Glass UK (EFR-18-H-003671)	0.6
3	Pyrodur 60-20 Pilkington UK Ltd (WF391843)	0.6 <sup>4</sup>
4	Pyroguard EI30 Pyroguard UK Ltd	0.6 <sup>4</sup>
5	Pyrostop 30-10 Pilkington UK Ltd	0.6 <sup>4</sup>
6	Pyrobel 16 AGC Flat Glass UK	0.6 <sup>4</sup>

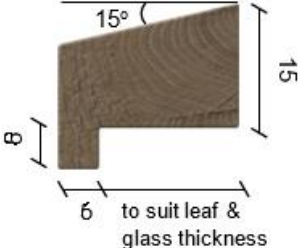

#### Note:

1. An STS glazing liner must be installed lining all sides of glazed apertures where Pyrobelite 9EG is installed, see drawings in Section 6.2.1 as supplied by Falcon Timber Limited.
2. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.
3. Glass types 3-6 are fully insulating for 30 minutes in terms of the criteria set out BS 476: Part 20: 1987.
4. Assessed based on glass having equal or greater fire resistance integrity and insulation performance as the tested glass.

## 6.2 Glazing Beads & Installation – All Leaf Options

The 3D models in the following sections are provided as a generalised illustration of the glazing installation only; actual installation must be as per the specific details noted within this document.

### 6.2.1 Chamfered Bead

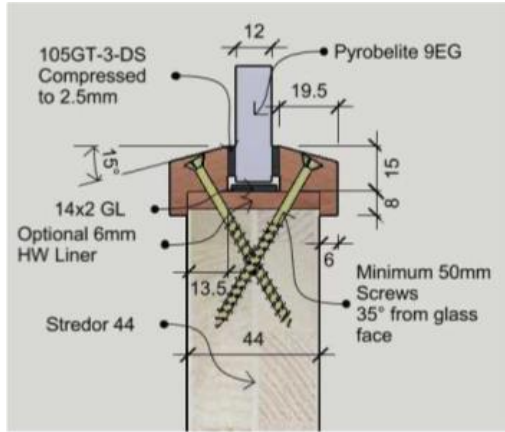
Permitted with glazing systems from the table in Sections 6.1.1	
	
<ul style="list-style-type: none"> <li>• The glazing beads must be created from hardwood of a minimum 640kg/m<sup>3</sup> density.</li> <li>• Glazing beads must be retained in position with 50mm long steel pins or 50mm long No. 6-8 screws, inserted at 35-40° to the vertical.</li> <li>• Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.2.2 below.</li> <li>• The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.</li> <li>• Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires.</li> <li>• A 6mm thick timber aperture lining must be installed for leaf types 1 &amp; 3 (Strebord® 44 &amp; Strebord® 54) the application of a 6mm thick timber aperture lining remains optional for leaf types 2 &amp; 4 (Stredor® 44 &amp; Stredor® 54). The liner must be hardwood of minimum density of 640kg/m<sup>3</sup>, adhered in position using PU adhesive as specified in section 9. The liner must be the same width as the thickness of the door core/leaf with no gaps behind the glazing beads</li> </ul>	



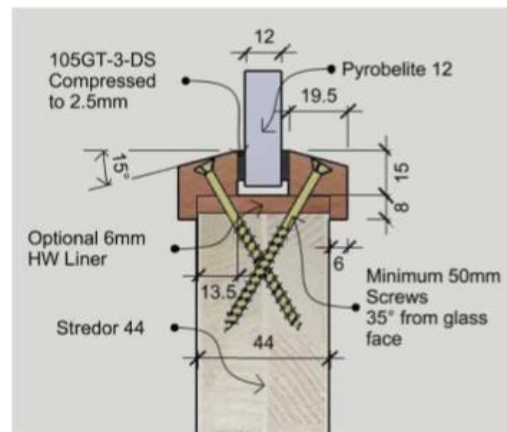
The following illustrations have been supplied by Falcon Timber Limited and detail the permitted glazing arrangements for each leaf:

<b>Leaf type No.1 – Strebord® 44 – Glazing</b>	
<b>Pyrobelite 9EG</b>	<b>Pyrobelite 12</b>
<b>Pyroguard EI30</b>	<b>Pyrobel 16</b>
<b>Pyrodur 60-20</b>	<b>Pyrostop 30-10</b>

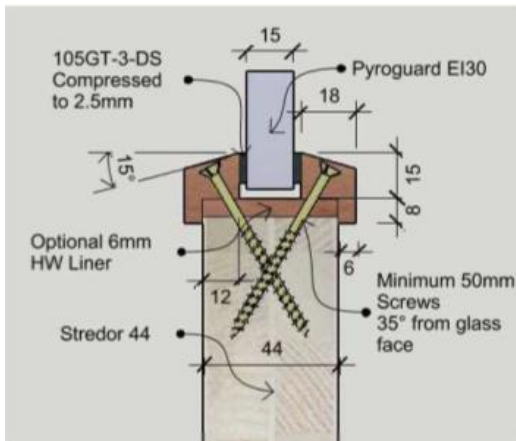
**Leaf type No.2 – Stredor® 44 – Glazing**



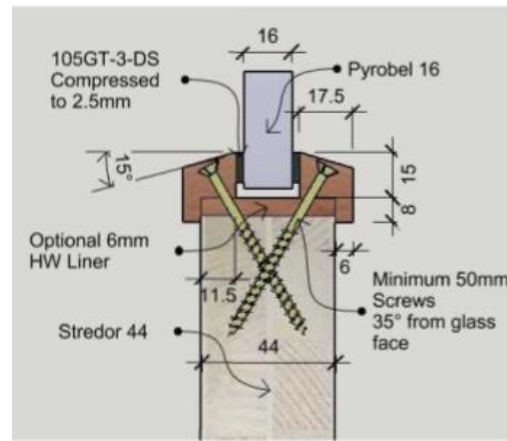
**Pyrobelite 9EG**



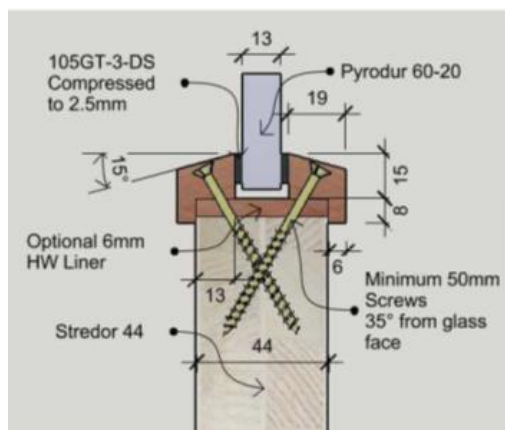
**Pyrobelite 12**



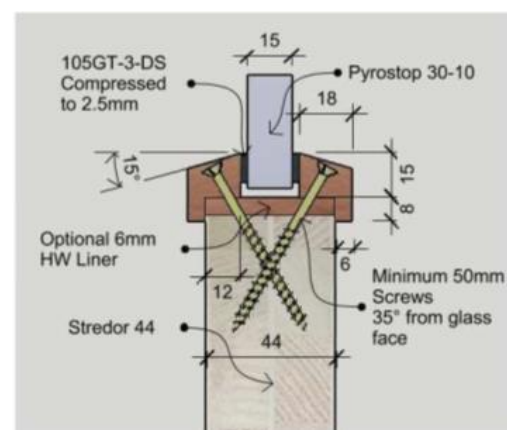
**Pyroguard EI30**



**Pyrobel 16**

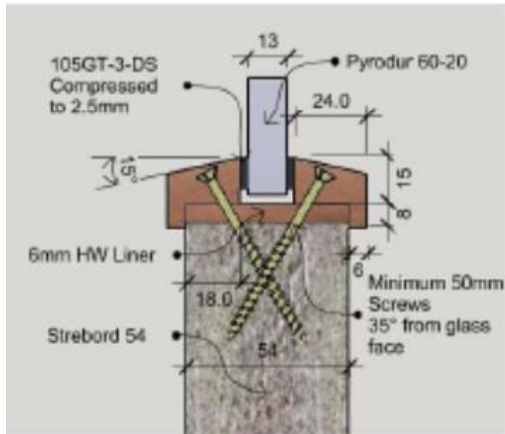


**Pyrodur 60-20**

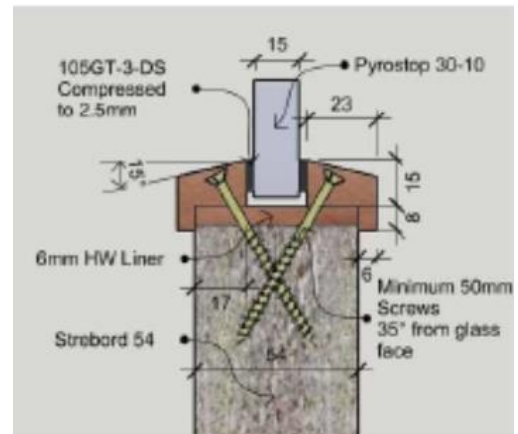


**Pyrostop 30-10**

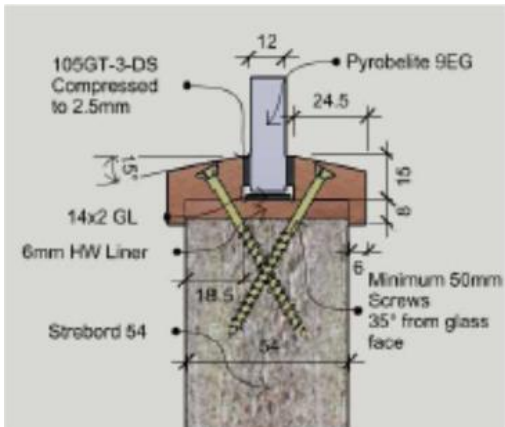
**Leaf type No.3 – Strebord® 54 – Glazing**



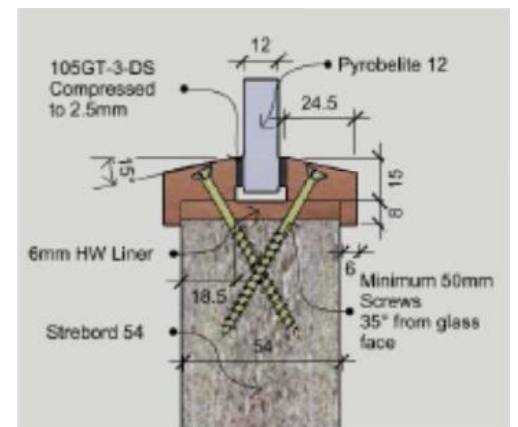
**Pyrodur 60-20**



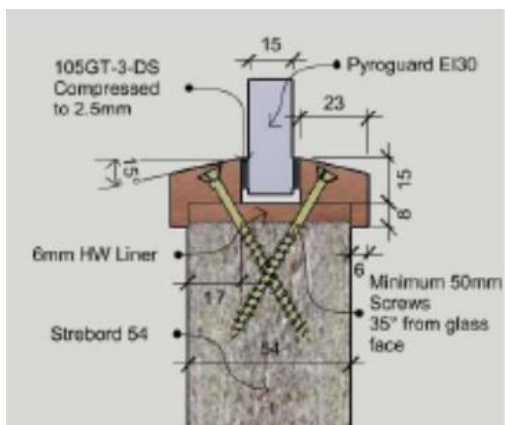
**Pyrostop 30-10**



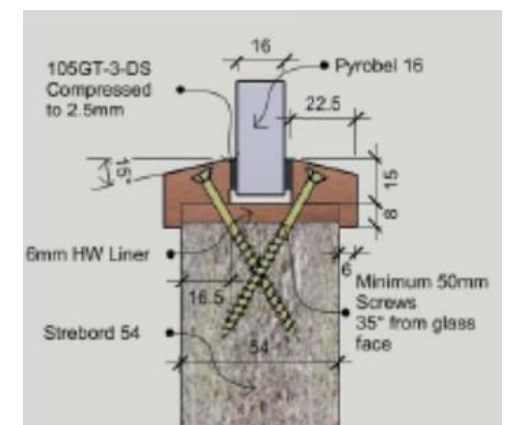
**Pyrobelite 9EG**



**Pyrobelite 12**



**Pyroguard EI30**



**Pyrobel 16**

<b>Leaf type No.4 – Stredor® 54 – Glazing</b>	
<b>Pyrobelite 9EG</b>	<b>Pyrobelite 12</b>
<b>Pyroguard EI30</b>	<b>Pyrobel 16</b>
<b>Pyrodur 60-20</b>	<b>Pyrostop 30-10</b>



## 6.2.2 Glazing Pins for Glazing Within Leaf

The following pin specification is permitted and has been considered suitable for applications requiring a pin fixing to glazing beads:

### Option 1 – Round, Oval & Rectangular Pins

The following dimension of pin has been approved for round, oval and rectangular shaped pins which are hand applied:

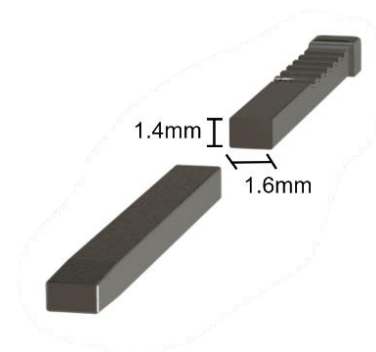
- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.03mm<sup>2</sup>.
- Minimum linear dimension of 1.6mm in any direction, see figure below. The maximum pin diameter or any linear dimension may be no greater than 2.0mm.



### Option 2 – Gun (Pneumatically) Fired Rectangular Pins

The following dimension of rectangular pin has been deemed suitable for gun (pneumatically) fired applications.

- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.24mm<sup>2</sup>.
- Minimum linear dimensions as shown in the figure.
- The 1.6mm dimension is predominately oriented perpendicular to the glass, where possible.
- The maximum pin diameter or any linear dimension may be no greater than 2.0mm.



Pins with dimensions less than those stated above are not covered by this assessment.

## 7 Door Frame Construction

### 7.1 Details for Frame 1

The door frames listed below are the minimum size and density which have been successfully tested and assessed by this report. The frame must be constructed to meet the following specification for single and double acting frames, where applicable.

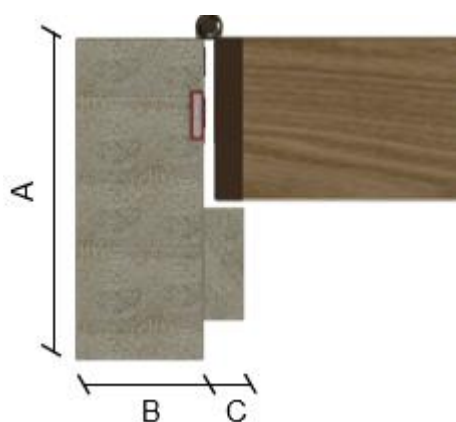
Frame Specification		
Material	Minimum Section Size (mm)	Minimum Density (kg/m <sup>3</sup> )
Softwood or Hardwood	Frame: 90 (d) x 29 (w) (excluding stop) Stop: 15 (w) (integral or planted on)	510

**Note:**

Minimum section size is subject to size of hardware.

#### 7.1.1 Standard frame detail

The diagram below shows detail of the standard frame construction.



A: Frame depth = 90mm minimum

B: Frame width = 29mm minimum

C: Stop width = 15mm minimum

## 7.2 Threshold

### 7.2.1 Profiled Proprietary Threshold

The following tested thresholds may be used with the Falcon Timber Limited. Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 doorsets based on the test evidence available as summarised within section 3.

1. Sealed Tight Solutions STH004 – WF391032
2. Stormguard, Low height Macclex – Thermally broken, 62 x 15mm complete with 2No. seals – WF432578 Issue 1

The following aluminium-based threshold profiles have been considered based on the similar composition to the above detailed tested Stormguard, low height Macclex threshold. Similarities include aluminium profiled body, presence of thermal break and presence of environmental control seal.

1. Exitex aluminium threshold ref: MXS/FS15
2. Stormguard Slimline

In all cases the threshold seal shall be sealed to the bottom of the jambs with an intumescent fire rated acrylic sealant, prior to fixings being applied.

### 7.2.2 Timber Threshold

It has been possible to consider the application of a timber threshold meeting the following specification:

- Hardwood timber of minimum density 640kg/m<sup>3</sup>.
- Minimum width of timber must remain equal to the door frame and measure between 15-25mm thick.
- One of the following hardware options must be included:
  1. Morticed drop down seal (as defined within section 10.8.5) shall be applied to the bottom edge of the leaf engaging onto timber threshold.
  2. One of the above detailed threshold seals (section 7.2.1) shall be fitted between jambs bedded on top of the timber threshold with an acrylic intumescent mastic.

### 7.3 Door Frame Joints

Below are depictions of the door framing joints that are deemed acceptable. Please note that the drawings are provided as general illustrations of each type of door frame joint; actual construction in terms of intumescent seal location and material, etc. must be as the text within this document specifies. The door frame joints are required to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws. Frame joints may additionally be reinforced with any of the adhesives approved for the application of lippings, on the basis that the approved lipping adhesive has been proven to contribute to the positive fire resistance performance of the timber-to-timber junction at the door leaf edge.



Half Lapped Joint



Mitre Joint



Mortice & Tenon Joint



Butt Joint



Trenched Joint

Figure 4 – Approved door frame jointing options



## 8 Overpanels & Fanlights

### 8.1 Framing options

Based upon the available test evidence, referenced WF432578 Issue 1 (Section 3.1.9), there are 2No. approved framing options that may be employed when fitting solid overpanels and 1No. approved framing option for glazed fanlights. These are described below. In both scenarios, the following limitations apply:

- The maximum height of the overall assembly is 2950mm, the maximum width of the assembly must be no greater than the doorset itself.
- The assembly may only contain 1No. single leaf door.
- All joints must be tight with no gaps, specific fixing arrangements are given below.

#### 8.1.1 Transomed Frames

Transomed framing option consists of a common framing member between the head of the door frame and the panel above, this option is permitted for the use of solid overpanels only.

Frame specifications shall be as defined below:

- Perimeter framing is to be constructed in accordance with section 7.1 and include a single transom measuring a minimum of 90mm (d) x 29mm (w).
- The transom is to be mortice and tenon jointed within the frame mechanically fixed with the appropriate size ring shank nails or screws must be additionally bonded with the adhesive shown in section 9.

#### 8.1.2 Coupled (Modular) Frames

Coupled frames are where the fanlight or overpanel is contained within its own separate frame which is then independently affixed to the rear of the door frame. This option is permitted for the use of solid over panels and glazed fanlights.

Frame specifications shall be as defined below:

- The framing material shall consist of softwood or hardwood with a density of  $\geq 545\text{kg/m}^3$ .
- The framing shall have a minimum cross-sectional dimension of 90mm (d) x 44 (w) with a 15mm x 47 rebate to create an integral bead.
- Frame joints are to be in accordance with section 7.3 additionally the joint is to be mechanically fixed with the appropriate size ring shank nails or screws must be additionally bonded with the adhesive shown in section 9.
- The framing is to be affixed back to the door frame with 70mm long wood screws applied through the door frame stop and 50mm screws applied through the frame reveal into the rear of the fanlight. Screws are to be applied at no greater than 100mm from corners and no more than 250mm centres.
- The rear of the modular frame shall include 2No. intumescent seals approved within section 4.5.5 and 4.5.6, applied to the top member of framing only positioned 20mm from each face of the frame across the entire width.

## 8.2 Solid Overpanels

Test reports reference within section 3 have proven the ability of the Falcon Timber Limited door leaves tested within a variety of framing and intumescent sealing conditions as a doorset. It is assessed to consider the tested door leaf material, intumescent specification and framing as a solid panel where the solid panel element of the door core is mechanically fixed within the frame. Eliminating the gaps and hinged element will reduce the effects of thermally induced deflection and ensure that the leaf remains within the perimeter framing which it is applied, therefore solid overpanels may be constructed of the Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 cores to the following specification:

- The overpanel must be constructed of the same core as is used for the door leaf. For example, if the Stredor® 44 has been used for the door leaf the overpanel shall also consist of the Stredor® 44 core.
- Overpanels are not required to be lipped at perimeter edges.
- The overpanel must be fixed by screwing through the rear of the frame with steel screws passing at least 30mm into the centre line of the overpanel. Fixings must be no more than 100mm from each corner and a maximum of 250mm centres in between.
- The intumescent seals specified for the jambs in section 4.5.5 & 4.5.6 as appropriate, must also be fitted to all concealed edges of the overpanel. The seals may be fitted in the overpanel edges or alternatively in the frame reveal.
- A maximum 2mm gap is permitted between the edge of the overpanel and the frame reveal.
- The maximum overpanel height is 2000mm subject to meeting the size of assembly restrictions as detailed in section 8.1.



### 8.3 Glazed Fanlights

Based upon test reference WF432578 Issue 1 glazed fanlights are permitted for use with the doorset design providing they are constructed within the modular framing detailed within section 8.1.2.

The glazing system must be one of the following proprietary tested systems, it can be observed within section 3.1.9 that the double-glazed unit detailed below has been tested from both directions with respect to fire resistance performance.

The table below specifies the maximum assessed height and width that is deemed acceptable for different aspect ratios ('landscape' or 'portrait' orientation) for an individual glazed aperture, based upon the specific system.

The total dimension of the door assembly including glazed apertures must not exceed that stated for the entire assembly, noted in section 8.1, above.

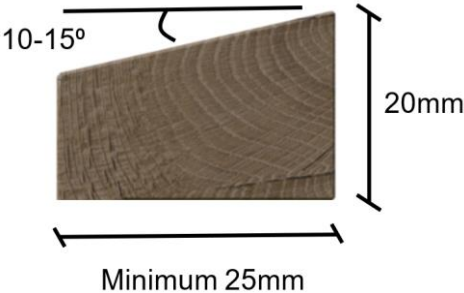
Glass & Glazing System Specification		
Glass Type & Manufacturer (Test reference)		Glazing System & Manufacturer (Test reference)
		1.
		STS 104 & STS 302 Liner Sealed Tight Solutions Ltd (WF432578 Issue 1)
1	12mm Pyrobelite / 8mm Steel Spacer Bar / 6.8mm Low E Laminated Glass. Fireglass UK (WF432578 Issue 1)	Maximum dimension (Aperture Size): 650mm (h) x 932mm (w)

#### Note:

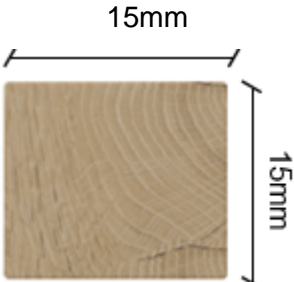
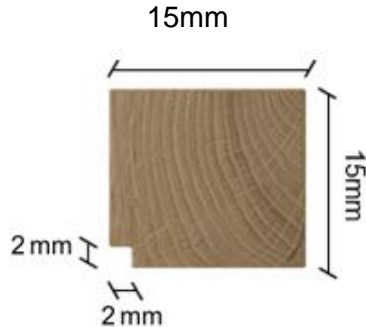
1. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.
2. The pane dimensions given above represent the maximum width against maximum height. Panes with smaller dimensions are acceptable
3. Expansion allowance of 3mm must be maintained at all edges, as tested WF432578 Issue 1

## 8.3.1 Glazing Beads & Installation

### 8.3.1.1 Chamfered Bead

Permitted Beading – Fanlight – Chamfered

<ul style="list-style-type: none"><li>• The glazing beads must be created from hardwood of a minimum 640kg/m<sup>3</sup> density.</li><li>• Glazing beads must be retained in position with 50mm long steel pins or 50mm long No. 6-8 screws, inserted at 35-40° to the glass.</li><li>• Fixings must be at 140mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 8.4 below.</li><li>• The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.</li><li>• Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires</li></ul>

### 8.3.1.2 Square Beads

Permitted Beading – Fanlight – Square	
	
<ul style="list-style-type: none"><li>• The glazing beads must be created from hardwood of a minimum 640kg/m<sup>3</sup> density.</li><li>• Glazing beads must be retained in position with 50mm long steel pins or 50mm long No. 6-8 screws, inserted at 35-40° to the glass.</li><li>• Fixings must be at 140mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 8.4 below.</li><li>• The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.</li><li>• Glass shall be aligned within the aperture using hardwood or non-combustible setting block placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires</li></ul>	

## 8.4 Glazing Pins for Glazed Fanlights & Sidelight

The following pin specification is permitted and has been considered suitable for applications requiring a pin fixing to glazing beads:

### Option 1 – Round, Oval & Rectangular Pins

The following dimension of pin has been approved for round, oval and rectangular shaped pins which are hand applied:

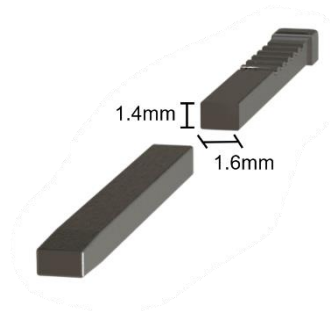
- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.03mm<sup>2</sup>.
- Minimum linear dimension of 1.6mm in any direction, see figure below.



## Option 2 – Gun (Pneumatically) Fired Rectangular Pins

The following dimension of rectangular pin has been deemed suitable for gun (pneumatically) fired applications.

- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.24mm<sup>2</sup>.
- Minimum linear dimensions as shown in the figure.
- The 1.6mm dimension is predominately oriented perpendicular to the glass, where possible.



Pins with dimensions less than those stated above are not covered by this assessment.

## 9 Adhesives

The following adhesives must be used in the construction of the doorsets. These may be hand applied or may be applied using an edgebander, where applicable. With either method it must be ensured that sufficient glue is applied across the entire surface area between the 2No substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed, for either installation application used.

Element	Product/Material Type
Door blank core & facings (where applicable)	Manufacturers Specification – Relevant to each core type – Details held on file by certification body.
Timber lipping & decorative facings	Polyurethane or PUR
Decorative Grooves	PVA
Aperture lining (Glazing)	Polyurethane
Frame Jointing	PVA Wurth/Morrells D4

## 10 Hardware

### 10.1 General

The following section details the permitted scope and constraints for fitting hardware to this door design. The following items of hardware must also bear the UKCA or CE Mark in addition to the requirements outlined in the following sections. The UKCA or CE mark must indicate that the hardware is suitable for fire doors in the classification code and declaration of performance issued by the hardware manufacturer:

- Latches & locks: Test Standard EN 12209
- Single axis hinges: Test Standard EN 1935
- Controlled door closing devices: Test Standard EN 1154
- Electrically powered hold-open devices: Test Standard EN 1155

Where an item of hardware is not covered by the scope of a relevant harmonised or designated standard, and cannot therefore be UKCA or CE Marked, inclusion of the hardware is not permitted within the doorset design, unless it is specifically identified within the appropriate section of this Field of Application. All items of hardware must be fitted in accordance with requirements of this assessment.

The following sections consider what tested and assessed alternative items of essential and non-essential hardware can be used on the doorset range.

Items of hardware have been considered and approved via the following means:

- The component has been successfully tested to BS 476: Part 22: 1987 or BS EN 1634-1 in a suitably similar type of doorset e.g., timber leaf in timber frame
- As a result of an assessment of the appropriateness of the item of hardware, based on test evidence not commissioned by Falcon Timber Limited.
- As a result of the CERTIFIRE approval of the item of hardware

Each section will consider the named item of hardware and detail if there are any limitations associated with:

- Leaf size
- Configuration
- Intumescent seals
- Intumescent protection
- Frame configuration requirements

No item of hardware should be within 200mm of another item of hardware unless there is test evidence to demonstrated they can be in closer proximity.

Hardware items should generally be fitted in accordance with the manufacturer's instructions. **However, the parameters and requirements of this assessment always take precedence, including specified protection such as hardware gaskets.** Referenced CERTIFIRE approved hardware may be incorporated subject to the design, material and dimensional limitations identified within this assessment report and identified on the relevant CERTIFIRE certificate.



## 10.2 Intumescent to Hardware

The intumescent materials used to protect hardware that have been tested and assessed for this doorset design are detailed below. Note that any one of the product/maker options listed in the table may be used in the specific application noted. However, only 1 No manufacturer should be considered per doorset application.

The door gap perimeter intumescent seal specifications are documented in conjunction with the leaf envelope size limitations in section 4.

Hardware Intumescent Specification		
Item	Location	Product/Manufacturer
Hinges	Under each hinge blade	Not required.
Lock/latches	Under keeps	See details for each specific item as detailed within section 10.4.1.
	Under forend	
	Encasing centre lock body	
	Encasing top and bottom lock bodies	
	Encasing lock motor box (if applicable)	
Concealed overhead closers	Encasing the entire body of the concealed closer and slide arm including the back surface of the face plate	See details for each specific item as detailed within section 10.7.1

Gaskets must be fitted where required by supporting evidence, for example, test evidence or Certifire certificates. If gaskets are not required by the supporting evidence but are within this Field of Application, the requirements of this Field of Application take precedence.

Where it is stated that intumescent is not required for a particular element of hardware, it is permitted to use up to 2mm thick MAP, Interdens or graphite-based gasket tested for the particular application [as appropriate for the hardware]. It is the opinion of Warringtonfire that the additional protection will not detract from the fire resistance performance under test conditions.



### 10.3 Essential Hardware

The following table details the essential hardware for the various doorset configurations that are referenced in this assessment.

Configuration	Hardware
LSASD	<ul style="list-style-type: none"> <li>• Latch</li> <li>• Handle</li> <li>• Hinges</li> <li>• Self-closing device (closer)</li> </ul>

### 10.4 Latches & Locks

#### 10.4.1 Latches & Locks – Multi Point Engagement

The table below details the tested multi point latch that is approved.

Element	Manufacturer & Product Reference	Minimum Intumescent Protection
Locks & latches	1. ERA Surefire Classic 2 Hook (Complete with electric motor box) – WF391032, WF391843 & WF416690 Issue 2	1mm (t) Sealed Tight Solutions Ltd, Graphite. Applied encasing the centre lock case & under all keeps.
	2. Winkhaus AV2 L-A Multipoint lock – WF402305	1mm (t) Norseal, NOR910, Graphite applied encasing top, bottom & centre lock cases within the leaf, under forend & under latch keeps.
	3. Winkhaus AV3 Autofire Multipoint lock – WF414162	1mm (t) Interdens® encasing top, bottom and centre lock cases within the leaf & applied under keeps.
	4. Yale Lockmaster Autoengage 2LB Classic 45mm – WF432578	1mm (t) Interdens® encasing top, bottom and centre lock cases within the leaf & applied under keeps.

#### Note:

1. The top and bottom hook locks need to be engaged for fire performance.
2. Intumescent protection shall be as detailed within section above, underneath the latch body, keeps or forend as appropriate.
3. The centre, top and bottom keep plates must be the same as those tested, as supplied by the manufacturer.
4. In all instances the location of the handle must be between 950–1050mm from the threshold. The multi point latch forend must finish a minimum of 50mm away from the edge of the leaf at the top and bottom, this is likely to restrict the minimum size permitted by this assessment.
5. It is possible to consider the application of a lock motor where applicable for the associated lockset, providing the motor case is no greater than 200mm high x 40mm wide x 18mm thick, when applied the lock motor must be fully encased with the same intumescent as detailed for the centre lock case.

## 10.4.2 Cylinders

The table below details the tested cylinders that are approved.

Element	Manufacturer & Product Reference
Cylinder	<ol style="list-style-type: none"><li>1. UAP 70mm Key/thumb turn cylinder Ref. ZL30T/30CAS – WF414882</li><li>2. Yale Platinum 3* – WF432578</li></ol>

Alternatively, components with the following specification are also deemed acceptable.

- Where required for use with multi point latches, the cylinder must be constructed of either brass or steel with a melting point in excess of 800°C.
- The cylinder must be compatible with the lock/latch.
- Cylinder dimensions may be up to 33mm high x 17mm wide at the maximum dimension and shall be euro profile.
- Single and double cylinders, along with cylinder & turn are permitted.
- Door preparation for single cylinders shall penetrate only half the door thickness.
- Intumescent protection and tightness of fitting:
  - If the lock body is protected with an intumescent material, maximum clearance between leaf and cylinder is 3mm to each edge.
  - 1mm thick MAP or non-pressure forming graphite intumescent around the cylinder is optionally permitted.

## 10.4.3 Cable Ways & Cable Loops

Test WF391032 incorporated a cableway drilled through the leaf in combination with the ERA Surefire multipoint latch in a Strebord® 54 door assembly. It is therefore permitted to include cableways within leaf types 3 (Strebord® 54) and 4 (Stredor® 54) leaves, only.

The cableway must be concealed in the following way:

1. A hole drilled centrally through the leaf thickness of maximum 10mm diameter and lined with Sealed Tight Solutions Ltd 'Cable-Pro'.
2. The cable for the electronic closing/latching mechanisms must be no more than 2mm smaller in diameter than the hole through the leaf.
3. The cable for the electronic closing/latching mechanism must be PVC encased.
4. The hole must be located below 1500mm from the threshold and must be spaced a minimum of 90mm from any apertures within the leaf, e.g., glazing or letter plates, etc.
5. Cableways must not continue behind grooves on the leaf faces.
6. 2mm thick Sealed Tight Solutions Ltd raw graphite must be fitted lining each cheek of the cable loop body, protection is not required to the rear of the cable loop case.

## 10.5 Handles

The table below details the tested handles that are approved.

Element	Manufacturer & Product Reference
Handles	<ol style="list-style-type: none"><li>1. Fab &amp; Fix Balmoral Inline Lever Lever 1A000 – WF391032</li><li>2. Stanza ZPZ090SC – EFR-18-H-003671</li><li>3. Sapphire Hardware ZAA030 Lever type handle and escutcheon – WF402305</li><li>4. ERA 1X000 – Stainless Steel Handle – WF416690 Issue 2</li><li>5. Serozzetta Plaza Stainless Steel Lever Handle &amp; Smith and Lock Escutcheon ref. 4378H – WF414162</li><li>6. Hoppe Amsterdam Stainless Steel Inline lever type handle – WF414882</li><li>7. Yale – 0757-2003-CH-CH Inline Lever Handle – WF432578</li></ol>

Alternatively, components with the following specification are also deemed acceptable.

- The handle or escutcheon may be any size up to 240mm high x 35mm wide or a maximum of Ø52mm. The handle or escutcheon must be compatible with the lock/latch and cylinder (if required), such that the closing action of the doorset is not impeded.

## 10.6 Butt Hinges

The table below details the tested butt hinges that are approved.

Element	Manufacturer & Product Reference
Hinges	<ol style="list-style-type: none"> <li>1. Royde &amp; Tucker Hi-Load 101 – WF386959</li> <li>2. Royde &amp; Tucker H207 – EFR-18-H-003671</li> <li>3. Royde &amp; Tucker Hi-Load 102 – WF402305</li> <li>4. Zoo – ZHSS243RS – WF416690 Issue 2</li> <li>5. Vier Stainless Steel Lift Off VLHL243RS &amp; VLHR243RS – WF414882</li> <li>6. Eurospec HIN 1433/13 – WF432578</li> </ol>

Alternatively, components with the following specification are also deemed acceptable.

Element	Specification
Blade height:	90 - 102mm
Blade width (excluding knuckle):	30 - 35mm
Blade thickness	2.5 - 4mm
Fixings:	Minimum of 4No. Ø5mm x 30mm long fully threaded 'twinfast' or chipboard screws per blade
Materials:	Steel or stainless steel

The doorset shall be hung on a minimum of 3No. hinges with no greater than 4No. hinges being applied, as required. In all instances, the hinges must have the following specification.

Element	Specification	
Hinge Positions	Top	140-180mm from the head to top of hinge
	2 <sup>nd</sup> (& 3 <sup>rd</sup> when applied)	Equispaced between top and bottom or 2 <sup>nd</sup> hinge 200mm from top hinge and when applied 3 <sup>rd</sup> hinge equally spaced between 2 <sup>nd</sup> and bottom hinge
	Bottom	180 - 250mm from the foot of leaf to bottom of hinge
Intumescent protection:	See section 10.2	

### Note:

It is also permitted to use screw fixings as tested and supplied with the hinges approved for the Strebord® and Stredor® designs at 30 minutes fire resistance referenced specifically within the tables above.

## 10.7 Doorset Self Closing

Doorset automatic self-closing can be provided by:

- Overhead face fixed closers
- Concealed jamb mounted closers
- Concealed overhead closers

Automatic doorset self-closing devices such as transom mounted, and offset pivots used with floor springs are not considered acceptable for use with the doorset range.

### 10.7.1 Overhead Face Fixed Closer

The table below details the tested overhead face-fixed closers that are approved.

Element	Manufacturer & Product Reference
Overhead face-fixed closers	<ol style="list-style-type: none"><li>1. Hoppe AR1500 – WF416690 Issue 2</li><li>2. Rutland TS.9205 – WF414882</li></ol>

Alternatively, components with the following specification are also deemed acceptable.

- CERTIFIRE approved overhead face-fixed closers for 30-minute fire resistance applications on 44mm thick timber door and timber frames

#### Note:

It must be ensured that the closer is of sufficient strength and power to ensure the door leaf/leaves fully engage into the frame reveal.

### 10.7.2 Frame Jamb Mounted Closer

The table below details the tested concealed jamb mounted closers that are approved.

Element	Manufacturer & Product Reference
Jamb mounted concealed closer	<ol style="list-style-type: none"><li>1. Astra 4000 – WF402305</li></ol>

Alternatively, components with the following specification are also deemed acceptable.

- CERTIFIRE approved jamb mounted concealed closer for 30-minute fire resistance applications on 44mm thick timber door and timber frames

#### Note:

1. It must be ensured that the jamb mounted concealed closer is of sufficient strength and power to ensure the door leaf/leaves fully engage into the frame reveal.
2. The closer must be mounted between 800 – 1200mm above the threshold.
3. Provided the rebates required for installation are as tight as possible to the closer hardware, no additional intumescent protection is required.
4. The closer reaction plate in the door frame may fully interrupt both intumescent seals within the frame.

### 10.7.3 Concealed Overhead Self Closing Device

The tables below detail the tested concealed overhead closers that are approved, care should be taken as each closer has restrictions on to which leaf type they apply.

#### 10.7.3.1 Rutland ITS.11204 – Leaf type 1 (Strebord® 44)

Based on results of WF386959, the Rutland ITS11204 concealed, head mounted closer may be used with the Strebord® 44 door design. It is not permitted in all other leaf types.

Element	Manufacturer & Product Reference (Test Reference)	Intumescent Protection	Closer Body Dimensions	Closer Slide Arm Dimensions	Minimum Frame Stop Dimension
Concealed overhead closer	Rutland ITS.11204 (WF386959)	Manufacturers supplied 2mm thick graphite type intumescent kit referenced Rutland IP114. Positioned lining closer arm rebate & positioned on top of closer body within the leaf.	256mm x 32mm x 55mm	461mm x 30mm	12mm

**Note:**

1. Lipping at the head of the Strebord® 44 leaf must be 18 - 23mm thick, otherwise meeting the requirements in section 5.4.
2. It must be ensured that the concealed overhead closer is of sufficient strength and power to ensure the door leaf/leaves fully engage into the frame reveal
3. Intumescent protection shall be as detailed within the above table, as tested.
4. The dimensions of the concealed overhead door closer must not exceed the dimensions given within the table above.

### 10.7.3.2 Rutland ITS.11205 – Leaf Type 3 (Strebord® 54)

Based on results of WF391032, the Rutland ITS11205 concealed, head mounted closer may be used with the Strebord® 54 door design. It is not permitted in the other leaf types 1, 2 & 4.

Element	Manufacturer & Product Reference (Test Reference)	Intumescent Protection	Closer Body Dimensions	Closer Slide Arm Dimensions	Minimum Frame Stop Dimension
Concealed overhead closer	Rutland ITS.11205 (WF391032)	Manufacturers supplied 2mm thick graphite type intumescent kit supplied with Rutland ITS.11205. Positioned encasing the closer arm & positioned on top of closer body & encasing the closer body within the leaf.	42mm x 300mm (Footprint)	460mm x 30mm	20mm

**Note:**

1. Lipping at the head of the Strebord® 54 leaf must be 18 - 23mm thick, otherwise meeting the requirements in section 5.4.
2. It must be ensured that the concealed overhead closer is of sufficient strength and power to ensure the door leaf/leaves fully engage into the frame reveal
3. Intumescent protection shall be as detailed within the above table, as tested.
4. The dimensions of the concealed overhead door closer must not exceed the dimensions given within the table above.
5. The closer arm rebate in the door frame partially interrupts the first intumescent seal with the second seal uninterrupted.

## 10.8 Non-Essential Hardware

Only the following items of non-essential hardware are permitted in addition to the prescribed essential hardware as detailed within section 10.3.

### 10.8.1 Pull Handles

Steel, stainless steel or bronze handles may be surface-fixed or bolted through the door leaf, providing the length is limited to 1200mm between the fixing points. If through fixed, there must be no more than 1mm clearance between the hole and stud.

The above scope of application is provided as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted away from the edge of the door leaf, therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and therefore cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

### 10.8.2 Push Plates & Kick Plates

Components with the following specification are deemed acceptable as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted away from the edge of the door leaf, therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and therefore cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

Approved specification:

- Polymeric or metal face-fixed hardware such as push plates and kick plates up to 2mm thick may be surface fitted to the doorset. These items of hardware are permitted up to a maximum of 20% of the door leaf area if mechanically fixed and a maximum of 30% if bonded with a contact or other thermally softening adhesive. Plates must not return around the door edges or 'notch out'/interrupt the door stop.



### 10.8.3 Security Viewers

The table below details the tested security viewers that are approved.

Element	Manufacturer & Product Reference
Security viewers	<ol style="list-style-type: none"> <li>1. Sealed Tight Solutions Ltd, STS4008 – WF386959</li> <li>2. Norseal DV160/C – WF402305</li> <li>3. ERA, Fab&amp;Fix Spyhole – WF416690 Issue 2</li> <li>4. Jedo, JV942 – WF414162</li> <li>5. Yale, DH000768 – WF432578</li> </ol>

Alternatively, components with the following specification are also deemed acceptable.

- Door security viewers with brass or steel bodies of a diameter less than or equal to 15mm may be used provided that the through-hole is bored tight to the case of the viewer (maximum tolerance +1 mm). Lenses must be glass and the item must be protected with a tested acrylic intumescent mastic.
- Must be fitted no closer than 100mm to door edge, glazing or any other hardware component

### 10.8.4 Environmental Seals

A number of different environmental seals have been successfully tested as part of the Falcon Timber Limited doorset design. For example, the Sealed Tight Solutions Ltd, ST1009 seal was successfully tested in report WF391032.

On this basis, silicon based flame retardant acoustic, weather and dust seals (for example those referenced above or Lorient IS1212, IS1511, IS7025, IS7060 or Sealed Tight Solutions Ltd. ST1009) may be fitted to this doorset design without compromising the performance, providing their fitting does not interfere with the activation of the intumescent seals or hinder the self-closing function of the leaves.

Where required, the seals may be fitted either rebated into the timber door stop.

### 10.8.5 Threshold drop Seals

A Sealed Tight Solutions Ltd drop seal was successfully tested in report WF432578 and is acceptable for use in all door designs. It is permitted for use without the requirement for any intumescent protection.

Alternatively, components with the following specification are also deemed acceptable, recessed into the bottom of leaves based on the summarized evidence contained within section 3.

Product	Manufacturer
STS 422	Sealed Tight Solutions Ltd
ST422GT	Sealed Tight Solutions Ltd
FAS45	Fire and Acoustic Seals Ltd
8105	Norseal Ltd
NOR810S	Norseal Ltd

## 10.8.6 Letter Plates

Based on the evidence provided in WF416690 Issue 2, WF414162 and WF414882 test reports, the Strebord® 44 and Stredor® 44, can incorporate letter plates as specified below. The Strebord® 44 can also incorporate a letter plate security shield as specified by the evidence in WF414882 test report.

Based on the evidence provided in WF391032 test report, the Strebord® 54 and Stredor® 54, can incorporate letter plates. Additionally, the evidence provided in the test reports on the Strebord® 44 and Stredor® 44 door cores can also be extended to include alternative letter plate options for the Strebord® 54 and Stredor® 54 doorsets, provided the letter plate and intumescent type is the same as that specified in the test reports for the Strebord® 44 and Stredor® 44 door cores, with a commensurate size increase of components and intumescent protection to accommodate the 54mm thick door leaves.

Products may be fitted from 400 - 1200mm from floor level and not closer than 100mm to any leaf edge or glazed aperture. The letter plate and associated intumescent protection must be fitted in accordance with the test evidence, and as per the manufacturer's instructions.

The tables in the sections below gives a summary of permitted letter plates, their manufacturers, and required intumescent specification.

### 10.8.6.1 Leaf Types 1 (Strebord® 44) & 2 (Stredor® 44)

Element	Manufacturer & Product Reference	Required Intumescent Protection
Letter plate	1. ERA, Fab&Fix Nu Mail Door Letterplate – WF416690 Issue 2	2No. Wraps of 2mm (t) Sealed Tight Solutions Ltd, Graphite around the letterplate tunnel within the leaf.
	2. Royde and Tucker, LP008 – WF414162	Manufacturers supplied intumescent kit supplied with Royde and Tucker LP008 letterplate.
	3. Fab and Fix Letterplate (3C018) and Security Shield (3F005) – WF414882	Fire and Acoustic Seals Ltd, Spartan Hardware Protection kit referenced FASGP1013
	4. Yale, Postmaster professional – WF432578	Manufacturers supplied graphite type intumescent supplied with Yale, Postmaster Professional. Applied around the tunnel within the leaf and graphite tubes at fixing posts.

### 10.8.6.2 Leaf Types 3 (Strebord® 54) & 4 (Stredor® 54)

The table below details the tested letter plates that are approved.

Element	Manufacturer & Product Reference	Required Intumescent Protection
Letter plate	1. Sealed Tight Solutions Ltd, STS4001 – WF391032	2mm (t) Sealed Tight Solutions Ltd, Graphite applied lining the letterplate tunnel within the leaf & 1mm (t) Sealed Tight Solutions Ltd, Graphite applied to the inside of the letterplate tunnel.
	2. ERA, Fab&Fix Nu Mail Door Letterplate – WF416690 Issue 2	2No. Wraps of 2mm (t) Sealed Tight Solutions Ltd, Graphite around the letterplate tunnel within the leaf.
	3. Royde and Tucker, LP008 – WF414162	Manufacturers supplied intumescent kit supplied with Royde and Tucker LP008 letterplate.
	4. Fab and Fix Letterplate (3C018) and Security Shield (3F005) – WF414882	Fire and Acoustic Seals Ltd, Spartan Hardware Protection kit referenced FASGP1013
	5. Yale, Postmaster professional – WF432578	Manufacturers supplied graphite type intumescent supplied with Yale, Postmaster Professional. Applied around the tunnel within the leaf and graphite tubes at fixing posts.

Alternatively, components with the following specification are also deemed acceptable.

- Letter boxes/plates must be CERTIFIRE approved for 30 minutes in doorsets with solid timber door leaves. Restriction relating to size, location and intumescent protection around the letter box/plate must be complied with.
- The area of the letter plate plus any glazing must not exceed the total permitted area for glazing in the leaf.

### 10.8.7 Knockers, Numerals & Decals

Components with the following specification are also deemed acceptable as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted away from the edge of the door leaf, therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and therefore cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

Approved specification:

- Steel, stainless steel, aluminium or bronze knockers, numerals or decals may be surface-fixed or bolted through the door leaf, providing they are fitted no closer than 75mm from the leaf edge or to any glazing and are no greater than 300mm high x 100mm wide. If through fixed, there must be no more than 1mm clearance between the hole and stud.

### 10.8.8 Security Chains

Components with the following specification are also deemed acceptable as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted with fixings positioned away from the edge of the door leaf and therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

Approved specification:

- Metallic security chains may be surface fixed to the face of the door leaf and frame, providing they are fitted such that they do not interfere with the junction between the leaf edge and the frame, and no material is removed in order to facilitate the fitting of the security chain. Screws to affix the security chain shall be no greater than 25mm long.

### 10.8.9 Identification Plates

Plastic or metal fire safety signs may be glued or screwed to the face of the door leaves. The signage must comply with BS 5499-5: 2002 according to whether the door is:

- a) To be kept closed when not in use (Fire Door Keep Shut)
- b) To be kept locked shut when not in use (Fire Door Keep Locked Shut)
- c) Held open by an automatic release mechanism or free swing device (Automatic Fire Door Keep Clear).

It is also permitted to fit aluminium (max. thickness 2mm) or PVC (max. thickness 3mm) identification plates. The signage must not exceed 45mm diameter and can be fitted flush with the leaf face, a minimum of 50mm from any edge or glazed aperture.

## 11 Installation




### 11.1 General

This section considers the installation of direct types of frames and doorset. This section considers:

- the door frame and architrave installation position relative to the wall
- the fire stopping between the frame and the wall and the use of shadow gaps
- the fixing requirement including packers
- the requirements for door edge gaps
- the trimming of door edges

### 11.2 Door Frame Installation

The following figures indicate the acceptable door frame installations. Please note that the firestopping element is provided in the below 3D models as a generic-coloured seal. For further clarification of the approved firestopping systems see section 11.3.


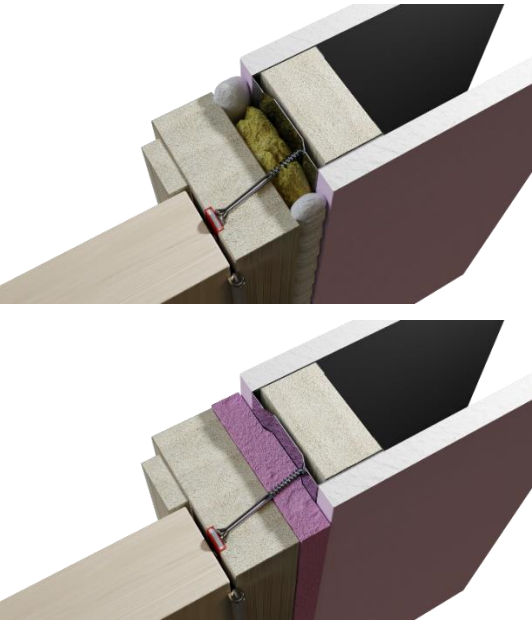
<b>Permitted Installations</b>	
	<p>Instances where the door frame and the wall of the same depth such that architraves are fitted flush to both faces. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see door frame section.</p> <p>Architraves requirements are documented in the firestopping section of this report.</p>
	<p>Instances where the wall thickness is greater than the door frame depth.</p> <p>Architraves requirements are documented in the firestopping section of this report.</p>
	<p>Split frames are permitted providing that both frame sections are secured to the wall in accordance with section 11.5. Furthermore, the main frame section (from which the door is hung) must be constructed to at least the minimum door frame section size (width and depth) as per the requirements noted in this report – see door frame section. The extension piece must be constructed using the same timber species as the main frame section.</p>

#### Note:

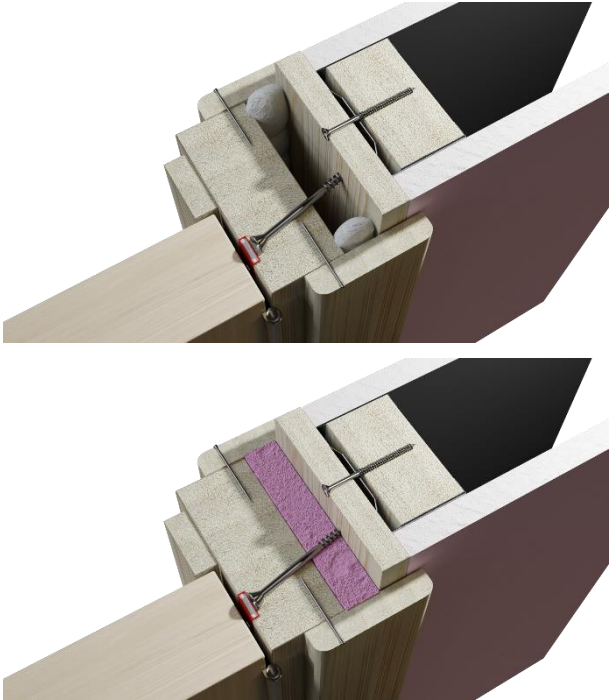
The drawings are provided as a generalised illustration of the door frame installation only; actual installation must be as per the text within this document specifies.

### 11.3 Firestopping

The firestopping requirements between the back of frame and wall are dependent on the gap size between the substrates. The table below provides the requirements based upon the gaps size. Please note that in the 3D depictions noted below show the application where a door frame is of the same depth as the overall wall thickness.

Gap (mm)	Requirement	3D model depiction
0 – 2	In practice, unlikely to occur, but if present, must be sealed with architraves, as below, fitted over a bead of acrylic intumescent sealant, tested as below.	N/A
3 – 10	Gap must be sealed on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1.  Timber architraves of a minimum 18mm thick must be fitted to both faces, fitted with a minimum 15mm overlap to the door gap.	
10 – 20	Gap must be tightly packed with mineral fibre capped on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1 or full depth expanding PU foam, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1.  Timber architraves of a minimum 18mm thick must be fitted to both faces, fitted with a minimum 15mm overlap to the door gap when using tested PU foam materials. Architraves remain optional when using mineral fibre and mastic capping.	



Gap (mm)	Requirement	3D model depiction
Over 20	<p>A timber based or non-combustible subframe up to 50mm thick can be inserted and fixed to the wall bedded on intumescent mastic, the gap between door frame and subframe filled as follows:</p> <p>Gaps 5 to 10mm filled on both sides with 10mm depth of acrylic intumescent mastic or full depth expanding PU foam, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1.</p> <p>Timber architraves of a minimum 18mm thick must be fitted to both faces, fitted with a minimum 15mm overlap to the supporting structure and door frame.</p>	

**Note:**

Guidance for 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 and implemented where appropriate.

### 11.4 Packers

Packers can be timber of equal density to the frame, or plywood or plastic packers if fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1.

## 11.5 Wall Types, Structural Opening & Fixity

### 11.5.1 Wall Types

The following wall types are approved for this doorset design:

- a) Plasterboard clad timber stud partitions
- b) Plasterboard clad steel stud partitions including timber lining
- c) Masonry constructions

Wall types a & b above must have supporting fire resistance test evidence which demonstrates that it is capable of staying in place and intact for a minimum of 30 minutes supporting a doorset design.

Wall type c above must be determined to be able to provide at least the same level of fire resistance of the doorset design.

All wall types detailed above shall provide a suitable medium to permit adequate fixity, it is anticipated that for:

- Plasterboard clad timber stud partitions, the timber stud will be of sufficient dimensions such that the fixing for the door frame penetrates into solid timber.
- Plasterboard clad steel stud partitions will include a timber lining of sufficient dimensions such that the fixing for the door frame penetrates into solid timber.
- Masonry constructions are anticipated to be constructed of a solid block or brickwork to receive the fixings.

Note: Other tested solutions to achieve adequate fixity may be detailed within the above noted supporting fire resistance test evidence.

### 11.5.2 Structural Opening

For all wall types the structural opening shall be square, plumb and provide a flat surface for installation of the doorset

For flexible wall types such as steel and timber stud partitions the structural opening must be prepared in line with the test evidence provided by the wall manufacturer.

### 11.5.3 Fixity

In all instances the fixing position must be such that it provides adequate restraint to the element of construction throughout the exposure to fire. This may therefore sometimes necessitate a twin line of fixings.

For single leaf doorset without fanlights or overpanel, the frame jambs only are to be fixed to the supporting construction using steel fixings at 600mm maximum centres and maximum of 150mm from corner. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm. It is not necessary to fix the frame head, although packers must be inserted.

For all other configurations of doorset, the upper horizontal framing section abutting the structural opening must also be secured to the wall using steel fixings at 600mm maximum centres and maximum of 150mm from corner. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm. Architraves requirements are documented in the firestopping section of this report.



## 11.6 Post Production (Onsite) Leaf Size Adjustment

The Falcon Timber Limited range of doorsets may be altered as follows:

Leaf Size Adjustment Specification	
Element	Reduction
Lipping	The post-production lipping thickness may be reduced by 1mm for fitting purposes, providing that the door gaps and intumescent conditions remain as required by this assessment and the minimum limitation in terms of lipping thickness is still maintained

## 11.7 Door Gaps

Door gaps and alignment tolerances must fall within the following range:

Door Gap & Alignment Tolerance Specification	
Location	Dimension
Door edge gaps	A minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud of each other or from the door frame by more than 1mm.
Threshold	8mm between bottom of leaf and top of floor covering. This is the maximum tolerance for fire resistance only.

## 12 Insulation Performance

Insulation performance may be claimed for a doorset to this design meeting the following:

Insulation Performance Criteria	
Type	Details
Partially insulating	Doorsets incorporating up to 20% of non-insulating glazing
Fully insulating	Unglazed doorsets or doorsets including 30-minute insulating glazing (e.g., 15mm Pyrostop or 16mm Pyrobel)

## 13 Conclusion

If detailed Falcon Timber Limited doorsets constructed in accordance with the specification documented in this field of application were to be tested in accordance with BS 476: Part 22: 1987, it is our opinion that they would provide a minimum of 30 minutes integrity and insulation (subject to section 12).

## 14 Declaration by the Applicant

- 1) We the undersigned confirm that we have read and comply with obligations placed on us by the Passive Fire Protection Forum (PFPF) Guide to undertaking technical assessments and engineering evaluations based on fire test evidence 2021 Industry Standard Procedure
- 2) We confirm that any changes to a component or element of structure which are the subject of this assessment have not to our knowledge been tested to the standard against which this assessment has been made.
- 3) We agree to withdraw this assessment from circulation should the component or element of structure, or any of its component parts be the subject of a failed fire resistance test to the standard against which this assessment is being made.
- 4) We understand that this assessment is based on test evidence and will be withdrawn should evidence become available that causes the conclusion to be questioned. In that case, we accept that new test evidence may be required.
- 5) We are not aware of any information that could affect the conclusions of this assessment. If we subsequently become aware of any such information, we agree to ask the assessing authority to withdraw the assessment.

(In accordance with the principles of FTSG Resolution No. 82: 2001)

Signed:



Name: Joshua Clare

Position: Technical Manager

Date: 14th July 2023

For and on behalf of: Falcon Timber Limited

## 15 Limitations

The following limitations apply to this assessment:

- 1) This field of application addresses itself solely to the elements and subjects discussed and do not cover any other criteria or modifications. All other details not specifically referred to should remain as tested or assessed.
- 2) This field of application report is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available to Warringtonfire, the assessment will be unconditionally withdrawn, and the applicant will be notified in writing. Similarly, the assessment evaluation is invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence.
- 3) This field of application has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.
- 4) Opinions and interpretation 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 against the ISO 834 time/temperature curve that is stipulated in the standard this assessment concludes to. 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, 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 test evidence referred to in this report. We express no opinion as to whether that evidence, and/or this field of application would be regarded by any Building Control authorities or any other third parties as sufficient for that or any other 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.

## 16 Validity

- 1) The assessment is initially valid for five years after which time it is recommended to be submitted to Warringtonfire for re-appraisal.
- 2) This assessment report is not valid unless it incorporates the declaration given in Section 14 duly signed by the applicant.

<b>Position:</b>	<b>Assessor</b>	<b>Reviewer</b>
<b>Signature:</b>		
<b>Name:</b>	<b>N Whitelock*</b>	<b>P Barker*</b>
<b>Title:</b>	Senior Product Assessor	Technical Manager

\* For and on behalf of Warringtonfire

## Appendix A: Revisions

Rev.	WF Ref.	Date	Description
A	422364	11-12-2019	<p>Revision to add 3 additional test evidence for: Fab&amp;Fix Nu Mail Door Letterplate, LP008 &amp; Fab&amp;Fix 3C018+3F005 Letter Plate systems. Test Evidence include: WF416690, WF414162 &amp; WF414882</p> <p>Remove intumescent specification in section 12 for letter plate</p>
B	522313	30-01-23	<p>The revision included the following amendments:</p> <ul style="list-style-type: none"> <li>○ Update to report format to align with current practices.</li> <li>○ Inclusion of assumptions within section 2.1</li> <li>○ Update of the existing report summaries to include the detail of the tested elements.</li> <li>○ Inclusion of new test evidence consisting of WF432578 Issue 1.</li> <li>○ Update to leaf size envelopes, including alternative intumescent sealing techniques and a core comparison justification.</li> <li>○ Incorporation of Appendix A and C from revision A of the document into the main body of the report.</li> <li>○ Inclusion of alternative tested hardware which was previously not detailed.</li> <li>○ Inclusion of modular framing for over panels.</li> <li>○ Inclusion of modular framing of glazed fanlights including the tested double-glazed unit.</li> </ul>
C	534447	14/07/23	<p>The revision included the following amendments:</p> <ul style="list-style-type: none"> <li>○ Addition of surface mounted security chains (Section 10.8.8)</li> <li>○ Update to section 10.4.2.</li> <li>○ Addition of possibility for a minimum of 3No. hinges in section 10.6.</li> </ul>