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Title

Field of Application for:
The Falcon Duocore Range of
Doorsets Using 44mm thick Door
Blanks in Timber Based Door
Frames

For 30 minutes Fire Resistance

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Prepared for:

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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.

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1 Foreword

This Field of application report has been commissioned by Falcon Timber Limited and relates to the fire resistance of 30 minute fire resisting doorset designs.

The report is for National Application and has been written in accordance with the general principles outlined in BS EN 15725: 2010; *Extended application reports on the fire performance of construction products and building elements*.

This Field of Application (scope) uses established empirical methods of extrapolation and experience of fire testing similar 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 Field of Application has been written using appropriate test evidence generated at UKAS accredited laboratories, to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturers stated door design and is summarised in section 3.

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

This Field of Application has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the Passive Fire Protection Forum (PFPF) '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.

Certifire supporting documentation has been used to enhance the scope of application within this evaluation. At the time of issue of this document, the relevant documentation has remaining validity. The referenced supporting documentation must retain validity, with the same conclusions maintained for the aspects considered herein, in order that the relevant scope generated within this field of application report remains valid. This may necessitate a review of more recent iterations of supporting documentation, against those referenced in this assessment report. If the scope of the relevant supporting documentation changes, then Warringtonfire must be consulted to review the changes, and to consider their effect on the outcomes of this assessment report.

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 Duocore 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. These test summaries are not intended to be a definitive guide to constructing a doorset. The details for the construction of a doorset must be taken from other sections within this Field of Application.

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 with side screens and overpanels.

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 Duocore doorset designs if tested in accordance with BS 476: Part 22: 1987.

3.1 Primary Test Evidence

The following summaries are provided to give the key details relevant to the tested specimen. Throughout this assessment report, relevant sections will reference the tests where they have been used to provide the scope of application.

3.1.1 Summary of Test Report RF12053 – Unlatched, Glazed Single Leaf.

The referenced test report, the essential details of which are summarised below, is primary data for the Duocore product: Construction Type 1A.

Date of Test:	30.04.2012
Identification of Test Body:	Chiltern International Fire Ltd. (Now trading as Warringtonfire Testing) UKAS No. 1762
Sponsor:	MBM Forest Products Ltd
Tested Product:	2 No. Doorsets both Unlatched, Single Acting, Single Leaf, Flush Timber Doorset a Glazed Aperture in each specimen – ULSASD.
Tested Orientation:	Opening in towards heating condition
Sampling information:	Test specimens were not sampled
Summary of Test Specimen:	<p><u>Leaf: Doorsets Referenced (A) & (B)</u></p> <p>Overall Size: (A) 2150 (h) x 933 (w) x 44mm (t) : (B) 2140 (h) x 933 (w) x 44mm (t)</p> <p><u>Core:</u></p> <p>3.5mm central cross grain Albasia Falcata core, faced to both sides with 16mm thick x 47mm wide Abasia Falcata vertically orientated lamels. 2.0mm cross grain Albasia Falcata inner facing. 2.1mm long grain Albasia Falcata outer facing.</p> <p><u>Lipping:</u> Sapele (640kg/m³), 8mm thick</p> <p>(A) Top & Vertical Edges, (B) Vertical Edges Only</p> <p><u>Facing:</u> Formed as part of the Core Construction</p> <p><u>Frame:</u></p> <p>Head & Jambs: European Redwood (510kg/m³), 70 x 32mm thick, with 20 x 12mm thick planted stop.</p> <p>Frame Fixing: 4No. 80mm long steel screws per jamb</p> <p>Threshold: None Fitted</p> <p><u>Intumescent:</u></p> <p>Frame Reveal: (A) 1No 15x4 Pyroplex FO8700.Centred on Doorleaf (B) 1No 20x4 Pyroplex FO8700. Centred on Doorleaf</p> <p>Bottom Leaf Edge: None Fitted</p> <p><u>Hardware:</u></p> <p>Hinges: 3 No. Royde & Tucker H101 hinge per jamb</p> <p>Closer: 1No Rutland TS3204 per leaf</p> <p>Lock/Latch: 1No EuroSpec Easi-T tubular mortice latch</p> <p>Lock/Latch Size: Lockcase: mm, Forend: 60 x 25 x 3mm, Keep: 65 x 25 x 1.5mm.</p> <p>Lock/Latch Status: Disengaged for test</p> <p>Handle: Aluminium lever type handle (100x38mm Footprint)</p>

	<p><u>Hardware Protection:</u> Under Hinges: None Fitted Under Forend & Keep: None Fitted Around Lockcase: None Fitted <u>Glazing: Samples (A) & (B):</u> Glass: Pilkington Pyroshield 2, 6.4mm thick Aperture Size: 806 x 606mm wide (Note sizing discrepancy in Fire Test) Beading: Sapele (640kg/ m³), 22 x 21mm high, chamfered & bolected. Bead Fixing: 50mm long steel pins, at 45 degrees, 150mm centres & 50mm from corners. Glazing Perimeter: (A) Pyroplex FG30 Product reference 8193 (B) Pyroplex FG30 Product reference 30049</p>
<p>Test Standard:</p>	<p>BS 476 Part 22: 1987</p>
<p>Performance:</p>	<p>Integrity: (A) 35minutes, (B) 34 Minutes Insulation: 0 minutes (Specimens were not evaluated for insulation)</p>
<p>Failure Mode:</p>	<p>Initial Failure: (A) No failure at termination of test. (B) 34 mins – 25mm Gap Gauge passes through fallen glazing panel.</p>

3.1.2 Summary of Test Report RF12138 (Unequal Pair)

The referenced test report, the essential details of which are summarised below, is primary data for the Duocore product: Construction Type 1A.

Date of Test:	06.11.2012
Identification of Test Body:	Chiltern International Fire Ltd. UKAS No. 1762 (Now trading as Warringtonfire Testing) UKAS No. 1762
Sponsor:	MBM Forest Products Ltd
Tested Product:	1 No. Doorset Unlatched, Single Acting, Double Leaf, Flush Timber Doorset–ULSADD.
Tested Orientation:	Opening in towards heating condition
Sampling information:	Test specimen was not sampled
Summary of Test Specimen:	<p><u>Leaf:</u> Overall Size: (Primary Leaf) 2135 (h) x 900 (w) x 44mm (t) (Secondary Leaf) 2135 (h) x 300 (w) x 44mm (t)</p> <p><u>Core:</u> 3.5mm central cross grain Albasia Falcata core, faced to both sides with 16mm thick x 47mm wide Abasia Falcata vertically orientated lamels. 2.0mm cross grain Albasia Falcata inner facing. 2.1mm long grain Albasia Falcata outer facing.</p> <p><u>Lipping:</u> Sapele (640kg/m³), 8mm thick to Vertical Edges only.</p> <p><u>Facing:</u> Formed as part of the Core Construction</p> <p><u>Frame:</u> Head & Jambs: European Redwood (510kg/m³), 70 x 32mm thick, with 20 x 12mm thick planted stop. Frame Fixing: 4No. 80mm long steel screws per jamb Threshold: None Fitted</p> <p><u>Intumescent:</u> Frame Reveal: 1No 15x4 Pyroplex FO8700.Centred with Doorleaf Meeting Stiles: 2No 10x4 Pyroplex FO8700. Fitted centrally on one meeting edge only Bottom Leaf Edge: None Fitted</p> <p><u>Hardware:</u> Hinges: 3 No. Royde & Tucker H101 hinge per jamb Closer: 1No Rutland TS3204 per leaf Lock/Latch: 1No Arrone 3 lever mortice latch Lock/Latch Size: Lockcase: mm, Forend: 155x22 x 3mm, Keep: 125 x 24 x 1.5mm. Lock/Latch Status: Disengaged for test Handle: Aluminium lever type handle (103x40mm Footprint)</p> <p><u>Hardware Protection:</u> Under Hinges: None Fitted Under Forend & Keep: None Fitted Around Lockcase: None Fitted Glazing: None Fitted</p>

Test Standard:	BS 476 Part 22: 1987
Performance:	Integrity: 45 minutes Insulation: 0 minutes (Specimens were not evaluated for insulation)
Failure Mode:	Initial Failure: 45mins – Flaming at top meeting edge.

3.1.3 Summary of Test Report WF369451 – (Unlatched Glazed Pair)

The referenced test report, the essential details of which are summarised below, is primary data for the Duocore product: Construction Type 1B

Date of Test:	14.07.2016
Identification of Test Body:	Chiltern International Fire Ltd. UKAS No. 1762 (Now trading as Warringtonfire Testing) UKAS No. 1762
Sponsor:	MBM Forest Products Ltd
Tested Product:	1 No. Doorset Unlatched, Single Acting, Double Leaf, Flush Timber Doorset a Glazed Aperture in each leaf – ULSADD.
Tested Orientation:	Opening in towards heating condition
Sampling information:	Test specimens were not sampled
Summary of Test Specimen:	<p><u>Leaf:</u> Overall Sizes: 2490 (h) x 1000 (w) x 44mm (t) – both leaves.</p> <p><u>Core:</u> Albasia veneer – long grain – 0.85 thick – Final Facing Albasia veneer – short grain - 1.6 thick Albasia BJLC, A grade - 18.5 thick Albasia veneer – short grain - 2.1 thick - Central Core Albasia BJLC, A grade - 18.5 thick Albasia veneer – short grain - 1.6 thick Albasia veneer – long grain - 0.85 thick – Final Facing Lipping: Sapele (640kg/m³), 8mm thick to all four edges. Facing: Formed as part of the Core Construction</p> <p><u>Frame:</u> Head & Jambs: European Redwood (510kg/m³), 70 x 32mm thick, with 24 x 12mm thick planted stop. Frame Fixing: 4No. Dia 8x100mm long steel screws per jamb Threshold: None Fitted</p> <p><u>Intumescent:</u> Frame Reveal: No 15x4 Pyroplex FO8700. Centred on Doorleaf Meeting Stiles: 2No 10x4 Pyroplex FO8500. Fitted centrally on one meeting edge only Bottom Leaf Edge: None Fitted</p> <p><u>Hardware:</u> Hinges: 3 No. Smith & Locke Ref. 2900G (101x30mm) hinge per jamb</p>

	<p>Closer: 1No Geze closer, model reference not recorded in test report / Arrone AR1500</p> <p>Lock/Latch: 1No Tubular mortice latch</p> <p>Lock/Latch Size: Lockcase: mm, Forend: 60 x 22 x 3mm, Keep: 65 x 22 x 1.5mm.</p> <p>Lock/Latch Status: Disengaged for test</p> <p>Handle: Smith and Locke lever type handle Ref: 2812H (Dia 50mm)</p> <p><u>Hardware Protection:</u></p> <p>Under Hinges: None Fitted</p> <p>Under Forend & Keep: None Fitted</p> <p>Around Lockcase: None Fitted</p> <p><u>Glazing:</u></p> <p>Glass: Pyroguard C730, 7mm thick</p> <p>Aperture Size: 1205 x 305mm wide</p> <p>Beading: Sapele (640kg/ m³), 19 x 23mm high, chamfered & bolected.</p> <p>Bead Fixing: 40mm long steel pins, at 45 degrees, 150mm centres & 40mm from corners.</p> <p>Glazing Perimeter: Pyroplex FG30 Product reference 30049</p>
Test Standard:	BS 476 Part 22: 1987
Performance:	Integrity: 35 minutes Insulation: 35 minutes (Glazing not evaluated)
Failure Mode:	Initial Failure 35 mins – Cotton pad above latch position.

3.1.4 Summary of Test Report RF12138 (Single Leaf)

The referenced test report, the essential details of which are summarised below, is primary data for the Duocore product: Construction Type 1A.

Date of Test:	06.11.2012
Identification of Test Body:	Chiltern International Fire Ltd. UKAS No. 1762 (Now trading as Warringtonfire Testing) UKAS No. 1762
Sponsor:	MBM Forest Products Ltd
Tested Product:	1 No. Doorset Unlatched, Single Acting, Single Leaf, Flush Timber Doorset–ULSASD.
Tested Orientation:	Opening in towards heating condition
Sampling information:	Test specimen was not sampled
Summary of Test Specimen:	<p><u>Leaf:</u> Overall Size: (Primary Leaf) 2305 (h) x 1100 (w) x 44mm (t) Core: 3.5mm central cross grain Albasia Falcata core, faced to both sides with 16mm thick x 47mm wide Abasia Falcata vertically orientated lamels. 2.0mm cross grain Albasia Falcata inner facing. 2.1mm long grain Albasia Falcata outer facing. Lipping: Sapele (640kg/m³), 8mm thick to Vertical Edges only. Facing: Formed as part of the Core Construction</p> <p><u>Frame:</u> Head & Jambs: European Redwood (510kg/m³), 70 x 32mm thick, with 20 x 12mm thick planted stop. Frame Fixing: 4No. 80mm long steel screws per jamb Threshold: None Fitted</p> <p><u>Intumescent:</u> Frame Reveal: 1No 20x4 Pyroplex FO8700.Centred with Doorleaf Bottom Leaf Edge: None Fitted</p> <p><u>Hardware:</u> Hinges: 3 No. Royde & Tucker H101 hinge per jamb Closer: 1No Rutland TS3204 per leaf Lock/Latch: 1No Arrone 3 lever mortice latch Lock/Latch Size: Lockcase: mm, Forend: 155x22 x 3mm, Keep: 125 x 24 x 1.5mm. Lock/Latch Status: Disengaged for test Handle: Aluminium lever type handle (103x40mm Footprint)</p> <p><u>Hardware Protection:</u> Under Hinges: None Fitted Under Forend & Keep: None Fitted Around Lockcase: None Fitted</p> <p><u>Glazing: None Fitted</u></p>
Test Standard:	BS 476 Part 22: 1987
Performance:	<p>Integrity: 29 minutes Insulation: 0 minutes (Specimens were not evaluated for insulation)</p>

Reason for Use	This test has been included to permit larger single leaf envelopes. A failure occurred at 29 minutes above the spindle position. Intumescent protection was not included around the lock or under forend / keep.
Failure Mode:	Initial Failure: 29mins – Cotton pad 50mm above latch position. At 44 mins there was continuous flaming of the doorset

3.1.5 Summary of Test Report WF399751 – (Unlatched Glazed Pair)

The referenced test report, the essential details of which are summarised below, is primary data for the Duocore product: Construction Type 1B.

Date of Test:	22.05.18
Identification of Test Body:	Chiltern International Fire Ltd. UKAS No. 1762 (Now trading as Warringtonfire Testing) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd
Tested Product:	1 No. Doorset Unlatched, Single Acting, Double Leaf, Flush Timber Doorset a Glazed Aperture in each leaf – ULSADD.
Tested Orientation:	Opening in towards heating condition
Sampling information:	Test specimens were not sampled
Summary of Test Specimen:	<p><u>Leaf:</u> Overall Sizes: 2445 (h) x 995 (w) x 44mm (t) – both leaves.</p> <p><u>Core:</u> Albasia veneer – long grain – 0.85 thick – Final Facing Albasia veneer – short grain - 1.6 thick Albasia BJLC, A grade - 18.5 thick Albasia veneer – short grain - 2.1 thick - Central Core Albasia BJLC, A grade - 18.5 thick Albasia veneer – short grain - 1.6 thick Albasia veneer – long grain - 0.85 thick – Final Facing Lipping: Sapele (640kg/m³), 8mm thick to all four edges. Facing: Formed as part of the Core Construction</p> <p><u>Frame:</u> Head & Jambs: European Redwood (510kg/m³), 70 x 32mm thick, with 24 x 12mm thick planted stop. Frame Fixing: 4No. Dia 8x100mm long steel screws per jamb Threshold: None Fitted</p> <p><u>Intumescent:</u> Frame Reveal: 1No 15x4 Pyroplex FO8700. Centred on Doorleaf Meeting Stiles: 2No 10x4 Pyroplex FO8500. Fitted centrally on one meeting edge only Bottom Leaf Edge: None Fitted</p> <p><u>Hardware:</u> Hinges: 3 No. Cooke Brothers Concealed Bearing Butt Hinge Ref. 7735CB hinges per jamb – 102x37mm Blade size. Closer: 2No Rutland TS9205 Lock/Latch: 1No EuroSpec Tubular mortice latch Lock/Latch Size: Lockcase: mm, Forend: 58 x 25x 3mm, Keep: 60 x 23 x 1.5mm. Lock/Latch Status: Disengaged for test Handle: Easyclick Apollo Lever on rose, aluminium alloy.</p>

	<p><u>Hardware Protection:</u> Under Hinges: 1mm ISL Therm-A-Flex under all hinge flaps. Under Forend & Keep: 1mm ISL Therm-A-Flex Around Lockcase: 1mm ISL Therm-A-Flex</p> <p><u>Glazing:</u> Glass: Pyroguard EN30, 7.2mm thick Aperture Size: 1205 x 305mm wide Beading: Sapele (640kg/ m³), 19 x 23mm high, 15 degree chamfered & bolected. Bead Fixing: 40mm long steel pins. Fitted 35mm from corners at 124mm centres on vertical edges, 40mm from corners at 124mm centres on horizontal edges Glazing Perimeter: Lorient FF1 (Flexible Figure 1)</p>
Test Standard:	BS 476 Part 22: 1987
Performance:	Integrity: 31 minutes Insulation: 31 minutes (Glazing not evaluated)
Failure Mode:	Initial Failure 31 mins – continuous flaming at the top of the meeting stile.

3.1.6 Summary of Test Report WF523027

The referenced test report, the essential details of which are summarised below, is primary data for the Duocore product: Construction Type 1B.

Date of Test:	27.09.2022
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Falcon Timber Ltd
Tested Product:	1 No. Doorset latched, Single Acting, Single Leaf, Flush Timber Doorset a Glazed Aperture – LSASD.
Tested Orientation:	Opening in towards heating condition
Sampling information:	Sampling of the doorsets was conducted by a representative of BM Trada on 18/08/2022, 08/09/2022 with final installation on 26/09/2022 under sampling contract SC22155.
Summary of Test Specimen:	<p><u>Leaf:</u> Overall Sizes: 2040 (h) x 926 (w) x 44mm (t)</p> <p><u>Core:</u> Albasia veneer – long grain – 0.9 thick – Final Facing Albasia veneer – short grain - 1.65 thick Albasia BJLC, A grade - 18.4 thick Albasia veneer – short grain - 2.1 thick - Central Core Albasia BJLC, A grade - 18.4 thick Albasia veneer – short grain - 1.65 thick Albasia veneer – long grain - 0.9 thick – Final Facing Lipping: Strelip (713kg/m³), 8mm thick to all four edges. Facing: Formed as part of the Core Construction</p> <p><u>Frame:</u> Head & Jambs: Streframe E (450kg/m³), 80 x 32mm thick, with 25 x 12mm thick planted stop. Frame Fixing: 4No. Ø7.5x100mm long steel screws per jamb</p> <p><u>Architrave:</u> UPVC, 31x6mm to both sides of the doorsets pinned with 1.6x32mm pins, 50mm from the corners and at 200mm centres.</p> <p><u>Intumescent:</u> Frame Reveal: 1 No 15x4 Sealed Tight Solutions ST154FO, positioned 14.5mm relative to the opening face of the door leaf.</p> <p><u>Glazing:</u> Glass: Pyroguard 7mm Pyroguard 2-EW30/7-1, 7mm thick Aperture Size: 1600 x 626mm wide Beading: Sapele (640kg/ m³), 20.5 x 20mm high, chamfered & bolected. Bead Fixing: 38mm long steel pins, at 30 degrees, 100mm centres & 50mm from corners. Glazing Perimeter: Sealed Tight Solutions STS104SG between the glass and glazing beads on both faces.</p> <p><u>Hardware:</u> Hinges: 3 No. Zoo Hardware – ZHSS243S Ball Bearing Butt Hinge – 102x30x3mm blade size.</p>

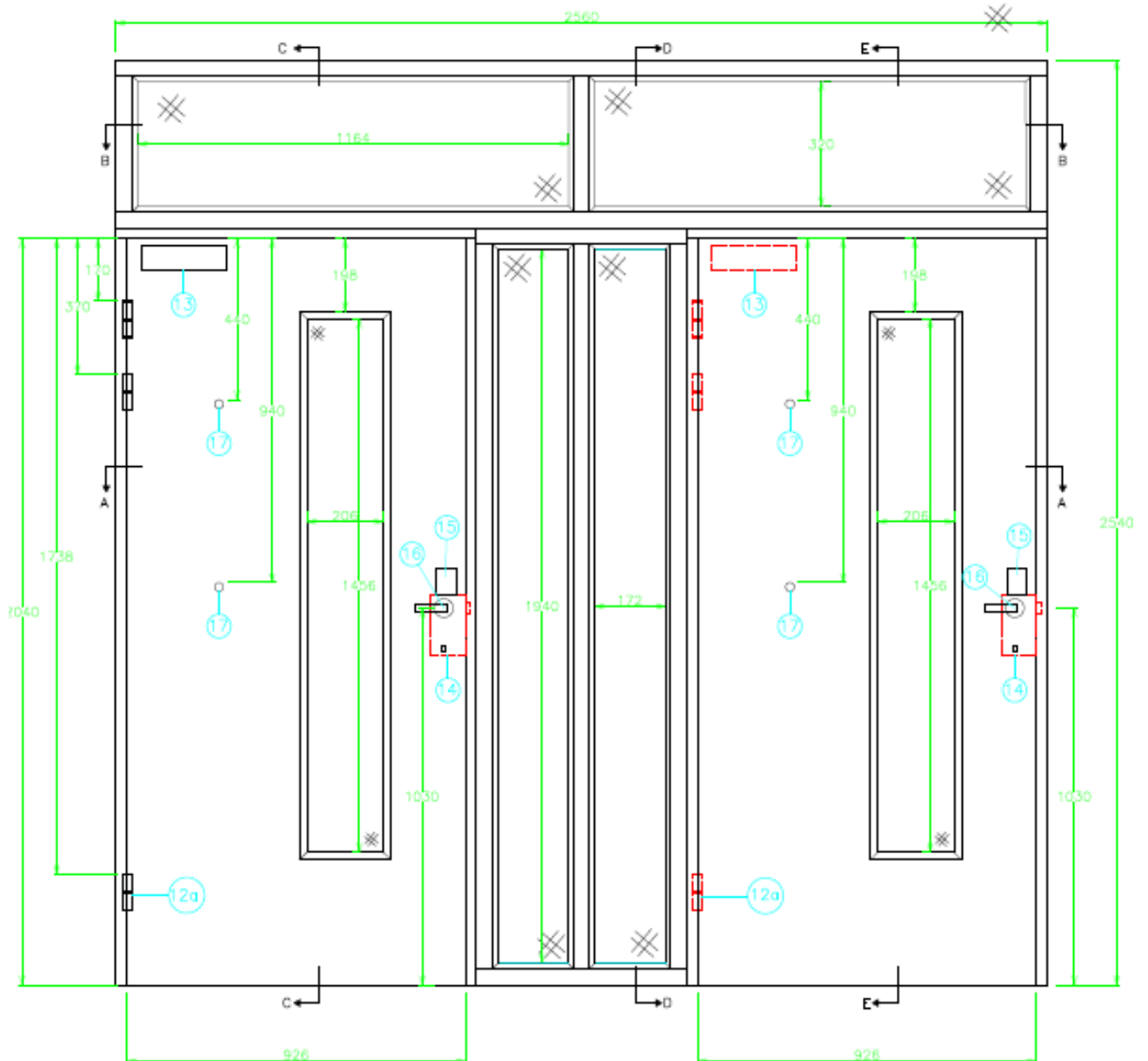
	<p>Closer: Rutland TS.9205DABC Lock/Latch: Zoo Hardware / Vier ZDL7260RSS DIN Euro Sashlock Lock/Latch Status: Engaged for test Lever Handle: Zoo Hardware ZCS2040SS lever on Ø52 x 8mm rose. Cylinder: Vier V5EP70CTSCE 32 x 17 x 70mm Escutcheon: Zoo Hardware ZCS200001SS Ø52 x 8mm. <u>Hardware Protection:</u> Under Hinges: 1mm Intumescent Seals Ltd. Therm-A-Strip hinge pads under all hinge blades. Under Forend, strike/keep & encasing lock body: 1mm Intumescent Seals Ltd. Therm-A-Strip</p>
Test Standard:	BS 476 Part 22: 1987 Clause 8
Performance:	Integrity: 35 minutes Insulation: Not Evaluated (Clause 8)

3.2 Supplementary Test Evidence

3.2.1 Evidence for Fanlights

3.2.1.1 Summary of test report WF411193

The referenced test report, the essential details of which are summarised below, is used to support fanlights with the Falcon Duocore door design where a 4 sided frame construction is utilised around the fanlights. The tested door leaf design has been considered as being fundamentally the same design for the purpose of supporting fanlights with the Falcon Duocore door design:



Date of Test:	28.February.2019
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd
Tested Product:	2 latched, single acting, single doorset – LSASD with glazed fanlights.
Tested Orientation:	A - Hung opening away from heating condition B- Hung opening in towards heating condition
Summary of Test Specimen:	<p><u>LEAF A and B:</u> Overall Size: 2040mm(h) x 926(w) x 44mm(t) Core: Falcon Panel Products Strebord® 44 Lipping: LVL mixed hardwoods (580kg/m³), 8mm thick to all edges</p> <p><u>FRAME A and B:</u> Head & Jamb: MDF (700kg/m³), 100mm(d) x 30mm(w) with an 32mm(d) x 12mm(w) planted (pinned) MDF (700kg/m³) stop. Fire stopping: Fire and Acoustic Fire foam with plastic packers visible on fire side – gaps 18 to 23mm Threshold: Non-combustible</p> <p><u>INTUMESCENT:</u> Frame Reveal: <ul style="list-style-type: none"> • 1no 15x4mm Pyroplex FO8700 fitted 14.5m from the exposed face. </p> <p><u>SMOKE/ACOUSTIC SEALS:</u> Frame Reveal: <ul style="list-style-type: none"> • FAS 35 11.7 x 5 fitted to the upstand of stop. • FAS 45 30 x 12.5 fitted centrally to bottom of leaf </p> <p><u>GLAZING:</u> Glass (Both leaves): Pyrobelite 7. Left Leaf: <ul style="list-style-type: none"> • Aperture Size: 1486mm(h) x 236mm(w) • Glass size 1481mm(h) x 231mm(w) • Sight size: 1456mm(h) x 206mm(w) Beading: MDF (Oak foil wrapped) (~750kg/m³) 22mm(h) x21mm(d) including 5x7mm bolection and a 18° chamfer. Bead Fixing: Steel pins 18g, 40mm(l), 125mm-150mm centres.</p>

GLAZING SYSTEM (Both Leaves):

Glazing perimeter: 15x3mm FAS Close cell foam fitted between glass and bead with FAS filling remaining glazing void.

HARDWARE:

Hinges: 3no Vier Zoo lift off butt hinges VLHL243RS 102 x 76 x 3 fitted 170mm, 370mm and 1737mm from the head of the leaf.

Closer: Rutland TS11205 overhead face fixed closer

Latch: Salto Element mortice latch Ref LE7E3765COIMSLH with half cylinder and thumb turn with nib fitted 1030mm from the threshold of the leaf.

- Forend size: 235mm(h) x 20mm(w) x 3mm(t)
- Keep: 170mm(h) x 25mm(d)

Card reader: Salto Element Euro card reader Battery pack 116mm x 65mm and card reader 45mm x 67 mm fitted above door handle

Lock/Latch Status: Engaged for test

Handle: Salto stainless steel lever Ref R1SURIM080

Eye viewer: 2No UAP Nanocoast ref CVPLSSS barrel 12mm dia fitted 440 and 940 down from the head of the leaf.

HARDWARE PROTECTION:

Under hinge blade: 1mm thick FAS Spartan hardware protection

Encasing latch body and under latch forend: 1mm thick FAS Spartan hardware protection

Under latch keep: 1mm thick FAS Spartan Hardware protection

Surrounding eye viewers 1mm thick FAS Intumescent acrylic mastic

Fanlight

A 4 sided framed modular fanlight with 2 apertures covering both doorsets and sidelights, with a shared mullion.

Overall size 2560mm (w) by 460mm (h)

Sidelight

A 4 sided framed modular sidelight with 2 apertures between both doorsets, with a shared mullion.

	<p><u>SIDELIGHTS AND FANLIGHTS</u></p> <p><u>Framing</u></p> <ul style="list-style-type: none"> • <u>Timber Pinus Sylvestris 520 kg/m³</u> • <u>Dimensions 44mm (w) x 100mm (d)</u> <p><u>Glazing</u></p> <p>Glass Pyrobelite 7</p> <ul style="list-style-type: none"> • <u>Fanlights</u> • Aperture Size: 370mm(h) x 1214mm(w) • <u>Sidelights</u> • Aperture Size: 1990mm(h) x 222mm(w) <p>Beading: Sapele (640kg/m³) 25mm(h) x 30mm(d) including and a 17° chamfer.</p> <p>Bead Fixing: Steel pins 18g, 38mm(l), 100mm from corners and 200 centres.</p> <p>Glazing perimeter: 15x3mm FAS Ceramic fibre fitted between glass and bead with FAS filling remaining glazing void.</p>
	<p>BS 476: Part 22: 1987</p>
<p>Performance:</p>	<p>Integrity: 37 minutes Insulation 0 minutes in accordance with Section 8.6.1</p>

3.2.1.2 Third Party Evidence for Fanlights

The following test evidence has been incorporated to support the use of particular glass types and glazing systems, when used as fanlights. From the sizes tested it is possible to establish the maximum pane size for the particular glass type in either landscape or portrait orientation.

The performance column indicates the result obtained by the screen and doorset. In some cases the doorset result is below 30 minutes. The only aspect of the test being considered in this assessment is the glazed screen component, and therefore the doorset result is not relevant.

Evidence for Fanlights			
Report Reference (Glass Type)	Pane Size & Glazing System (mm)	Test Standard	Performance (minutes)
RF09134 (Pyroguard EW30)	Portrait: 2510 high x 810 wide Landscape: 816 high x 921 wide Glazing system: 15x3 K ceramic tape	BS EN 1634-1	Doorset: 29
			Screen: 34
RF09201 (Pyroguard EW30)	Portrait: 1415 high x 320 wide Landscape: 816 high x 2510 wide Glazing system: 10 x 2 Interdens	BS EN 1634-1	Doorset: 33
			Screen: 33
RF10070 (Pyroguard EW30)	Portrait: 1415 high x 310 wide Landscape: 816 high x 2510 wide Glazing system: 10 x 2 Interdens	BS EN 1634-1	Doorset: 29
			Screen: 32
RF10081 (Pyroguard EW30)	Portrait: 2510 high x 1010 wide Landscape: 816 high x 921 wide and 320 high x 1010 wide Glazing system: 10 x 2 Interdens	BS EN 1634-1	Doorset: 29
			Screen: 32
RF10120 (Pyroguard EW30)	Portrait: 2510 high x 1010 wide Landscape: 816 high x 921 wide and 320 high x 1010 wide Glazing system: 10 x 2 Interdens	BS EN 1634-1	Doorset: 32
			Screen: 32
RF10163 (Pyroguard EW30 Maxi)	Portrait: 1415 high x 320 wide and 987 high x 749 wide Landscape: 816 high x 2510 wide Glazing system: 10 x 2 Interdens	BS EN 1634-1	Doorset: 38
			Screen: 38
RF00138 (Pilkington Pyrodur 7mm)	Portrait: 2016 high x 515 wide Landscape: 720 high by 1670 wide Glazing system: 20 x 2 Interdens	BS EN 1634-1	Doorset: 40
			Screen: 32

Evidence for Fanlights			
Report Reference (Glass Type)	Pane Size & Glazing System (mm)	Test Standard	Performance (minutes)
RF01024 Rev. A (Pilkington Pyrodur 10mm)	Portrait: 2000 x 1400 Landscape: 720 high by 1670 wide Glazing system: 20 x 2 Interdens	BS 476: Part 22: 1987	Doorset: 60
			Screen: 57
CF297 (Pilkington Pyroshield 2)	Portrait: 2632 high x 1367 wide Landscape: 1900 high x 1900 wide Glazing system: 12 x 3 Hodgsons Firestrip 30	Certifire Certificate	N/a
CF328 (Pilkington Pyrostop 30-10 – 15mm thick)	Portrait: 2500 high x 1752 wide Landscape: 2000 high x 2092 wide Glazing system: 20 x 2 Interdens	Certifire Certificate	N/a
CF328 (7mm Pyrodur Plus 30-104)	Portrait: 2050 high x 1454 wide Landscape: 1726 high x 1726 wide Glazing system: 20 x 2 Interdens	Certifire Certificate	N/a
CF328 (7mm Pyrodur 30-105)	Portrait: 3000 high x 1000 wide Landscape: 1250 high x 3000 wide Glazing system: 15 x 3 Ceramic Fibre Tape	Certifire Certificate	N/a
CF297 (15mm Pyranova)	Portrait: 2000 high x 1400 wide Landscape: 1673 high x 1673 wide Glazing system: 12 x 3 Hodgsons Firestrip 30	Certifire Certificate	N/a
CF437 Pyroguard EI30 INT	Portrait: 3179 high x 2200 wide Landscape: 2200 high x 3179 wide Glazing system: 20 x 6 Ceramic Fibre Tape	Certifire Certificate	N/a
CF377 AGC Glass UK Ltd	Portrait: 2900 high x 1600 wide Landscape: 1900 high x 1920 wide Glazing system: 10 x 5 Closed Cell Foam tape and mastic capping	Certifire Certificate	N/a

3.2.2 Summary of Test Report WF414781

The referenced test report, the essential details of which are summarised below, is being used as supplementary data for the Duocore design in order to include larger lockcases and cylinders in double doorset configurations. The larger lock case has been deemed acceptable on the basis of including intumescent protection around the lockcase for all configurations of Duocore, as detailed in this assessment. In addition, the testing on the Stredor design was to the EN 1634-1 standard which is known to be more onerous than the BS 476: Part: 1987 standard that the Duocore has been tested to. No other elements within this test are considered for Falcon Duocore.

Date of Test:	7 th June 2019
Identification of Test Body:	BM TRADA UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd
Tested Product:	Unlatched single acting double leaf doorset (ULSADD)
Sampling:	Sampled by a representative from BM TRADA on 30 th May 2019 under FM414654
Tested Orientation:	Stredor door core tested with leaves opening towards the furnace conditions
Summary of Test Specimen:	<p>LEAF: Overall Size (each leaf): 2040mm(h) x 935(w) x 44mm(t) Door Core:</p> <ul style="list-style-type: none"> • Falcon Panel Products Stredor 44mm (F14 mill) <ul style="list-style-type: none"> ○ (Inner Core Layer) – 2.1mm poplar ply (594-613kg/m³) ○ (Outer Core Layers) – 13mm pine lamels (594-613kg/m³) ○ (Surface Core Layer) – 8mm MDF (594-613kg/m³) <p>Lipping (both leaves): Strelip 30 (686-698kg/m³), 8mm thick to all four edges</p> <p>FRAME: Head & Jamb: European Redwood (510kg/m³), 90mm(d) x 32mm(w), with 32mm(w) x 12mm(d) planted stop. Frame Fixing: 4No. Ø5 x 100 steel woodscrews Threshold: Non combustible</p> <p>INTUMESCENT: Frame Reveal: 1No. 15 x 4 Lorient LP1504 Type 617 fitted 15mm from the opening face in the frame reveal Leaf Edge: 2No. 10 x 4 Lorient LP1004DS Type 617 fitted 10mm apart with the first seal 6mm from the opening face</p> <p>SMOKE/ACOUSTIC Lorient Polyproducts LAS8001si drop seal 35 (h) x 14 (w)</p> <p>GLAZING: Glass: Fireglass UK AGC Pyrobelite 7</p>

	<p>Aperture Size: 250 (w) x 1200 (h) (upper) 250 (w) x 440 (h) (lower) Apertures spaced 100mm apart Beading: Sapele (640kg/m³), 21mm(w) x 19mm(h) with 15° chamfer and a 6x6mm bolection Bead Fixing: 50mm long x 1.6 Ø steel pins at 30°, 200mm centres & 50mm from corners.</p> <p><u>GLAZING SYSTEM:</u> Glazing Perimeter: 15 x 3.5 Lorient Polyproducts Ltd Flexible Figure 1 (FF1) fitted between the glass and bead on both faces</p> <p><u>HARDWARE:</u> Hinges: 3no Carlisle brass (Eurospec) stainless steel bearing butt type hinge ref HIN 1433/113SSS/R Closer: Rutland Door Controls concealed overhead closer ref: ITS11204 Lock/Latch: Assa Abloy Union steel latch re: JHD72Esl-R-SS60 with Assa Abloy cylinder ref J-228AA-SC</p> <ul style="list-style-type: none"> • Forend: 235x24mm • Keep: 185x43mm <p>Altro Stainless steel lever type handle RE: 908356 TH 105 Zoo stainless steel flush bolts ref: ZAS03RSS fitted in top and bottom of leaf</p> <p><u>HARDWARE PROTECTION:</u> Under Hinge: 1mm Lorient Polyproducts MAP fitted under hinge blade on frame and leaf Concealed closer: Lining concealed closer rebates 2(t) manufacturers supplied graphite kit Lock/Latch:</p> <ul style="list-style-type: none"> • Encasing latch body: 1 (t) Lorient MAP • Under forend plate: 1 (t) Lorient MAP • Under keep: 1 (t) Lorient MAP • Lining drop seal rebate: 1 (t) Lorient MAP • Lining flush bolt rebates: 1 (t) Lorient MAP
Test Standard:	BS EN 1634-1: 2014 + A1: 2018
Performance:	Integrity: 33 minutes Insulation: 10 minutes

3.3 Certifire Certificates

3.3.1 Certifire Certificate CF257

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the Pyroguard EW30 & EW Maxi glass types for the proposed door leaf glazing as detailed in section 6 of this report.

CERTIFIRE certification is gained by a third party analysis of previously tested constructions and approval against quality procedures and represents a higher level of attestation than simple 'type' testing.

The Pyroguard EW30 & EW Maxi glass types are approved on the basis of:

- a) Initial type testing on independently sampled product
- b) A design appraisal against a Technical Schedule (TS25)
- c) Regular product manufacturing audits and surveillance under ISO 9001
- d) Regular audit fire testing on independently sampled product

It is therefore deemed acceptable to use this approval as a basis for technical justification of the Pyroguard EW60 glass types considered in this appraisal.

Validity period	Issued:	20 th February 2006
	Revised:	24 th February 2021
	Valid to:	01 st February 2026
Identification of certification body:	Warringtonfire testing and Certification Limited	
Sponsor:	Pyroguard UK Limited	
Certified Product:	Pyroguard EW30 & EW Maxi Fire Resisting Glass	
Technical Schedule:	TS25 – Fire resisting glass, glazing systems, and materials	
Summary of certification:	<p>The TS25 CERTIFIRE scheme aims to provide confidence that installed fire resisting glass when used with appropriate glazing systems and framing systems will be capable of contributing to the performance of the element as a whole, without detriment to its fire resistance, for the designated fire resistance period and also to demonstrate compliance with fire performance specifications.</p> <p>NB: the basis and full scope of the approval is outlined in the referenced certificate</p>	
Test Standard:	BS 476: Part 22: 1987	

3.3.2 Certifire Certificate CF437

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the Pyroguard EI30 INT for the proposed door leaf glazing as detailed in section 6 of this report.

CERTIFIRE certification is gained by a third party analysis of previously tested constructions and approval against quality procedures and represents a higher level of attestation than simple 'type' testing.

The Pyroguard EI30 INT glass types are approved on the basis of:

- a) Initial type testing on independently sampled product
- b) A design appraisal against a Technical Schedule (TS25)
- c) Regular product manufacturing audits and surveillance under ISO 9001
- d) Regular audit fire testing on independently sampled product

It is therefore deemed acceptable to use this approval as a basis for technical justification of the Pyroguard EI60 glass types considered in this appraisal.

Validity period	Issued:	20 th February 2006
	Revised:	24 th February 2021
	Valid to:	23 rd February 2026
Identification of certification body:	Warringtonfire testing and Certification Limited	
Sponsor:	Pyroguard UK Limited	
Certified Product:	Pyroguard EI30 INT Fire Resisting Glass	
Technical Schedule:	TS25 – Fire resisting glass, glazing systems, and materials	
Summary of certification:	<p>The TS25 CERTIFIRE scheme aims to provide confidence that installed fire resisting glass when used with appropriate glazing systems and framing systems will be capable of contributing to the performance of the element as a whole, without detriment to its fire resistance, for the designated fire resistance period and also to demonstrate compliance with fire performance specifications.</p> <p>NB: the basis and full scope of the approval is outlined in the referenced certificate</p>	
Test Standard:	BS 476: Part 22: 1987	

3.3.3 Certifire Certificate CF377

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the AGC Glass UK Ltd glazing Pyrobelite 7, Pyrobelite 12, & Pyrobel 16 for the proposed door leaf glazing as detailed in section 6 of this report.

CERTIFIRE certification is gained by a third party analysis of previously tested glazing and approval against quality procedures and represents a higher level of attestation than simple 'type' testing.

The Pyrobelite 7, Pyrobelite 12 & Pyrobel 16 glasses are approved on the basis of:

- a) Initial type testing on independently sampled product.
- b) A design appraisal against a Technical Schedule (TS25).
- c) Regular product manufacturing audits and surveillance under ISO 9001
- d) Regular audit fire testing on independently sampled product.

It is therefore deemed acceptable to use this approval as a basis for technical justification of the glazing considered in this appraisal.

Validity period	Issued:	1 st April 2005
	Revised:	30 th September 2020
	Valid to:	20 th June 2024
Identification of certification body:	Warringtonfire testing and Certification Limited	
Sponsor:	AGC GLASS UK LIMITED	
Certified Product:	Pyrobelite 12, Pyrobel 16 & Pyrobel 25	
Technical Schedule:	TS25 Fire Resistant Glass, Glazing Systems and Materials	
Summary of certification:	<p>The contribution to the fire resistance of Pyrobelite 7, Pyrobelite 12, & Pyrobel 16 glazing, for use with timber door assemblies for 30 integrity, as defined in BS 476: Part 22</p> <p>NB: the basis and full scope of the approval is outlined in the referenced certificate</p>	
Test Standard:	BS 476 Part: 22: 1987	

3.3.4 Certifire Certificate CF328

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the Pilkington UK Ltd. glazing Pyrodur 20-104, Pyrodur 60-10 & Pyrostop 30-10 for the proposed door leaf glazing as detailed in section 6 of this report.

CERTIFIRE certification is gained by a third party analysis of previously tested glazing and approval against quality procedures and represents a higher level of attestation than simple 'type' testing.

The Pyrodur 20-104, Pyrodur 60-10 & Pyrostop 30-10 glasses are approved on the basis of:

- a) Initial type testing on independently sampled product.
- b) A design appraisal against a Technical Schedule (TS25).
- c) Regular product manufacturing audits and surveillance under ISO 9001
- d) Regular audit fire testing on independently sampled product.

It is therefore deemed acceptable to use this approval as a basis for technical justification of the glazing considered in this appraisal.

Validity period	Issued:	8 th July 2004
	Revised:	24 th March 2023
	Valid to:	22 nd October 2024
Identification of certification body:	Warringtonfire testing and Certification Limited	
Sponsor:	Pilkington United Kingdom	
Certified Product:	Pyrodur 20-104, Pyrodur 60-10 & Pyrostop 30-10	
Technical Schedule:	TS25 Fire Resistant Glass, Glazing Systems and Materials	
Summary of certification:	<p>The contribution to the fire resistance of Pyrodur 20-104, Pyrodur 60-10 & Pyrostop 30-10 glazing, for use with timber door assemblies for 30 integrity, as defined in BS 476: Part 22</p> <p>NB: the basis and full scope of the approval is outlined in the referenced certificate</p>	
Test Standard:	BS 476 Part: 22: 1987	

3.3.5 Certifire Certificate CF291

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the SCHOTT Technical Glass Solutions GmbH Pyran S fire for the proposed door leaf glazing as detailed in section 6 of this report.

CERTIFIRE certification is gained by a third party analysis of previously tested glazing and approval against quality procedures and represents a higher level of attestation than simple 'type' testing.

The Pyrodur S (6mm thick) glass is approved on the basis of:

- a) Initial type testing on independently sampled product.
- b) A design appraisal against a Technical Schedule (TS25).
- c) Regular product manufacturing audits and surveillance under ISO 9001
- d) Regular audit fire testing on independently sampled product.

It is therefore deemed acceptable to use this approval as a basis for technical justification of the glazing considered in this appraisal.

Validity period	Issued:	9 th September 2002
	Revised:	28 th November 2023
	Valid to:	27 th November 2028
Identification of certification body:	Warringtonfire testing and Certification Limited	
Sponsor:	SCHOTT Technical Glass Solutions GmbH	
Certified Product:	PYRAN S (6mm thick)	
Technical Schedule:	TS25 Fire Resistant Glass, Glazing Systems and Materials	
Summary of certification:	The contribution to the fire resistance of PYRAN S (6mm thick) glazing, for use with timber door assemblies for 30 integrity, as defined in BS 476: Part 22 NB: the basis and full scope of the approval is outlined in the referenced certificate	
Test Standard:	BS 476 Part: 22: 1987	

3.3.6 Certifire Certificate CF221

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the Dixon International Group Ltd (Sealmaster), Fireglaze 30 compound glazing system for the proposed door leaves, as detailed in section 5 of this report.

CERTIFIRE certification is gained by a third party analysis of previously tested glazing and approval against quality procedures and represents a higher level of attestation than simple 'type' testing.

The Fireglaze 30 glazing compound is approved on the basis of:

- a) Initial type testing on independently sampled product.
- b) A design appraisal against a Technical Schedule (TS25).
- c) Regular product manufacturing audits and surveillance under ISO 9001
- d) Regular audit fire testing on independently sampled product.

It is therefore deemed acceptable to use this approval as a basis for technical justification of the glazing considered in this appraisal.

Validity period	Issued:	23 rd May 2001
	Revised:	25 th October 2023
	Valid to:	17 th January 2024
Identification of certification body:	Warringtonfire testing and Certification Limited	
Sponsor:	The Old Brewery, Pampisford, Cambridge, CS22 3EW	
Certified Product:	Fireglaze 30 glazing compound	
Technical Schedule:	TS25 Fire Resistant Glass, Glazing Systems and Materials	
Summary of certification:	The contribution to the fire resistance of Fireglaze 30 glazing compound, for use with timber door assemblies for 30 integrity, as defined in BS 476: Part 22 (NB: the basis of the approval is outlined in the referenced certificate)	
Test Standard:	BS 476 Part: 22: 1987	

3.3.7 Certifire Certificate CF284

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the Dixon International Group Ltd (Intumescent Seals), Therm-A-Strip & Therm-A-Glaze 30+ glazing systems for the proposed door leaves, as detailed in section 5 of this report.

CERTIFIRE certification is gained by a third party analysis of previously tested glazing and approval against quality procedures and represents a higher level of attestation than simple 'type' testing.

The Therm-A-Strip & Therm-A-Glaze 30+ systems are approved on the basis of:

- a) Initial type testing on independently sampled product.
- b) A design appraisal against a Technical Schedule (TS25).
- c) Regular product manufacturing audits and surveillance under ISO 9001
- d) Regular audit fire testing on independently sampled product.

It is therefore deemed acceptable to use this approval as a basis for technical justification of the glazing considered in this appraisal.

Validity period	Issued:	11 th June 2002
	Revised:	9 th March 2020
	Valid to:	8 th March 2025
Identification of certification body:	Warringtonfire testing and Certification Limited	
Sponsor:	Dixon International Group Ltd	
Certified Product:	Therm-A-Strip & Therm-A-Glaze 30+	
Technical Schedule:	TS25 Fire Resistant Glass, Glazing Systems and Materials	
Summary of certification:	<p>The contribution to the fire resistance of Therm-A-Strip & Therm-A-Glaze 30+ for use with timber door assemblies for 30 integrity, as defined in BS 476: Part 22</p> <p>NB: the basis and full scope of the approval is outlined in the referenced certificate</p>	
Test Standard:	BS 476 Part: 22: 1987	

3.3.8 Certifire Certificate CF327

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the Lorient Polyproducts Ltd Flexible Figure 1 glazing system for the proposed door leaves, as detailed in section 5 of this report.

CERTIFIRE certification is gained by a third party analysis of previously tested glazing and approval against quality procedures and represents a higher level of attestation than simple 'type' testing.

The Flexible Figure 1 glazing strip is approved on the basis of:

- a) Initial type testing on independently sampled product.
- b) A design appraisal against a Technical Schedule (TS25).
- c) Regular product manufacturing audits and surveillance under ISO 9001
- d) Regular audit fire testing on independently sampled product.

It is therefore deemed acceptable to use this approval as a basis for technical justification of the glazing considered in this appraisal.

Validity period	Issued:	17 th December 2003
	Revised:	11 th December 2020
	Valid to:	10 th December 2025
Identification of certification body:	Warringtonfire testing and Certification Limited	
Sponsor:	Fairfax Road, Heathfield Industrial Estate, Newton Abbott, Devon, TQ12 6UD	
Certified Product:	Flexible Figure 1	
Technical Schedule:	TS25 Fire Resistant Glass, Glazing Systems and Materials	
Summary of certification:	The contribution to the fire resistance of Flexible Figure 1 glazing strip, for use with timber door assemblies for 30 integrity, as defined in BS 476: Part 22 (NB: the basis of the approval is outlined in the referenced certificate)	
Test Standard:	BS 476 Part: 22: 1987	

3.3.9 Certifire Certificate CF5060

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the ASSA Abloy Ltd T/A Lorient, Lorient System-36 Plus glazing gaskets for the proposed door leaves, as detailed in section 5 of this report.

CERTIFIRE certification is gained by a third party analysis of previously tested glazing and approval against quality procedures and represents a higher level of attestation than simple 'type' testing.

The Lorient System-36 Plus glazing gasket is approved on the basis of:

- a) Initial type testing on independently sampled product.
- b) A design appraisal against a Technical Schedule (TS25).
- c) Regular product manufacturing audits and surveillance under ISO 9001
- d) Regular audit fire testing on independently sampled product.

It is therefore deemed acceptable to use this approval as a basis for technical justification of the glazing considered in this appraisal.

Validity period	Issued:	4 th July 2012
	Revised:	1 st March 2023
	Valid to:	29 th January 2028
Identification of certification body:	Warringtonfire testing and Certification Limited	
Sponsor:	Portobello Works, School Street, Willenhall, WV13 3PW	
Certified Product:	Lorient System-36 Plus glazing gasket	
Technical Schedule:	TS25 Fire Resistant Glass, Glazing Systems and Materials	
Summary of certification:	The contribution to the fire resistance of Lorient System-36 Plus glazing gasket, for use with timber door assemblies for 30 integrity, as defined in BS 476: Part 22 (NB: the basis of the approval is outlined in the referenced certificate)	
Test Standard:	BS 476 Part: 22: 1987	

3.3.10 Certifire Certificate CF297

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the Hodgsons Sealants Ltd, Firestrip 30 glazing system for the proposed door leaves, as detailed in section 5 of this report.

CERTIFIRE certification is gained by a third party analysis of previously tested glazing and approval against quality procedures and represents a higher level of attestation than simple 'type' testing.

The Firestrip 30 glazing strip is approved on the basis of:

- a) Initial type testing on independently sampled product.
- b) A design appraisal against a Technical Schedule (TS25).
- c) Regular product manufacturing audits and surveillance under ISO 9001
- d) Regular audit fire testing on independently sampled product.

It is therefore deemed acceptable to use this approval as a basis for technical justification of the glazing considered in this appraisal.

Validity period	Issued:	27 th August 2002
	Revised:	19 th December 2022
	Valid to:	15 th May 2024
Identification of certification body:	Warringtonfire testing and Certification Limited	
Sponsor:	Belprin Road, Beverley, East Yorkshire, HU17 0LN	
Certified Product:	Firestrip 30	
Technical Schedule:	TS25 Fire Resistant Glass, Glazing Systems and Materials	
Summary of certification:	The contribution to the fire resistance of Firestrip 60 glazing strip, for use with timber door assemblies for 60 integrity, as defined in BS 476: Part 22 (NB: the basis of the approval is outlined in the referenced certificate)	
Test Standard:	BS 476 Part: 22: 1987	

4 Technical Specification

4.1 General

The technical specification for the proposed door Falcon Duocore 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 Door blank variants & considerations for Falcon Duocore

Consideration of the core materials and construction details of Duocore Types 1a & 1b along with comparison of the performance tests cited in Section 3 gives confidence, for the purposes of this assessment that the two core types may be considered comparable.

The core (or raft) is manufactured at Factory F12A with final processing and supply at Factory F12. Details of factory references retained by BM TRADA for the purposes of Q Mark certification.

4.3.1 Leaf 1 - Duocore Type 1a – Ply Faced

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings
4. Decorative planted on timber mouldings

4.3.2 Leaf 2 - Duocore Type 1b – Ply Faced

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings
4. Decorative planted on timber mouldings

4.4 Door Frames

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

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

4.4.1 Frame 1 – Softwood or Hardwood

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

4.4.2 Frame 2 – Medium Density Fibreboard

The construction of the door frame is from Medium Density Fibreboard (MDF) with minimum frame dimensions. For further information on the specification and construction of the door frames see section 7.

4.4.3 Frame 3 – Falcon Streframe® E

The construction of the door frame is from Falcon Streframe E (engineered softwood) with minimum frame dimensions. For further information on the specification and construction of the door frames see section 7.

4.5 Doorset Configurations & Maximum Leaf Sizes

4.5.1 General

The evaluation of the leaf size for each door leaf option, 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 configurations 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 a doorset with a flush overpanel is more onerous than a test on a doorset without an overpanel. A flush overpanel has the same thickness as the door leaf and is flush with the leaf/leaves.
3. 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.
4. A test on an unlatched single acting doorset is considered to be equivalent to a double acting doorset, due to the known deflection of an unlatched single acting doorset towards the furnace conditions i.e. away from the door stop. However, this does not cover doorsets with flush overpanels.
5. A doorset with transomed 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 Duocore doorset design, with the abbreviation and full description of each 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			
Ref.	Depiction	Abbreviation	Description
A		LSASD	Latched Single Acting Single Doorset
B		ULSASD	Unlatched Single Acting Single Doorset
G		LSADD	Latched Single Acting Double Doorset
H		ULSADD	Unlatched Single Acting Double Doorset

4.5.3 Orientation

The majority of primary fire resistance tests for these designs 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.

4.5.4 Envelopes for each Configuration

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

Unequal leaf double doorsets are covered by this assessment provided that all of the following criteria are met:

- The relevant door leaf envelopes are not exceeded.
- Door leaf widths are no smaller than 300mm.

For equal double doorsets both leaves must comply with the door leaf envelope size limitations and with minimum widths no smaller than 300mm.

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.

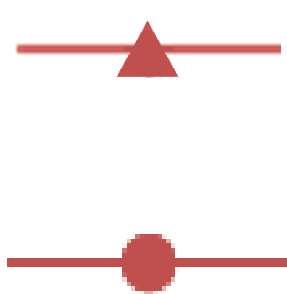

4.5.4.1 General Notes on Intumescent Seals

Tested and permitted intumescent seal configurations are as specified for all permitted door configurations. Leaf size envelope charts are specific to the same type and manufacturer. The lines in the charts are colour coded for the two seal sizes supplied by the same manufacturer (see colour coding in table below).

- Intumescent seals are to be fitted centrally unless stated otherwise.
- Intumescent seals are fully interrupted at hardware locations unless stated otherwise.
- Intumescent seals must run the full length of the leaf edge or frame reveals, with tightly formed abutting corner joints, unless stated otherwise.
- Vertical perimeter intumescent seals may include one tight butt joint in their length if needed.
 - Where two seals are fitted, the joints must be offset by a minimum of 100mm and may not be coincident.
 - Where one seal is fitted the joint must be in the lower half of the doorset (below 1m from the threshold).

The intumescent seals may be provided with or without pile or elastomeric fins in order to provide additional performance i.e., smoke or acoustic control. Whilst seals may be installed with the additional features; it is beyond the remit of this Field of Application report to provide scope for acoustic or cold smoke control performance.

Variations of the tested intumescent seal from the same product group in the table below are available and are considered acceptable.

Manufacturer	Product Group	Product Variations	Envelope Colour Code
Pyroplex Ltd	Rigid Box	Rigid Box (with no additional seal) Rigid Box – Pile (with pile brush) Rigid Box – Pile with fin (with pile brush and fin) Rigid Box – Single Flipper (with elastomeric fin) Rigid Box – Side Flipper (with elastomeric fin) Rigid Box – Twin Flipper (with 2 elastomeric fins) Rigid Box – Triple Flipper (with 3 elastomeric fins)	
Sealed Tight Solutions	STS	STS FO (with no additional seal) STS FS (with pile brush) STS SBS (with elastomeric fin)	

Each leaf size envelope chart in Section 4.6.4 is specific to a particular seal size, or combination of seal sizes.

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 2 leaf types and 3 frame 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:-

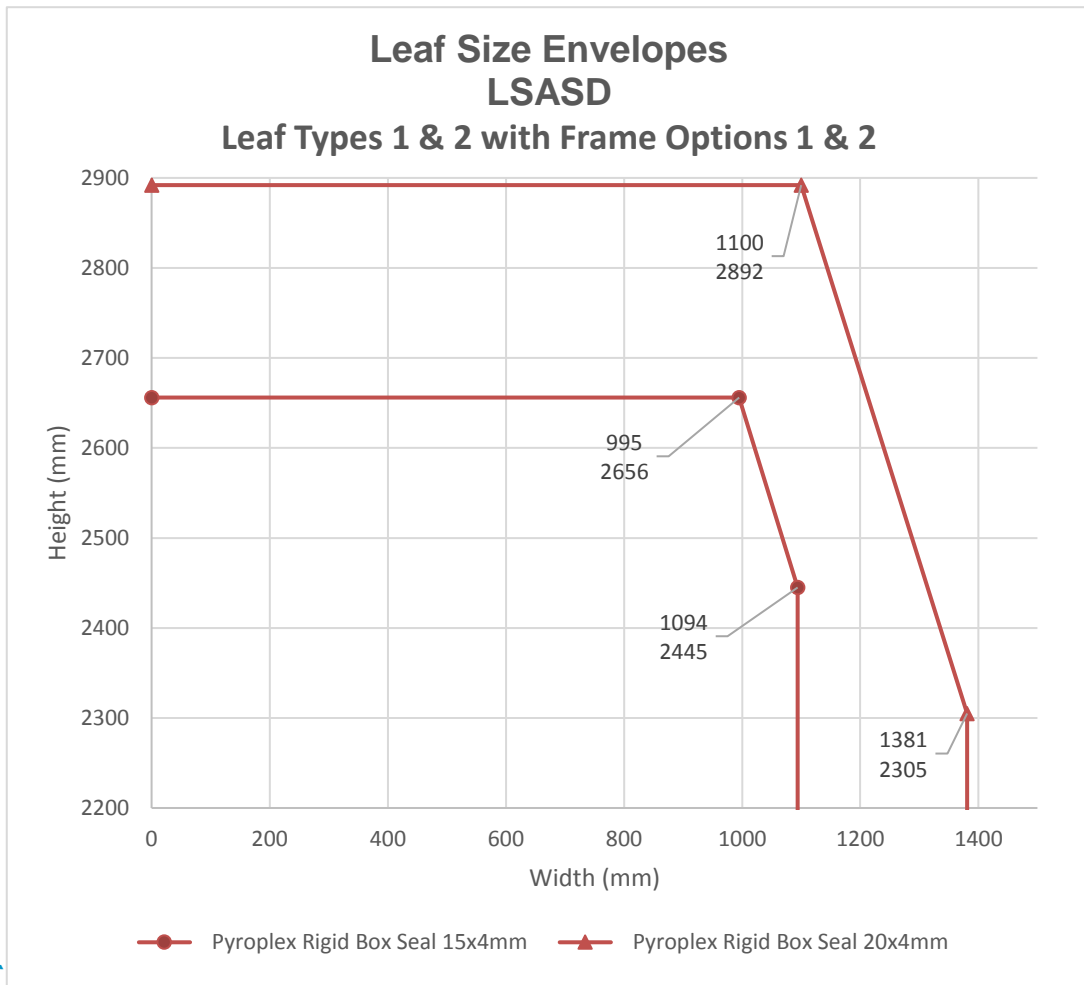
- for LSASD increasing in configuration complexity up to ULSADD
- for each configuration, each leaf type is considered separately
- for each configuration and leaf type, each frame type is considered separately
- for each configuration, leaf type, frame type and intumescent specification is considered separately and a unique envelope of permitted leaf sizes is presented based on the configuration, leaf type, frame type and intumescent and the envelope is directly linked to a unique test.

4.5.4.3 Summary of Permitted Configuration for (product reference) blank/each Leaf & Frame Option

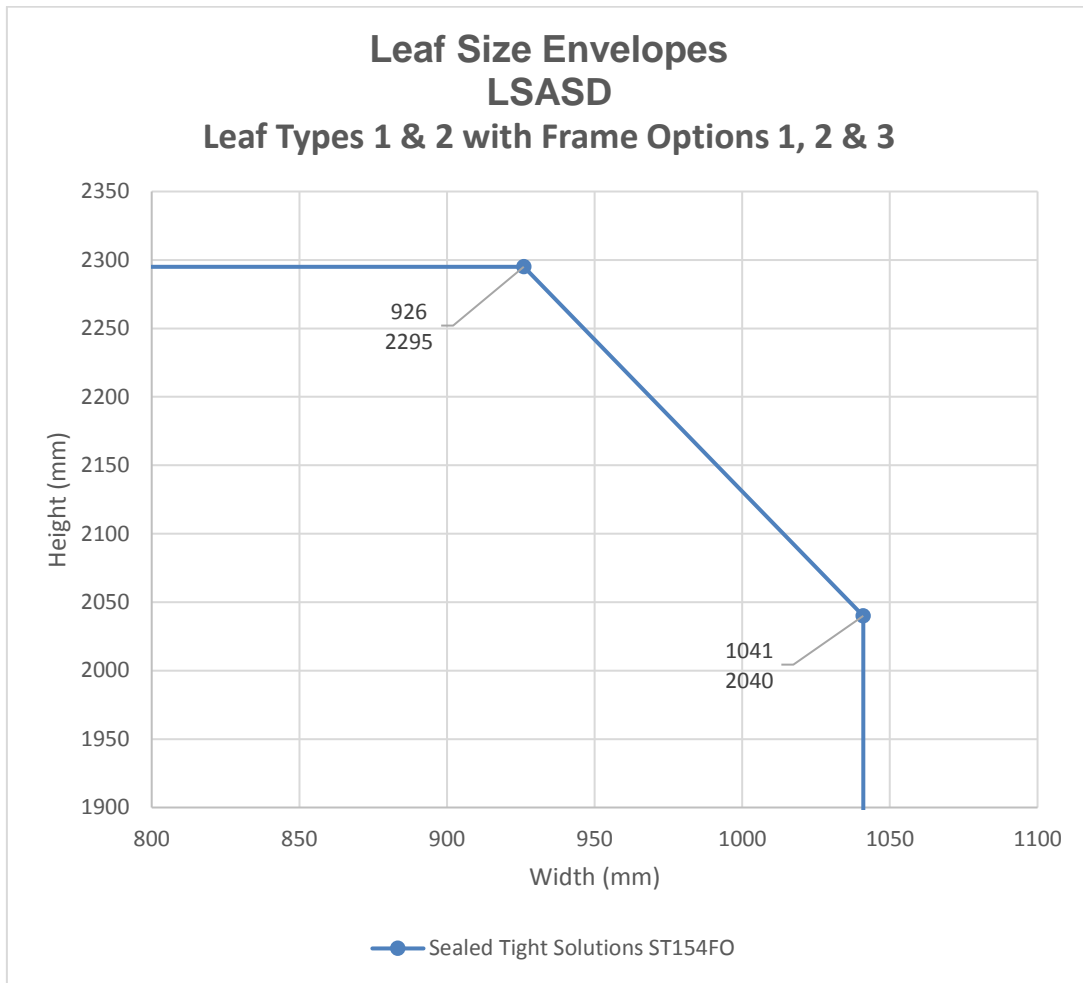
Permitted Configurations - Frame types 1-3 with leaf types 1 & 2					
		Configuration			
		LSASD	ULSASD	LSADD	ULSADD
Frame	1 – Softwood or Hardwood frame*	Yes	Yes	Yes	Yes
	2 – MDF frame*	Yes	Yes	Yes	Yes
	3 – Streframe E	Yes	No	No	No

* See Section 7 for specific limitations with respect to the framing types

4.5.4.4 LSASD Configuration: Leaf Sizes & Intumescent Specification

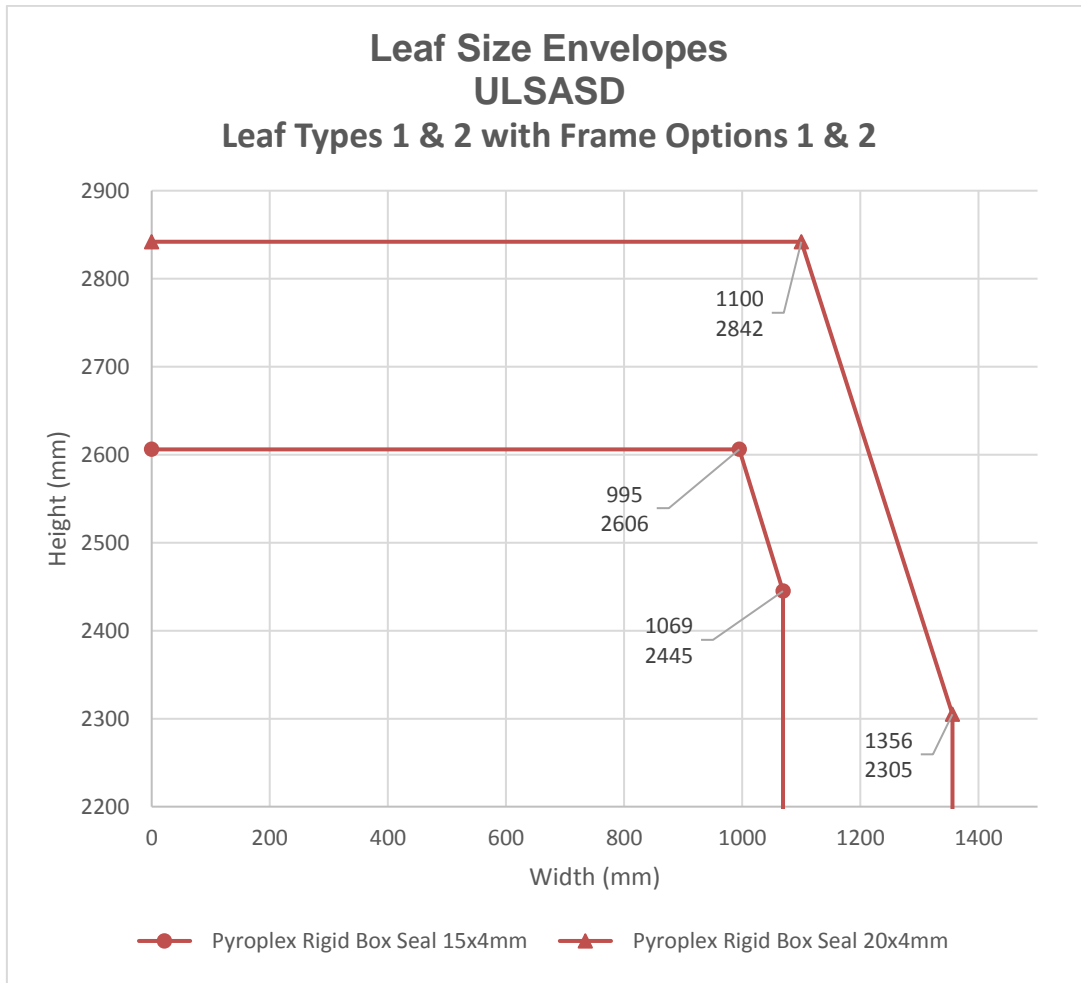


Intumescent Specification for LSASD Leaf Types 1 & 2 with Frame Options 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS/1 (WF399751)	Pyroplex 8700 Rigid Box Seal	Reddiplex Ltd	Head & Jambs: 1no 15x4mm fitted centrally in frame reveal or leaf edges
AS/2 (RF12138 – Set B)	Pyroplex 8600 Rigid Box Seal	Reddiplex Ltd	Head & Jambs: 1no 20x4mm fitted centrally in frame reveal or leaf edges



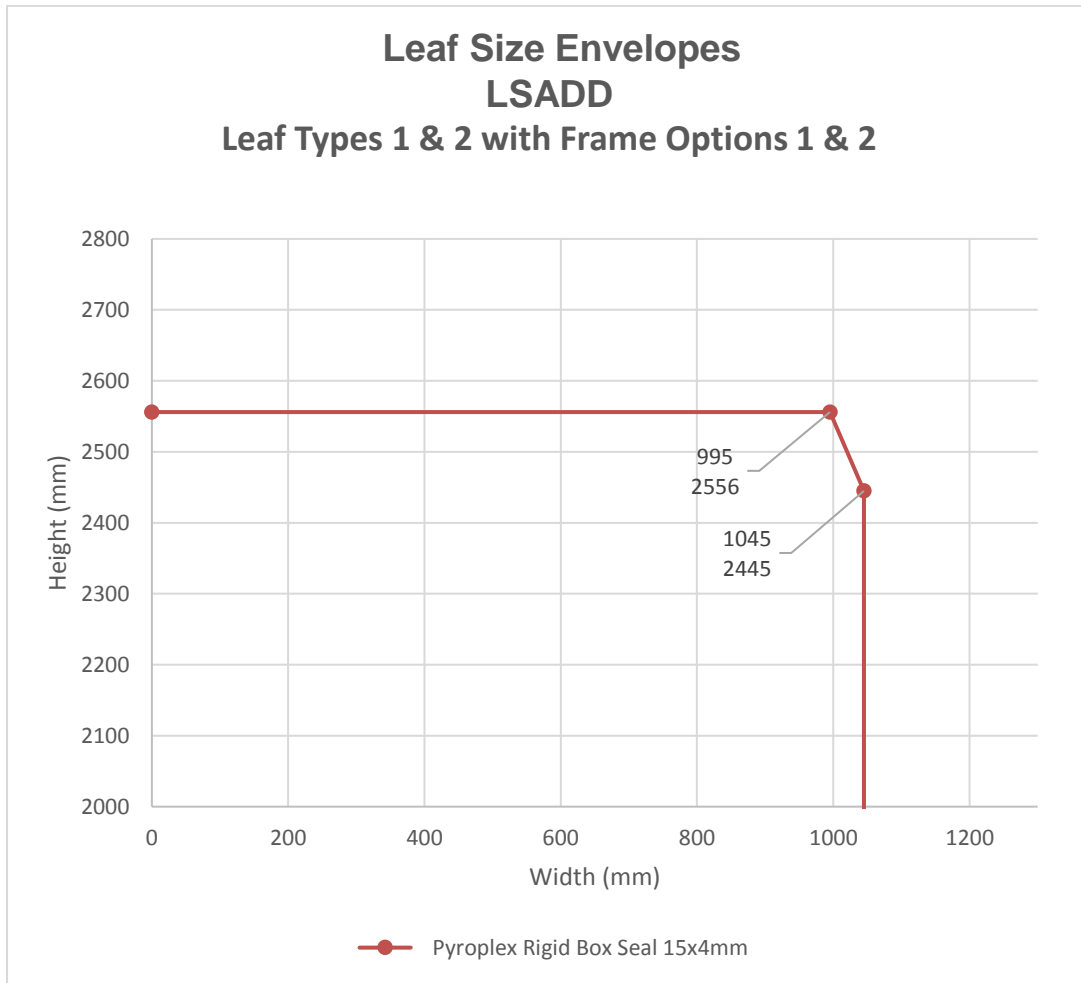
Intumescent Specification for LSASD Leaf Types 1 & 2 with Frame Options 1, 2 & 3			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS/3 (WF523027)	Sealed Tight Solutions Ltd ST154FO	Sealed Tight Solutions Ltd	Head & Jambs: 1no 15x4mm fitted centrally in frame reveal or leaf edges

4.5.4.5 ULSASD Configuration: Leaf Sizes & Intumescent Specification



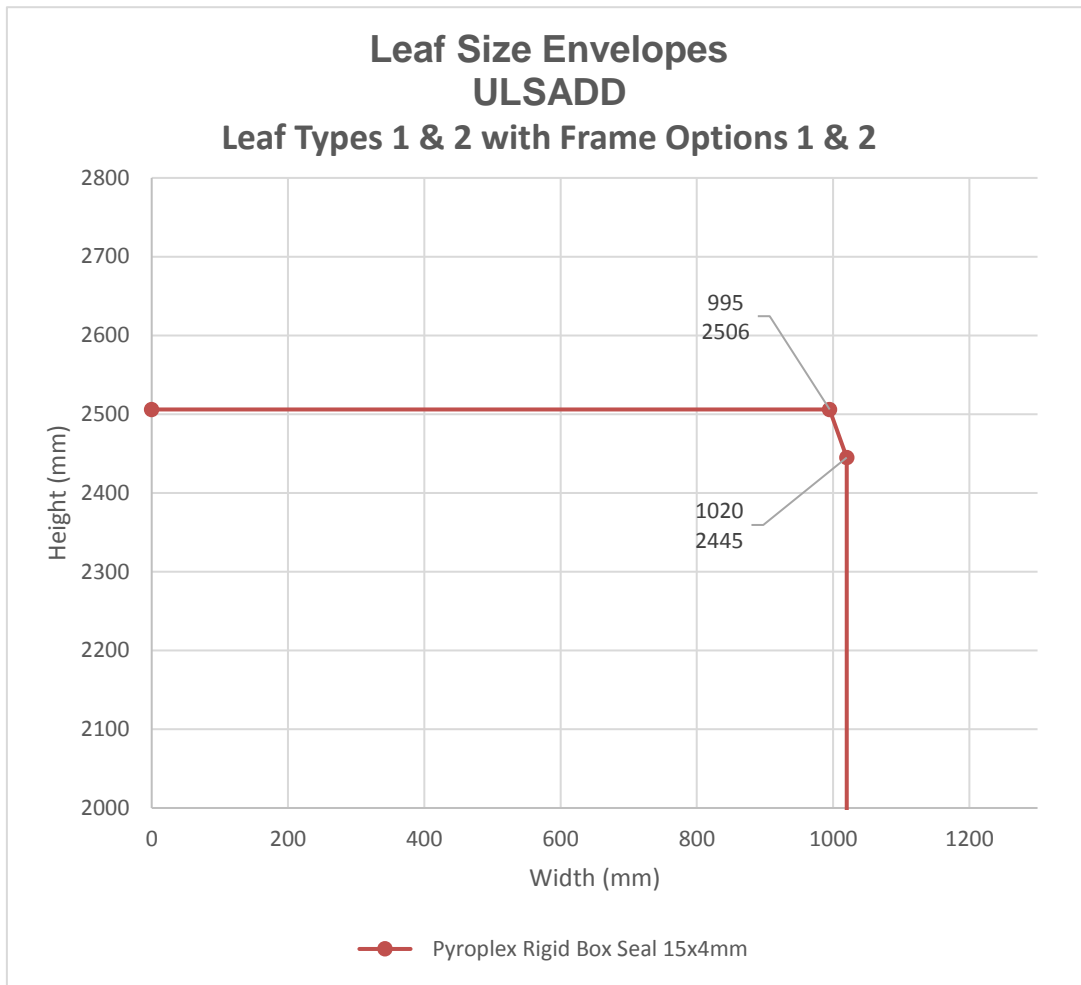
Intumescent Specification for ULSASD Leaf Types 1 & 2 with Frame Options 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BS/1 (WF399751)	Pyroplex 8700 Rigid Box Seal	Reddiplex Ltd	Head & Jamb: 1no 15x4mm fitted centrally in frame reveal or leaf edges
BS/2 (RF12138 – Set B)	Pyroplex 8600 Rigid Box Seal	Reddiplex Ltd	Head & Jamb: 1no 20x4mm fitted centrally in frame reveal or leaf edges

4.5.4.6 LSADD Configuration: Leaf Sizes & Intumescent Specification



Intumescent Specification for LSADD Leaf Types 1 & 2 with Frame Options 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
GS/1 (WF399751)	Pyroplex 8700 Rigid Box Seal	Reddiplex Ltd	Head & Jamb: 1no 15x4mm fitted centrally in frame reveal or leaf edges Meeting Edge: 2no 10x4mm fitted centrally and 10mm apart in one of the leaves.

4.5.4.7 ULSADD Configuration: Leaf Sizes & Intumescent Specification



Intumescent Specification for ULSADD Leaf Types 1 & 2 with Frame Options 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
HS/1 (WF399751)	Pyroplex 8700 Rigid Box Seal	Reddiplex Ltd	Head & Jambs: 1no 15x4mm fitted centrally in frame reveal or leaf edges Meeting Edge: 2no 10x4mm fitted centrally and 10mm apart in one of the leaves.

5 General Description of Construction

5.1 Leaf Core Construction

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

Consideration of the core materials and construction details of Duocore Types 1a & 1b along with comparison of the performance tests cited in Section 3 gives confidence, for the purposes of this assessment that the two core types may be considered comparable.

The core (or raft) is manufactured at Factory F12A with final processing and supply at Factory F12. Details of factory references retained by BM TRADA for the purposes of Q Mark certification.

5.1.1 Falcon Duocore – 44mm thick

5.1.2 Leaf Type 1 – (Duocore Type 1a) – 44mm thick

The basic tested construction of this door leaf design comprises the following:

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	1. Albasia Falcata - long grain	2.1 (t)	300 – 335*
	2. Albasia Falcata – cross grain	2.0 (t)	300 – 335*
	3. Albasia Falcata – vertically orientated lamels	16 (t)	180 – 335*
	4. Albasia Falcata – cross grain	3.5 (t)	180 – 335*
	5. Albasia Falcata – vertically orientated lamels	16 (t)	180 – 335*
	6. Albasia Falcata – cross grain	2.0 (t)	300 – 335*
	7. Albasia Falcata - long grain	2.1 (t)	300 – 335*
Facings	Integral as included above. (Items 1 & 7)	N/a	N/a

* Stated density not checked by laboratory

The leaf must be lipped as specified in section 5.3.

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

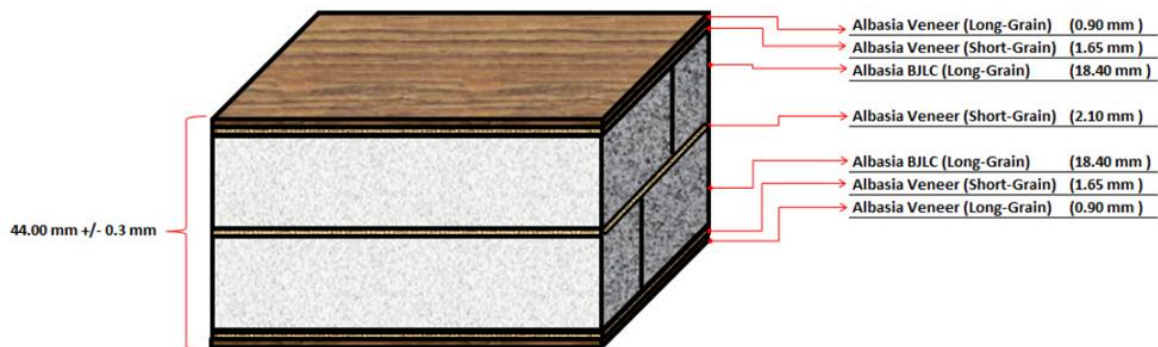
The minimum leaf thickness after finishes applied is 44mm.

5.1.3 Leaf Type 2 – (Duocore Type 1b) – 44mm thick

The basic tested construction of this door leaf design comprises the following:

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	1. Albasia veneer – long grain	0.9 (t)	180 – 335*
	2. Albasia veneer – short grain	1.65 (t)	180 – 335*
	3. Albasia BJLC, A grade	18.4 (t)	300 – 335*
	4. Albasia veneer – short grain	2.1 (t)	180 – 335*
	5. Albasia BJLC, A grade	18.4 (t)	300 – 335*
	6. Albasia veneer – short grain	1.65 (t)	180 – 335*
	7. Albasia veneer – long grain	0.9 (t)	180 – 335*
Facings	Integral as included above. (Items 1 & 7)	N/a	N/a

* Stated density not checked by laboratory



The leaf must be lipped as specified in section 5.3.

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.

5.2 Leaf Size Adjustment During Manufacture

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 5.3
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 5.3

5.3 Timber Lipping

The testing documented in section 3 has generally been undertaken using 8mm thick lippings applied to vertical or all edges using Sapele at varying densities. A number of different adhesives have also been used to seal the lippings.

The doorset in test WF523027 comprised a Falcon Duocore blank, lipped with Strelip® Engineered Hardwood to all four edges. Strelip® Engineered Hardwood is therefore permitted by this assessment based on the successful test WF523027.

On the above basis Falcon Duocore door blanks must be lipped to the following specification, for all leaf types and solid overpanels, where appropriate.

Timber Lipping Specification for Falcon Duocore door blanks		
Material	Size (mm)	Minimum Density (kg/m ³)
Hardwood	Flat Lipping = 8–13 thick	640
Strelip® Engineered Hardwood (based on WF523027)	Flat Lipping = 7–10 thick	650

Notes:

1. All lippings are to be the same thickness as the door leaf.
2. Overpanels separated from the leaf heads with a transom do not need to be lipped.
3. Single and double doorsets with transomed overpanels only require lipping on the vertical edges but may be additionally lipped on the top and bottom edges if required.
4. Lippings can be bonded with UF, PRF, PF, PVA, PUR or hotmelt 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.
5. 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.

5.4 Decorative & Protective Facings

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 to the leaf 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 ⁵	0.2
Timber veneers ³	2
Plastic laminates ³	2
PVC ³	2
Cellulosic and non-metallic foils ³	0.4

Notes:

1. Metallic facings are not permitted except for push plates and kick plates
2. The door leaf thickness may be reduced on both sides by a maximum of 0.5mm for calibration purposes in order to accommodate the chosen finish. The minimum overall leaf thickness must remain at 44mm after finishing has been applied.
3. Materials may over sail lippings but must not return around leaf edges.
4. For all options, materials must not conceal intumescent strips.
5. Intumescent paints are not permitted.

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

5.5 Decorative Planted on Timber Mouldings

Decorative mouldings can be applied 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 50mm
4. Cover no more than 20% of the door leaf area
5. Are no closer than 80mm to the door leaf edge
6. Are bonded into position with no mechanical fixings
7. Are bonded using any glue which is suitable for bonding the lipping of the door.

5.6 Astragal

The inclusion of timber astragals is permitted providing they meet the following specification:

- The astragal shall consist of the same material as the door frame with at least the same or greater density.
- The astragal shall be mechanically fixed using steel screws at no greater than 250mm centres, the screws shall penetrate into the substrate by at least 15mm and no greater than $\frac{1}{2}$ the thickness of the substrate.
- The astragal shall measure 50mm wide x 18mm thick and shall be positioned centrally over the junction.

Other materials or dimensions of astragals are not permitted.

It has been considered possible to include the above specified astragal based on the fact that the effective rebate of the doorset design will remain unchanged. The addition of the astragal element will provide further protection at the perimeter gaps increasing the time in which failure modes may develop.

Astragals are permitted in the following designs:

- Optionally permitted at meeting edges of double doors.

Astragals may only be fitted to one side of any single doorset design.

When fitted to double doors, a door selector as defined within section 10.8.4 shall be fitted to the doorset to ensure functionality.

6 Glazing within the Leaf

6.1 General

The testing conducted on Falcon Duocore door designs has demonstrated that they are capable of tolerating glazed apertures, whilst providing a margin of over performance.

Glazed apertures have been tested in test WF523027 where the aperture was 1600mm high by 626mm wide and achieved 35mins. Test RF12053 tested a double doorset with a single aperture of sizes 806mm high x 606mm wide and achieved 34 minutes. These tests have demonstrated the ability of the Falcon Duocore design to accommodate apertures and the following limitations have been set for all leaf types.

Glazing is therefore acceptable within the following parameters.

The maximum total assessed aperture area for any individual door leaf is 0.61m² within double door arrangements and 1.25m² for single leaf arrangements.

Any single aperture may not be greater than 0.61m² within double door arrangements and 1.25m² for single leaf arrangements.

Multiple apertures are acceptable within the permitted glazed area, with a minimum dimension of 100mm of core between apertures when multiple apertures are used the maximum glazed area for any single doorset design irrespective of configuration is 0.61m².

Apertures must not be less than 145mm from top and side edges and 145mm from the bottom edge.

Aperture shape must be rectilinear unless alternative shape has been proven by test.

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

6.1.1 Single Pane Glass & Glazing Systems

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 m²) that is considered acceptable for an individual glazed aperture, based upon the specific system.

The total area of all glazed apertures must not exceed the limitations stated in Section 6.1 above.

Glass & Glazing System Specification											
Maximum Assessed Area (m ²)											
Glass Type & Manufacturer (Test reference)		Thickness	Glazing System & Manufacturer (Test reference)								
			1.	2.	3.	4.	5.	6.	7.	8.	9.
			Fireglaze Compound or Fireglaze G30 Sealmaster UK Ltd (CF221)[Therm A Seal Intumescent Seals Ltd (CF284)	Firestrip 30 Hodgesson Sealants Ltd (CF297)	Flexible Figure 1 Lorient Polyproducts Ltd (WF399751 & CF327)	System 36 Plus Lorient Polyproducts Ltd (CF5060)	8193 Pyroplex Ltd (RF12053)	30049 Pyroplex (RF12053 & WF369451)	Therm A Glaze 30 + Intumescent Seals Ltd (CF284)	STS104SG Sealed Tight Solutions (WF523027)
1	Pyroshield 2 Clear Pilkington UK Ltd (RF12053)	7	Area: 0.55 Height: 0.824 Width: 0.741	Area: 0.21 Height: 0.967 Width: 0.75	Area: 0.57 Height: 0.875 Width: 0.75	Area: 0.66 Height: 0.875 Width: 0.75	Area: 0.688 Height: 1.482 Width: 0.58	Area: 0.61 Height: 0.967 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727	Area: 1.25 Height: 1.92 Width: 0.750	N/a
2	Pyran S Schott Glass Ltd (CF291)	7	Area: 0.55 Height: 0.824 Width: 0.741	Area: 0.21 Height: 0.967 Width: 0.75	Area: 0.57 Height: 0.875 Width: 0.75	Area: 0.66 Height: 0.875 Width: 0.75	Area: 0.688 Height: 1.482 Width: 0.58	Area: 0.61 Height: 0.967 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727	Area: 1.25 Height: 1.92 Width: 0.750	N/a
3	Pyrostem Pyroguard UK Ltd (CF5954)	7	Area: 0.55 Height: 0.824 Width: 0.741	N/a	Area: 0.57 Height: 0.875 Width: 0.75	Area: 0.66 Height: 0.875 Width: 0.75	Area: 0.688 Height: 1.482 Width: 0.58	Area: 0.61 Height: 0.967 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727	Area: 1.25 Height: 1.92 Width: 0.750	N/a
4	Pyroguard EW30 Pyroguard UK Ltd (CF257)	7	N/a	Area: 0.61 Height: 0.967 Width: 0.75	Area: 0.57 Height: 0.875 Width: 0.75	Area: 0.71 Height: 1.236 Width: 0.75 Or Area: 0.459 Height: 1.446 Width: 0.366	Area: 0.66 Height: 0.875 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727 Or Area: 0.459 Height: 1.446 Width: 0.366	Area: 1.25 Height: 0.967 Width: 0.727	N/a

5	Pyroguard 2 EW30/7-1 Pyroguard UK Ltd (WF523027)	7	N/a	N/a	N/a	N/a	N/a	N/a	N/a	N/a	Area: 1.25 Height: 1.92 Width: 0.75
6	Pyrobelite 7 AGC Flat Glass UK (CF377)	7	Area: 0.55 Height: 0.824 Width: 0.741	Area: 0.21 Height: 0.967 Width: 0.75	N/a	Area: 0.66 Height: 0.875 Width: 0.75 Or Area: 0.459 Height: 1.446 Width: 0.366	Area: 1.08 Height: 1.8 Width: 0.6	Area: 0.61 Height: 0.967 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727 Or Area: 0.459 Height: 1.446 Width: 0.366	Area: 0.61 Height: 0.967 Width: 0.727	Area: 1.25 Height: 1.92 Width: 0.75
7	Pyrodur 30-104 Pilkington UK Ltd (CF328)	7	Area: 0.55 Height: 0.824 Width: 0.741	Area: 0.21 Height: 0.967 Width: 0.75	Area: 0.57 Height: 0.875 Width: 0.75	Area: 0.66 Height: 0.875 Width: 0.75 Or Area: 0.459 Height: 1.446 Width: 0.366	Area: 0.66 Height: 0.875 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727 Or Area: 0.459 Height: 1.446 Width: 0.366	Area: 0.61 Height: 0.967 Width: 0.727	Area: 1.25 Height: 1.92 Width: 0.75
8	Pyrodur 60-10 Pilkington UK Ltd (CF328)	10	N/a	N/a	Area: 0.57 Height: 0.875 Width: 0.75	Area: 0.459 Height: 1.446 Width: 0.366	N/a	Area: 0.61 Height: 0.967 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727 Or Area: 0.459 Height: 1.446 Width: 0.366	N/a	Area: 1.25 Height: 1.92 Width: 0.75
9	Pyroguard EW Maxi Pyroguard UK Ltd (CF257)	11	N/a	N/a	N/a	Area: 0.459 Height: 1.446 Width: 0.366	N/a	Area: 0.61 Height: 0.967 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727 Or Area: 0.459 Height: 1.446 Width: 0.366	N/a	Area: 1.25 Height: 1.92 Width: 0.75
10	Pyrobelite 12 AGC Flat Glass UK (CF377)	12	N/a	N/a	N/a	Area: 0.459 Height: 1.446 Width: 0.366	N/a	Area: 0.61 Height: 0.967 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727 Or Area: 0.459 Height: 1.446 Width: 0.366	N/a	Area: 1.25 Height: 1.92 Width: 0.75

11	Pyroguard EI30 Pyroguard UK Ltd (CF437)	15	N/a	N/a	Area: 0.57 Height: 0.875 Width: 0.727	Area: 0.459 Height: 1.446 Width: 0.366	N/a	Area: 0.61 Height: 0.967 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727 Or Area: 0.459 Height: 1.446 Width: 0.366	N/a	Area: 1.25 Height: 1.92 Width: 0.75
12	Pyrostop 30-10 Pilkington UK Ltd (CF328)	15	Area: 0.55 Height: 0.824 Width: 0.741	N/a	N/a	Area: 0.459 Height: 1.446 Width: 0.366	N/a	Area: 0.61 Height: 0.967 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727 Or Area: 0.459 Height: 1.446 Width: 0.366	N/a	Area: 1.25 Height: 1.92 Width: 0.75
13	Pyrobel 16 AGC Flat Glass UK (CF377)	16	Area: 0.55 Height: 0.824 Width: 0.741	N/a	N/a	Area: 0.459 Height: 1.446 Width: 0.366	Area: 1.08 Height: 1.8 Width: 0.6	Area: 0.61 Height: 0.967 Width: 0.727	Area: 0.61 Height: 0.967 Width: 0.727 Or Area: 0.459 Height: 1.446 Width: 0.366	N/a	Area: 1.25 Height: 1.92 Width: 0.75

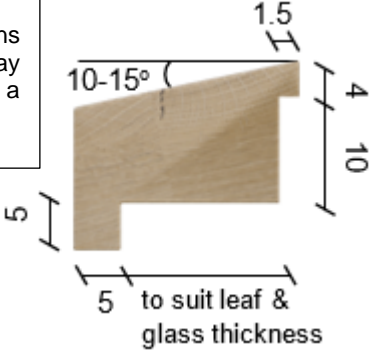

Note:

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. Glass types 11-13 are fully insulating for 30 minutes in terms of the criteria set out BS 476: Part 20: 1987.
3. Pilkington UK Ltd Pyroshield 2 – Textured glass is not permitted for fire resisting applications.

6.2 Glazing Beads & Installation

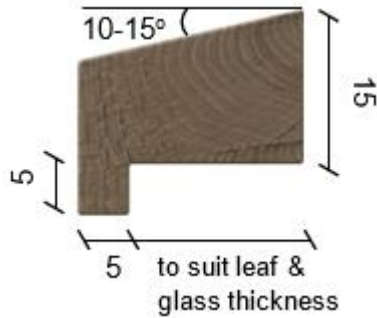
The 3D models in the following sections are provided as a generalised illustration of the glazing installation only; actual installation must be as per the specific details noted within this document.

6.2.1 Chamfered Bead

Permitted with glazing system 1 & 2 (Fireglaze 30 & Therm-A-Seal) from the table in Section 6.1.1	
<p>Belection Dimensions are minimum and may be increased by a maximum of 50%</p> 	
<ul style="list-style-type: none">• The glazing beads must be created from hardwood of a minimum 640kg/m³ density.• Glazing beads must be retained in position with 40mm long steel pins or 40mm long No. 6-8 screws, inserted at 35-40° to the vertical.• Fixings must be at 100mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.2.3 below.• The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.• 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	

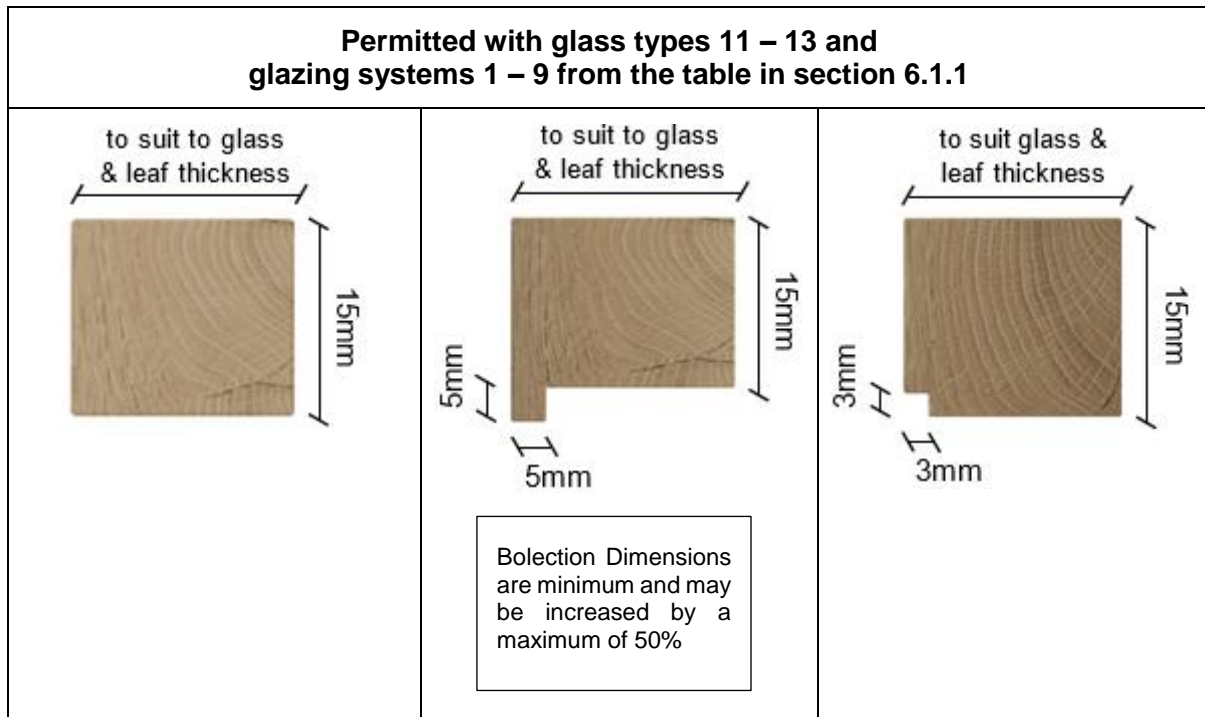
Permitted with glazing systems 3 – 9 (Firestrip 30, Flexible Figure 1, System 36 Plus, 8193, 30049, Therm A Glaze 30 + & STS104SG from the table in Sections 6.1.1

Belection Dimensions are minimum and may be increased by a maximum of 50%



- The glazing beads must be created from hardwood of a minimum 640kg/m^3 density.
- Glazing beads must be retained in position with 40mm long steel pins or 40mm long No. 6-8 screws, inserted at $35\text{-}40^\circ$ to the vertical.
- Fixings must be at 100mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.2.3 below.
- The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.
- 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

6.2.2 Square Beads



- The glazing beads must be created from hardwood of a minimum 640kg/m³ density.
- Glazing beads must be retained in position with 40mm long steel pins or 40mm long No. 6-8 screws, inserted at 35-40° to the vertical.
- Fixings must be at 100mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.2.3 below.
- A 6 – 10mm thick square aperture liner is permitted for use with square beads providing it is constructed from hardwood of minimum density 640kg/m³ and glued in position using a UF, PVA or PU type adhesive.
- The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.
- 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

6.2.3 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:

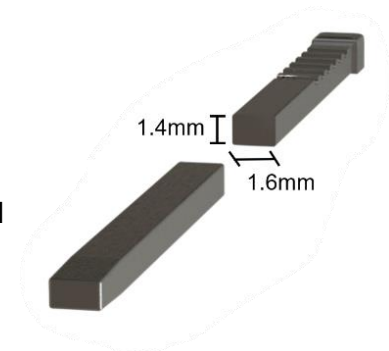
- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.03mm².
- Minimum linear dimension of 1.6mm in any direction, see figure below. The maximum pin diameter or any linear dimension may be no greater than 2.0mm.



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 2.24mm².
- 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

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 acting frames.

Frame Specification			
Frame Type	Material	Minimum Section Size (mm)	Minimum Density (kg/m ³)
1	Softwood / Hardwood	Frame: 70 (d) x 32 (w) (excluding stop) Stop: 20 x 12 (w) (integral or planted on)	510
2	MDF ¹	Frame: 70 (d) x 32 (w) (excluding stop) Stop: 20 x 12 (w) (integral or planted on)	650
3	Streframe [®] E ¹	Frame: 80 (d) x 32 (w) (excluding stop) Stop: 25 x 12 (w) (integral or planted on)	450

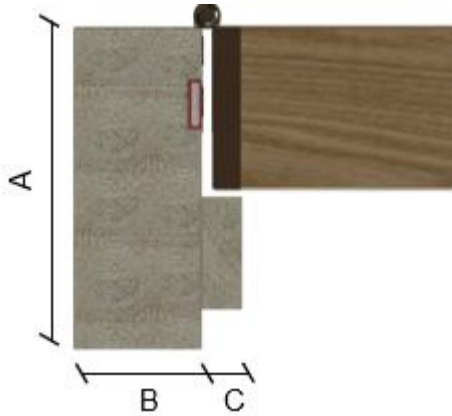
Notes:

1 Transoms and mullions are not permitted using these material types.

Minimum section size is subject to size of hardware and the use of transomed overpanel (see frame details below).

7.1.1 Details For Frame 1

The diagram below shows detail of the standard frame construction. Minimum section is permitted in two sizes subject to hardware size and the use of transom overpanel. Any radius to the lipping must comply with section 5.3.



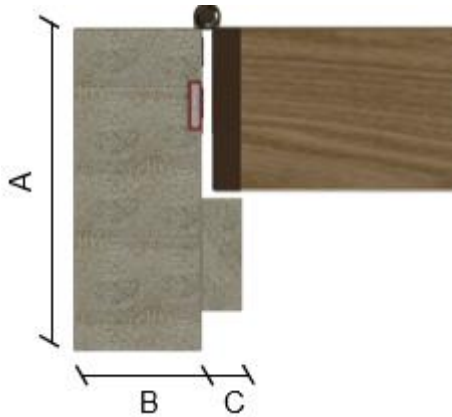
- A: Frame depth = 70mm minimum
- B: Frame width = 32mm minimum
- C: Stop width = 12mm minimum

Minimum section size when using a transomed overpanel:

- A: Frame depth = 70mm minimum
- B: Frame width = 44mm minimum
- C: Stop width = 12mm minimum

7.1.2 Details for Frame 2

The diagram below shows detail of the standard frame construction. Minimum section is permitted in two sizes subject to hardware size and the use of transom overpanel. Any radius to the lipping must comply with section 5.3.

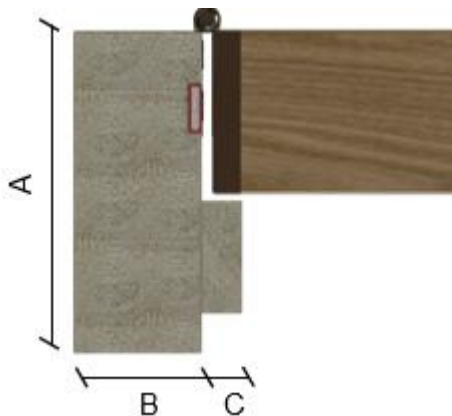


- A: Frame depth = 70mm minimum
- B: Frame width = 32mm minimum
- C: Stop width = 12mm minimum

Transoms are not permitted with this frame type.

7.1.3 Details for Frame 3

The diagram below shows detail of the standard frame construction. Minimum section is permitted in two sizes subject to hardware size and the use of transom overpanel. Any radius to the lipping must comply with section 5.3.



- A: Frame depth = 80mm minimum
- B: Frame width = 32mm minimum
- C: Stop width = 12mm minimum

Transoms are not permitted with this frame type.

7.2 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

Approved door frame jointing options

7.3 Decorative Facings – Frame

Relatively thin 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.

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

Decorative & Protective Facing Specification	
Facing Material	Maximum Permitted Thickness (mm)
Paint ³	0.2
Timber veneers	0.7

Notes:

1. Facing materials not listed above are not permitted.
2. For all options, materials must not conceal intumescent strips.
3. Intumescent paints are not permitted.

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

8 Overpanels & Fanlights

8.1 General

Overpanels, and fanlights can be used in conjunction with the Falcon Duocore doorset design. Overpanels are fitted with sections of door core and must be separated by a transom. Fanlights can either be fitted in combination frames with the doorset or can be installed as a jointed doorframes and fanlight system.

In all cases the overall height for the Falcon Duocore doorset design shall not exceed 2950mm high.

The following sections give the required construction details for the overpanels, and fanlights.

8.2 Transom Overpanels

Transomed overpanels, where the overpanel is separated from the head of the door leaves with a horizontal transom. It is possible to permit transomed overpanel by way of assessment as the overpanel is constructed from a section of the tested door leaf design and is fixed in position on all sides using mechanical fixings and the tested intumescent specification that is used at the perimeter of the door leaves is also included on all four edges of the overpanel. The overpanel section is therefore stable, has been proven as being able to maintain integrity and also includes the same sealing detail as that tested and proven for the swinging door leaves.

Table below specifies the maximum assessed solid overpanel dimensions.

Maximum Overpanel Dimension		
Configuration	Maximum Overpanel Height (mm)	Width (mm)
Single Leaf doorsets	2000	Overall door width
Double Leaf doorsets	1500	Overall door width

8.2.1 Transom Overpanel Details

The overpanel is to be constructed to the same specification as the door leaf.

Transom overpanels can be supplied for:

- Frame 1 only

The door frame and transom must meet all aspects of the door frame construction and specification given in this assessment for the materials listed above but with minimum dimensions for the frame (head & jambs) of no less than 70mm wide x 32mm thick (excluding stops) and 70mm wide x 44mm thick (excluding stops) for the transom, with a minimum density of 510kg/m³.

Transom joints must utilise one of the following methods: mortice and tenon joints or butt joints (see section 7.2). Either method requires joints to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws. Butt joints must be additionally bonded with urea formaldehyde.

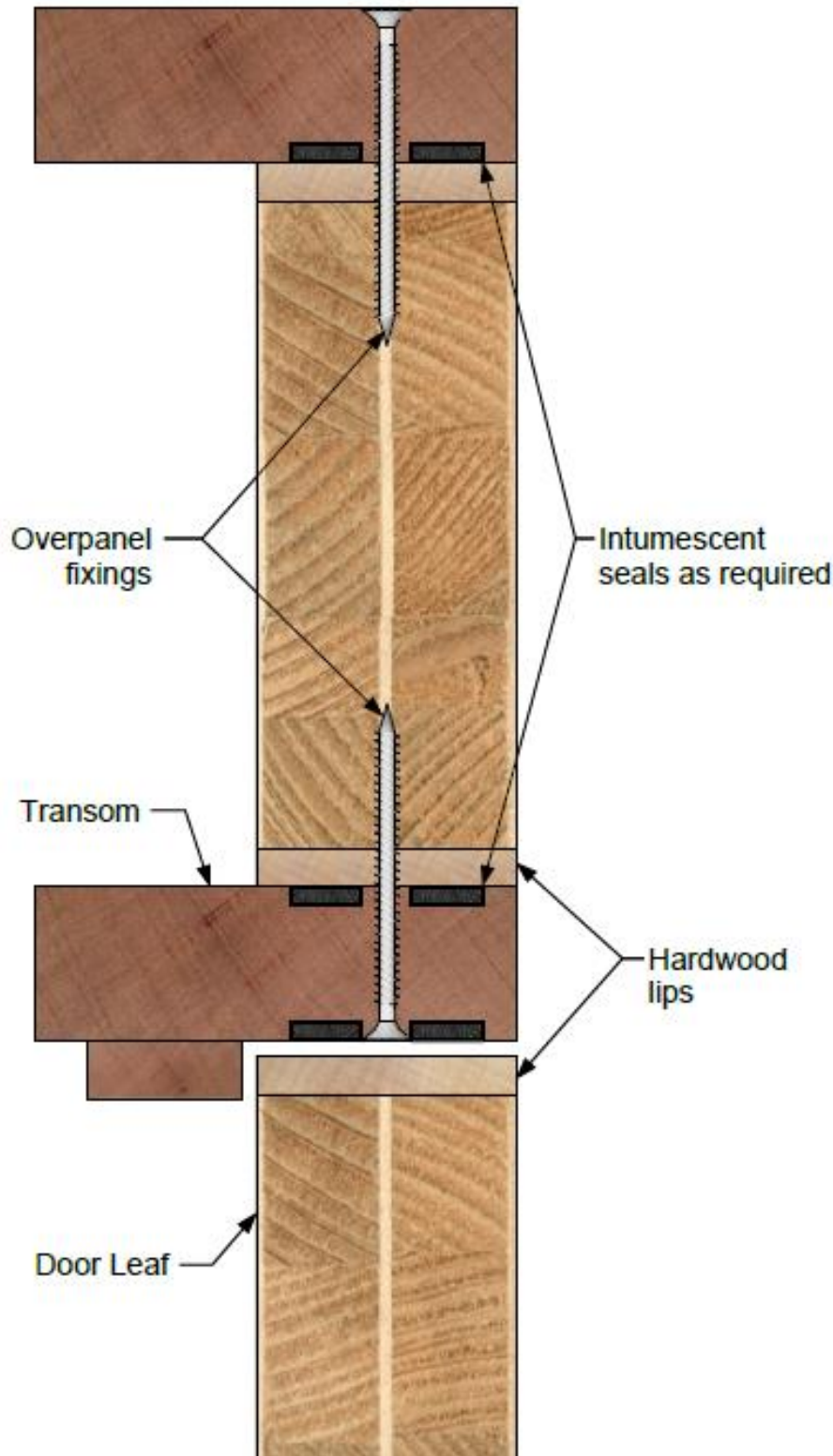
Overpanels must be fixed to the frame by using the following method:

- 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.

Overpanels of the same construction as the door leaves may be used, only when separated by a transom, and must comply with the following:

- Overpanels must be fully contained within the door frame (see diagram below).
- The gap between the edges of overpanel and frame reveal should be a tight fit.
- The intumescent specified for the jambs as given in the relevant envelopes and tables in section 4, must be fitted to all edges of the overpanel (either in the frame reveal or edge of the overpanel). The frame to overpanel junction is permitted to have a maximum 0.5mm gap tolerance.

Figure 8.1 – Transomed overpanel detail – cross section



Intumescent protection to be as specified within section 4.5.4 as appropriate for the doorset being constructed.

Figure 8.2 – Transomed overpanel – front elevation



8.3 Fanlights

8.3.1 General

Fanlights can be used in conjunction with the following door leaf and door frame types:

- Frame 1 only

NOTE: Frames for fanlights cannot be constructed using MDF or Streframe E

There are 2 systems which could be used to create a fanlight using 2 different construction methods.

Combination Frames:

This is where a single framing element has been used which separates the glass and door leaf. This type of construction has been tested by others. See section 8.3.2 for details and limitations associated with this design.

Jointed Door Frames & Fanlights:

This is where the door leaf has its own door frame and each pane of glass is surrounded by a frame, to create separate glazed modules. The individual modules are then fixed together to create a door and fanlight (described as a modular type system). The doorset has to comply with the requirements of this assessment and the individual framed glass panes and timber framing are based on test WF411193. See Section 8.3.3 for details and limitations.

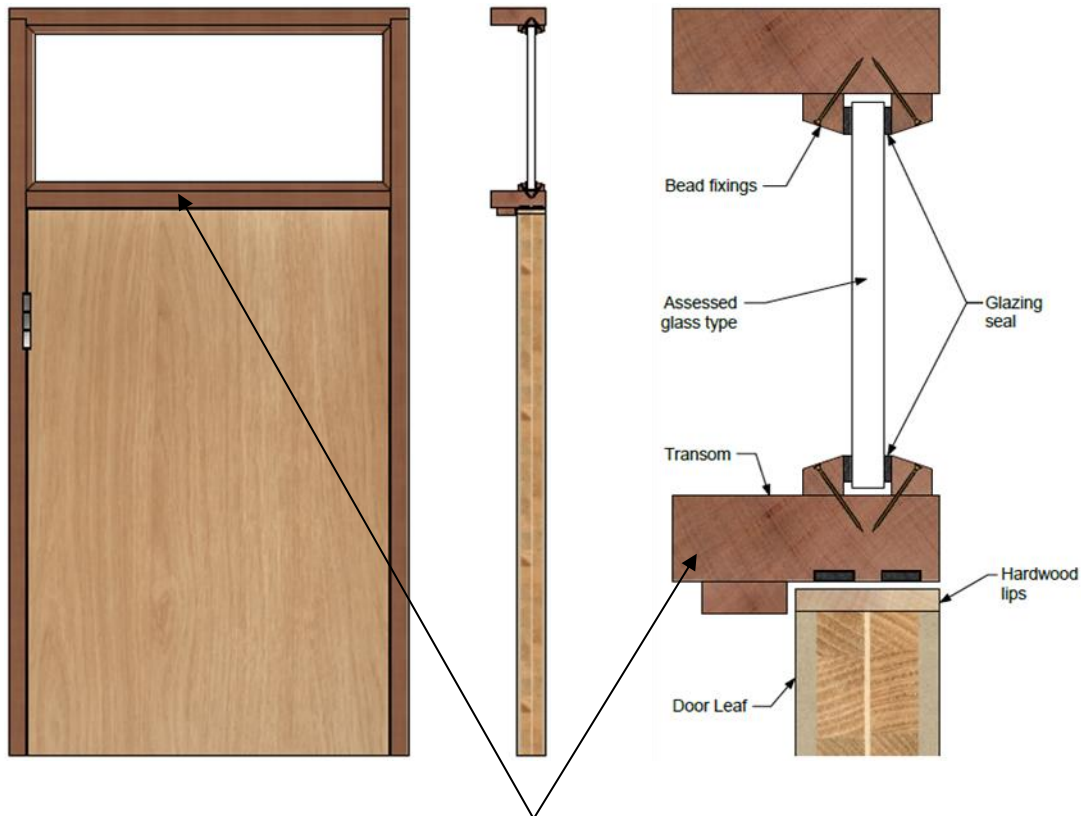
8.3.2 Combination Frames

8.3.2.1 General

When constructing a doorset assembly using combination frames the following limitations apply:

- Frame sections, glass type and dimensions, beads and glazing seals must be as described in the following sections, as appropriate for the glass type listed.
- The centreline of the glass must be aligned with the centreline of the timber frame.
- The maximum height of the overall doorset and fanlight assembly is 2950mm.
- The jamb must run continuously for the full height of the door and fanlight.

This method combines the door frame members with the fanlight frame members as illustrated in the example below:



The framing separating the leaf from the fanlight is common to both the glazing and the frame head for the door leaf

The following sections give the required specification for fanlights when using the combination frame system. Each section gives information on:

- Timber framing requirements
- Permitted glass types
- Maximum panel size in either portrait or landscape orientation
- Glazing details including, *Glazing material, Bead type and size, Fixings*

8.3.2.2 Pyroguard EW30 (7mm Thick) – Pyroguard UK Ltd

Transom/Frame details:

- Minimum 75mm deep x 44mm thick softwood or hardwood (minimum density 510kg/m³). This timber section can be used for both door jambs and transoms above doors. This requirement will increase the minimum depth of the door frame as the frame shall be equal to the transom included within it.

Glazing details:

- 15mm high x 32mm deep hardwood beads (minimum density 640kg/m³). The bead shape may be square or incorporate a 10 - 15° chamfer
- 50mm long size 6 - 8 steel wood screws at maximum of 70mm from corners and 200mm centres inserted at 30° to the plane of the glass
- 10mm x 2mm Interdens located between the glass and the beads
- 5mm high x 7mm wide x 40mm long hardwood or non-combustible setting blocks with 5mm expansion allowance to all edges.

Maximum single pane dimensions:

Element		Height (mm)	Width (mm)
Fanlight	From:	1074	808
	To:	816	2310

- The pane dimensions given above represent the maximum permitted width against maximum permitted height. Panes with smaller dimensions are acceptable

8.3.2.3 Pyroguard EW30 Maxi (11mm Thick) – Pyroguard UK Ltd.

Transom/Frame details:

- Minimum 75mm deep x 44mm thick hardwood (minimum density 640kg/m³). This requirement will increase the minimum depth of the door frame as the frame shall be equal to the transom included within it.

Glazing details:

- 20mm high x 30mm deep hardwood beads (minimum density 640kg/m³). The bead shape may be square or incorporate a 10 - 15° chamfer
- 50mm long size 6 - 8 steel wood screws at maximum of 70mm from corners and 200mm centres inserted at 30° to the plane of the glass
- 10mm x 2mm Interdens located between the glass and the beads
- 5mm high x 11mm wide x 40mm long hardwood or non-combustible setting blocks with 5mm expansion allowance to all edges.

Maximum single pane dimensions:

Element	Height (mm)	Width (mm)
Fanlight	967	2310

- The pane dimensions given above represent the maximum width against maximum height. Panes with smaller dimensions are acceptable.

8.3.2.4 Pyroguard EI30 (15mm thick) – Pyroguard UK Ltd. (CF437)

Transom/Frame details:

- Minimum 80mm deep x 44mm thick hardwood (minimum density 640kg/m³). This requirement will increase the minimum depth of the door frame as the frame shall be equal to the transom included within it.

Glazing details:

- 20mm high x 23mm deep hardwood beads (minimum density 640kg/m³). The bead shape may be square or incorporate a 10 - 15° chamfer;
- 40mm long size 6 - 8 steel wood screws at maximum of 70mm from corners and 200mm centres inserted at 30° to the plane of the glass;
- 7mm x 2mm Egopren glazing tape located between the glass and the beads;
- 20mm x 6mm Ceramic Fibre Tape fitted around edge of glass;
- 3mm high x 15mm wide x 80mm long hardwood or non-combustible setting blocks with 5mm expansion allowance to all edges.

Maximum single pane dimensions:

Element	Height (mm)	Width (mm)
Fanlight	1000	2310

- The pane dimensions given above represent the maximum width against maximum height. Panes with smaller dimensions are acceptable.

8.3.2.5 Pyranova (15mm Thick) – Schott Ltd.(CF297)

Transom/Frame details:

- Minimum 80mm deep x 45mm thick softwood or hardwood (minimum density 560kg/m³).

Glazing details:

- 13mm high x 21mm deep hardwood beads (minimum density 650kg/m³). The bead shape must incorporate a 10 - 20° chamfer
- 32mm long size 6 - 8 steel wood screws or pins at maximum of 50mm from corners and 150mm centres inserted at 30° to the plane of the glass
- 12mm x 3mm Hodgsons Sealants Firestrip 30 located between the glass and the beads
- 3mm high x 15mm wide x 80mm long hardwood or non-combustible setting blocks.

Maximum single pane dimensions:

Element	Height (mm)	Width (mm)
Fanlight	1000	1673

- The pane dimensions given above represent the maximum width against maximum height. Panes with smaller dimensions are acceptable;
- Transoms supporting single panes above 1100mm wide must be centrally supported by at least one vertical mullion.

8.3.2.6 Pyroshield 2 (6mm thick) – Pilkington Ltd.

Transom/Frame details:

- Minimum 80mm deep x 45mm thick softwood or hardwood (minimum density 560kg/m³).

Glazing details:

- 13mm high x 21mm deep hardwood beads (minimum density 650kg/m³). The bead shape must incorporate a 10 - 20° chamfer
- 32mm long size 6 - 8 steel wood screws or pins at maximum of 50mm from corners and 150mm centres inserted at 30° to the plane of the glass
- 12mm x 3mm Hodgsons Sealants Firestrip 30 located between the glass and the beads
- 3mm high x 15mm wide x 80mm long hardwood or non-combustible setting blocks.

Maximum single pane dimensions:

Element	Height (mm)	Width (mm)
Fanlight	1000	1900

- The pane dimensions given above represent the maximum permitted width against maximum permitted height. Panes with smaller dimensions are acceptable.

8.3.2.7 Pyrodur 30-104 (7mm thick) – Pilkington Ltd.

Transom/Frame details:

- Minimum 90mm deep x 45mm thick hardwood (minimum density 640kg/m³). This requirement will increase the minimum depth of the door frame as the frame shall be equal to the transom included within it.

Glazing details:

- 20mm high x 20mm deep hardwood beads (minimum density 640kg/m³) with a 15° chamfer;
- 60mm long size 6 - 8 steel wood screws or 38mm pins at maximum of 50mm from corners and 150mm centres inserted at 30° to the glass;
- 20mm x 2mm Interdens located between the glass and the beads;
- 3mm high x 6mm wide x 40mm long hardwood or non-combustible setting blocks fitted at 300mm centres along bottom edge of glass with 3mm expansion allowance to all edges.

Maximum single pane dimensions:

Element	Height (mm)	Width (mm)
Fanlight	1000	1726

- The pane dimensions given above represent the maximum permitted width against maximum permitted height. Panes with smaller dimensions are acceptable.

8.3.2.8 Pyrodur 30-105 (7mm thick) – Pilkington Ltd.

Transom/Frame details:

- Minimum 70mm deep x 44mm thick softwood or hardwood (minimum density 510kg/m³). This requirement may increase the minimum depth of the door frame as the frame shall be equal to the transom included within it.

Glazing details:

- 20mm high x 18mm deep softwood or hardwood beads (minimum density 510kg/m³). The bead shape may be square or incorporate a 10 - 15° chamfer;
- 40mm long size 6 - 8 steel wood screws or pins at maximum of 50mm from corners and 150mm centres inserted at 20° to the glass;
- 15x3mm Ceramic Fibre tape located between the glass and the beads;
- 3mm high x 6mm wide x 40mm long hardwood or non-combustible setting blocks fitted at 300mm centres along bottom edge of glass with 3mm expansion allowance to all edges.

Maximum single pane dimensions:

Element	Height (mm)	Width (mm)
Fanlight	978	2365

- The pane dimensions given above represent the maximum permitted width against maximum permitted height. Panes with smaller dimensions are acceptable.

8.3.2.9 Pyrodur 60-10 (10mm Thick) – Pilkington Ltd.

Transom/Frame details:

- Minimum 80mm deep x 44mm thick hardwood (minimum density 640kg/m³). This requirement will increase the minimum depth of the door frame as the frame shall be equal to the transom included within it.

Glazing details:

- 20mm high x 20mm deep hardwood beads (minimum density 640kg/m³) with a 15° chamfer
- 40mm long size 6 - 8 steel wood screws at maximum of 50mm from corners and 150mm centres inserted at 30° to the glass
- 20mm x 2mm Interdens located between the glass and the beads
- 3mm high x 6mm wide x 40mm long hardwood or non-combustible setting blocks fitted at 300mm centres along bottom edge of glass with 3mm expansion allowance to all edges.

Maximum single pane dimensions:

Element	Height (mm)	Width (mm)
Fanlight	810	1670

- The pane dimensions given above represent the maximum permitted width against maximum permitted height. Panes with smaller dimensions are acceptable.

8.3.2.10 Pyrostop 30-10 (15mm thick) – Pilkington Ltd.

Transom/Frame details:

- Minimum 82mm deep x 44mm thick hardwood (minimum density 705kg/m³). This requirement will increase the minimum depth of the door frame as the frame shall be equal to the transom included within it.

Glazing details:

- 20mm high x 30mm deep hardwood beads (minimum density 705kg/m³). Can be square or chamfered up to 15°
- 50mm long size 6 - 8 steel wood screws at maximum of 50mm from corners and 200mm centres inserted at 20° to the glass
- 20mm x 2mm Interdens located between the glass and the beads
- 5mm high x 15mm wide x 40mm long hardwood or non-combustible setting blocks fitted at 300mm centres along bottom edge of glass with 5mm expansion allowance to all edges.

Maximum single pane dimensions:

Element	Height (mm)	Width (mm)
Fanlight	1000	2092

- The pane dimensions given above represent the maximum permitted width against maximum permitted height. Panes with smaller dimensions are acceptable.

8.3.2.11 Pyrobel 16 (16mm Thick) – AGC Glass UK Ltd

Transom/frame details:

- The timber framing must be hardwood with a minimum density of 640kg/m³, and a minimum section of 75mm x 44mm. This requirement will increase the minimum depth of the door frame as the frame shall be equal to the transom included within it.

Glazing details:

- Beading 27mm high and 25mm wide (minimum density 640kg/m³) The bead shape may be square or incorporate a 10 - 15° chamfer
- 50mm screws at 250 centres and 50mm from corner, or 50mm pins at 150 centres and 50mm from corner, inserted at 30° to the plane of the glass.
- 10 x 5 Closed Cell Foam tape and mastic capping
- 3mm high x 15mm wide x 80mm long hardwood or non-combustible setting blocks with 5mm expansion allowance to all edges.

Maximum single pane dimensions:

Element	Height (mm)	Width (mm)
Fanlight	1000	1920

8.3.3 Jointed Door Frames & Fanlights

The approval of fanlights which are joined on to doorsets is based on the on WF411193 for the framing, glazing system and glass type being used to form a module.

The following general principles apply:

1. The maximum height of the overall assembly constructed using modular units is 2950mm.
2. The fanlights can be glazed or consist of a solid panels manufactured from door core and fitted as detailed for overpanels (see section 8.2).

8.3.3.1 Glass, Glazing System & Framing

Based on WF411193 the following details are permitted:

Module Framing:

- Maximum of 2 panes/panels within one framed module.
- Timber – Softwood or hardwood of minimum density 520 kg/m³
- Dimensions – 44mm (w) x 100mm (d) – used around glass/panel perimeter or as a mullion or transom to separate 2 panes/panels. This requirement will increase the minimum depth of the door frame as the door frame shall be equal to the modular framing used.

Glazing:

The glass tested in the modular units was Pyrobelite 7 from AGC Flat Glass. Based on this glass type it is permitted to fit other glass types that have the same or better integrity and insulation performance. The following glass types are therefore approved with jointed door frames and fanlights:

- Pyrobelite 7 – AGC Flat Glass
- Pyrostop 30-10 – Pilkington
- Pyrobel 16 – AGC Flat Glass
- Pyroguard EI30 – Pyroguard
- Pyranova 15- Schott
- Pyrodur 30-104 – Pilkington
- Pyrodur 60-10 – Pilkington

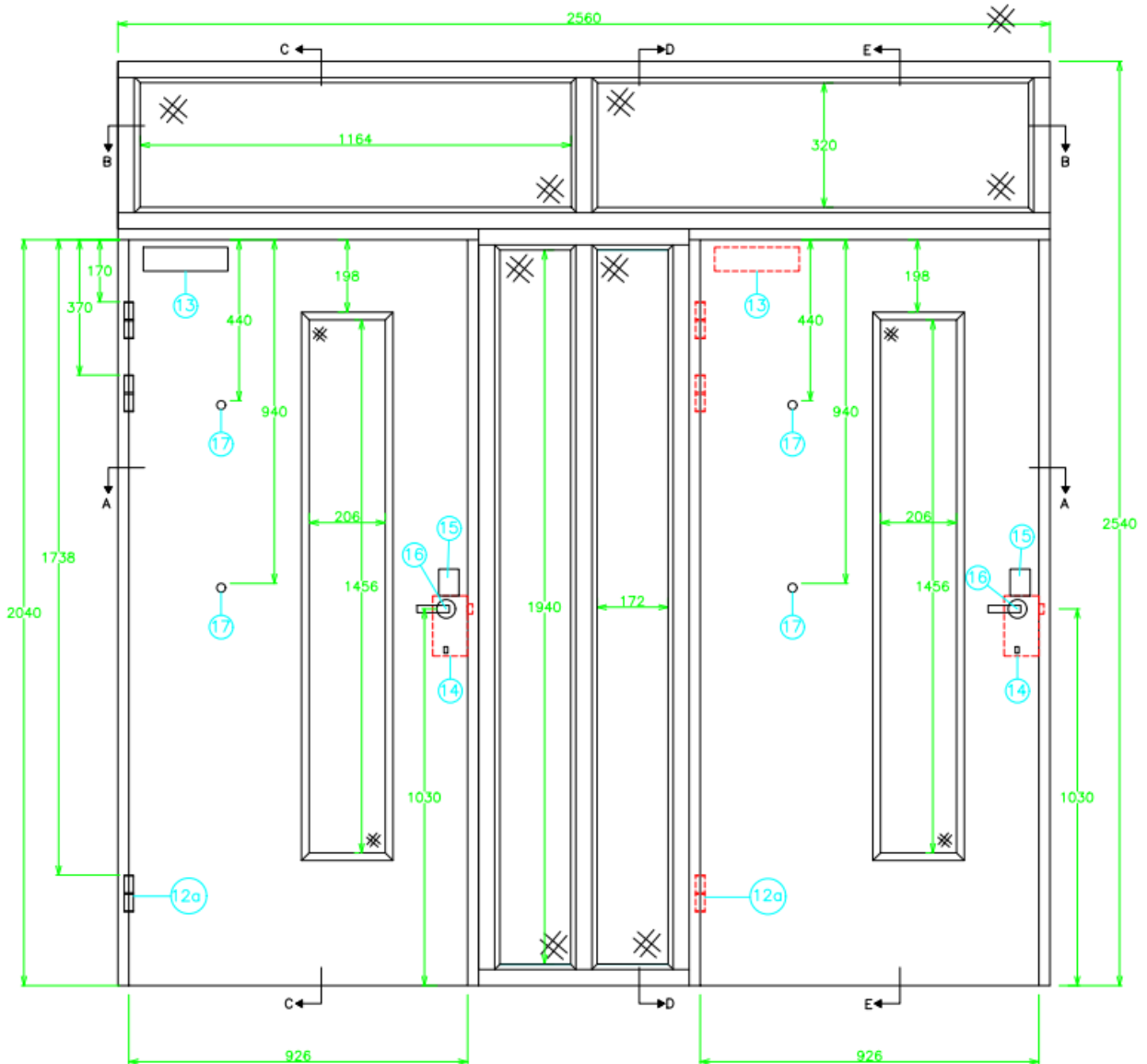
The following maximum dimensions are permitted for each of the modular fanlight unit:

- Maximum area 0.648m²
- Maximum height 666mm(h)
- Maximum width 1800mm(w)

The following glazing system is to be used when glazing the modular units:

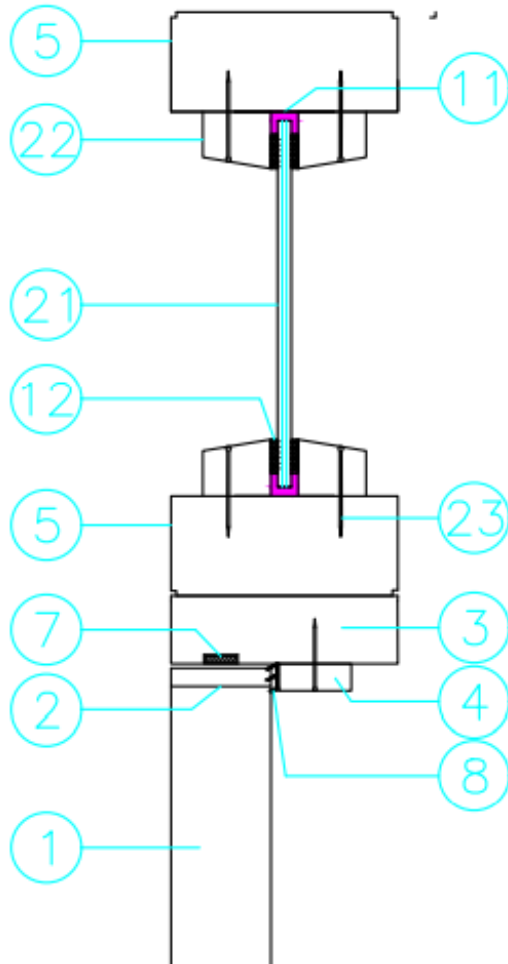
- Beading: Hardwood with minimum density 640kg/m³, measuring 25mm(h) x 30mm(d) including a 17° chamfer
- Bead Fixing: 38mm (l) steel pins 18g or 40mm long No. 6 or 8 steel woodscrews located a maximum 100mm from corners and at 200mm centres.
- Glazing perimeter: 15x3mm FAS Ceramic fibre fitted between glass and bead with FAS filling the remaining glazing void.

An example of a jointed door frame with fanlights can be seen below (taken from test report WF411193):



Note: Sidelights are not covered within this assessment.

The following drawing is taken from test report WF 411193 and shows a modular fanlight above a door leaf. The components are given in the key underneath the drawing:



Key:

- 1 – Duocore door leaf
- 2 – Flat lipping (see section 5.3 for options)
- 3 – Door frame
- 4 – Stop
- 5 – Perimeter framing for modular unit
- 7 – Perimeter intumescent strip
- 11 – FAS fibre filling the glazing pocket
- 12 – 15 x 3 FAS Ceramic fibre
- 21 – Approved glass type
- 22 – Glazing bead for modular unit
- 23 – Fixing for glazing beads

Notes:

1. When using separate modular units with the doorset, each section must be fixed to one another using appropriate steel screw fixings and glued using one of the adhesives approved for the lipping in the adhesive section of this report.
2. Screws must be fixed at 600mm centres and located to a depth of approximately two thirds of the adjacent timber section.
3. The overall dimensions of the door frame and frame around glass/solid panel must not be less than 100mm by 44mm.
4. Joints must be tight with no gaps.
5. It is permitted to include maximum 3mm (w) x 3mm (d) quirks at the junction of each timber section.
6. The drawing above is representative of each type of common frame member; actual construction in terms of intumescent seal location and material, etc. must be as given within this document for the doorset.

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. 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
Decorative Facings (section 5.4 & 7.5)	UF, PRF, PF, PU, PVA or CR
Timber Mouldings (section 5.5)	UF, PRF, PF, PU or PVA
Lippings (section 5.3)	UF, PRF, PF, PU ¹ or PVA
Aperture Linings (section 6)	UF, PRF, PF, PU or PVA

Notes

1. Includes Hot Melt Polyurethane
2. The acronyms for the adhesive types are provided along with other commonly used names below:-

UF = Urea Formaldehyde (Plastic Resin Glue)

PRF = Phenol Resorcinol Formaldehyde (Resorcinol Formaldehyde)

PF = Phenol Formaldehyde (Phenolic Resin)

PU = Polyurethane (PUR)

PVA = Polyvinyl Acetate (PVAc, Polyethenyl Ethanoate)

CR = Polychloroprene Rubber (Contact Adhesive, Neoprene)

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
- Door co-ordinators: Test Standard EN 1158
- Emergency exit hardware: Test Standard EN 179
- Panic exit hardware: Test Standard EN 1125.

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

Hardware protection is usually in the form of an intumescent sheet material, often with a self-adhesive backing, applied to parts of a hardware component or lining the mortice to which the component is to be installed.

The following reference table provides a list of manufacturers and intumescent materials. Reference must be made to the following hardware sections and where the thickness of the intumescent required is greater than the material thickness listed in the reference table below this material must not be used unless used in multiple layers to make up the required thickness. For example, 0,8mm thick material would not be acceptable where 1mm or greater intumescent is specified in the appropriate hardware section.

Manufacturer	Thickness	Product/Reference	Material Type
Astroflame	0.8mm	Flexiseal	Graphite
Dixon International Group Ltd	1mm	Therm-A-Strip	Monoammonium Phosphate
	2mm	Therm-A-Strip	Monoammonium Phosphate
	1mm	Therm-A-Flex	Graphite
	2mm	Therm-A-Flex	Graphite
	1mm	Sealmaster G30	Monoammonium Phosphate
	2mm	Sealmaster G30	Monoammonium Phosphate
Dufaylite Developments Ltd	1mm	Interdens	Monoammonium Phosphate
	2mm	Interdens	Monoammonium Phosphate
Fire & Acoustic Seals Ltd	0.8mm	Spartan	Graphite
	1mm	Spartan	Monoammonium Phosphate
	2mm	Spartan	Monoammonium Phosphate
Lorient Polyproducts Ltd	1mm	MAP Paper	Monoammonium Phosphate
	2mm	MAP Paper	Monoammonium Phosphate
Mann McGowan Ltd	1mm	Pyrostrip Interdens	Monoammonium Phosphate
	2mm	Pyrostrip Interdens	Monoammonium Phosphate
	1mm	Pyrostrip Heat Seal	Graphite
	2mm	Pyrostrip 500F	Graphite

Continued from previous page			
Manufacturer	Thickness	Product/Reference	Material Type
Norsound Ltd	0.5mm	NOR905	Graphite
	1mm	NOR910	Graphite
	2mm	NOR920	Graphite
Pyroplex Ltd	0.5mm	PMFS1 Mineral Fibre Sheet	Graphite
	1mm	PMFS2 Mineral Fibre Sheet	Graphite
Sealed Tight Solutions Ltd	1mm	STS Graphite	Graphite
	2mm	STS Graphite	Graphite
Vanquish Hardware Protection Ltd	0.8mm	FlexiFire	Graphite
	1mm	FlexiFire	Graphite
	2mm	FlexiFire	Graphite
	1mm	Vanquish Interdens	Monoammonium Phosphate
	2mm	Vanquish Interdens	Monoammonium Phosphate

The following sections provide the requirements for hardware protection across various components that can form part of a doorset using the Falcon Duocore system. Hardware protection is denoted as either “required” or “enhanced permitted”.

Where hardware protection is “required” in the individual component tables that follow, the **minimum** required specification is detailed.

Where hardware protection is “enhanced permitted” in the individual component tables that follow, it has been proven through testing (and therefore accepted) that the application of additional/thicker intumescent materials for the protection of hardware will not be detrimental to expected performance. Where this is the case, only the hardware protection types in the above table which are of the same type to those permitted for the particular hardware item, being of equal or increased thickness to the “required” protection are considered. If the hardware item does not require intumescent protection but “enhanced permitted” is denoted as acceptable, any intumescent protection from the above table may be used.

It is not permitted to increase the intumescent gasket thickness beyond 2mm, unless specifically required for a certain item of hardware.

Any hardware protection types **not** listed are not permitted by this Field of Application. For certain items of hardware, there may be specific guidance regarding the required intumescent protection, which will be detailed in the relevant section for that item of hardware (e.g. ensuring there is a certain amount of perimeter intumescent that runs past a piece of hardware in addition to any gasket protection or where there are specific requirements for certain types of hardware).

10.2.1 Single Point Locks

The hardware protection permissible for this doorset design is as follows:

Leaf Type	Frame Type	Configuration	Lock Forend Dims	Location	Required	Product & Manufacturer
1 & 2	All	Single & Double Leaf doorsets	Up to 100mm long x 24mm wide	N/a	No	N/a
1 & 2	All	Single & Double Leaf doorsets	Up to 235mm long x 24mm wide	Lining all sides of the mortice for the lockset and/or fitted under the forend and keep	Yes	All 1mm thick or above

10.2.2 Butt & Lift Off Hinges

The hardware protection permissible for this doorset design are as follows:

Leaf Type	Frame Type	Configuration	Location	Required	Enhanced Permitted	Type
1 & 2	All	All Single Action	Under all hinge blades of door leaf heights 2400mm or under	No	Yes	All
1 & 2	All	All Single Action	Under all hinge blades of door leaf heights 2401mm or over	Yes	Yes	All 1mm thick or above

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"> Latch Handle Hinges Self-closing device (closer)
ULSASD	<ul style="list-style-type: none"> Hinges Self-closing device (closer)
LSADD	<ul style="list-style-type: none"> Latch Handle Hinges Self-closing device (closer) Surface Mounted Bolt
ULSADD	<ul style="list-style-type: none"> Hinges Self-closing device (closer) Surface Mounted Bolt

10.4 Latches & Locks

Unless explicitly detailed within the sections below only 1No. lock or latch shall be applied within any individual doorset. When fitted the lock or latch body shall be installed within the vertical edge of the door leaf in all cases, at a height as detailed within the relevant section below. Refer to specific notes contained within each section for further considerations on lock or latch type.

10.4.1 Single Point Engagement

The table below details the tested latches and locks that are approved.

Element	Manufacturer & Product Reference
Locks & latches	<ol style="list-style-type: none"> EuroSpec Easi-T tubular mortice latch Arrone 3 lever mortice latch EuroSpec Tubular mortice latch Zoo Hardware ZDL7260RSS DIN Euro Sashlock

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

Element	Specification
Maximum forend and strike plate dimensions	235mm high by 25mm wide by 4mm thick
Maximum body dimensions	165mm high x 100mm wide x 18mm thick
Intumescent protection	see section 10.2.1
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel, stainless steel or brass with a melting point $\geq 800^{\circ}$ C

Notes:

- In all instances the location of the handle must be between 750 – 1200mm from the threshold.

10.4.2 Cylinders

The table below details the tested cylinders that are approved.

Element	Manufacturer & Product Reference
Cylinder	<ul style="list-style-type: none"> • Veir V5EP70CTSCE

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

- Where required for use with 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 may be of euro profile or oval.
- 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 not protected with an intumescent material, the maximum clearance between leaf and cylinder is 1mm to each edge.
 - 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.

10.5 Handles & Escutcheons

The table below details the tested handles that are approved.

Element	Manufacturer & Product Reference
Handles	<ul style="list-style-type: none"> • Zoo Hardware ZCS2040SS lever on Ø52 x 8mm rose • Aluminium lever type handle (103x40mm Footprint) • Smith and Locke lever type handle Ref: 2812H • Easyclick Apollo Lever on rose
Escutcheons	<ul style="list-style-type: none"> • Zoo Hardware ZCS200001SS Ø52 x 8mm.

Alternative handles are permitted providing they meet the specification given below:

- Steel, stainless steel, brass, aluminium or bronze are permitted
- Surface fixings or through fixings are permitted. If through fixed there must be no more than 0.5mm clearance between the hole and the fixing.
- The hole through the leaf to facilitate the spindle must be no greater than 20mm diameter.

The design may be either lever or knob on rose or lever or knob on back plate up to the following maximum sizes:

- Lever or knob on rose with a rose diameter up to 54mm
- Lever or knob on back plate with a back plate size up to 103mm high x 40mm wide
- Lever handle length 250mm

The handle must be compatible with the lock/latch, such that the closing action of the doorset is not impeded.

Alternative escutcheons are permitted providing they meet the specification given below:

- Steel, stainless steel, brass, aluminium or bronze are permitted
- Surface fixings or through fixings are permitted. If through fixed there must be no more than 0.5mm clearance between the hole and the fixing.
- The escutcheon may be up to Ø52mm overall and up to 8mm thick.

10.6 Butt & Lift Off Hinges

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

Element	Manufacturer & Product Reference
Hinges	<ul style="list-style-type: none"> Royde & Tucker H101 Smith & Locke Ref. 2900G Cooke Brothers Ref. 7735CB Zoo Hardware – ZHSS243S

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

Element	Specification
Blade height:	90 - 120mm
Blade width (excluding knuckle):	30 - 35mm
Blade thickness	2.5 - 4mm
Fixings:	Minimum of 4 No. 30mm long No. 8 or No.10 steel wood screws per blade
Materials:	Steel or stainless steel

In all instances, the hinges must have the following specification.

Element	Specification		
Hinge positions:	Top	100 –180mm from the head to top of hinge	
	If 3 hinges are required:	2 nd	Minimum 200mm from top hinge or centrally fitted between top and bottom hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
		Top	100-180mm from the head to top of hinge
	If 4 hinges are required:	2 nd & 3 rd	Equispaced between top and bottom or 2 nd hinge 200mm from top hinge and 3 rd hinge equally spaced between 2 nd and bottom hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
Intumescent protection:	See section 10.2.2		

Note:

Leaves less than 2400mm (h) must be hung on a minimum of 3 hinges. Leaves greater or equal 2400mm (h) must be hung on 4 hinges.

Alternatively, Certifire approved hinges approved for 30 minutes in an ITT door assembly (i.e. a door assembly containing intumescent, a timber frame and a timber leaf) is acceptable providing all the requirements for intumescent and frame are complied with.

10.7 Doorset Self Closing

Doorset automatic self-closing can be provided by:

- Overhead face fixed closers

Alternative automatic doorset self-closing devices such as transom mounted, and offset pivots used with floor springs and concealed closers are not considered acceptable for use with the Falcon Duocore 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	<ul style="list-style-type: none">• Rutland TS.3204• Rutland TS.9205• Arrone AR1500

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 Surface mounted face fixed barrel bolts

Steel, stainless steel, aluminium or bronze surface mounted barrel bolts (of up 300mm long) may be surface fixed at the top and bottom of one leaf, at a minimum of 50mm from the meeting edge.

These items are suitable within the following scope:

- Frame: 1 & 2
- Configuration: All
- Intumescent protection: none required

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 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:

- 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.
- In all cases plates meeting the above specification shall not be applied under glazing beads or door stops.

10.8.3 Security Viewers

Up to 2no. viewers are permitted within a single door leaf, viewers are to be positioned no closer than 100mm to door edges, glazed apertures or any other hardware component.

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 and / or a 0.5 – 1.0mm thick graphite based intumescent wrap.

10.8.4 Door Selectors

Configurations: All double leaf door configurations

These may be freely applied, provided that they are not invasive in the leaf edges or door frames and they do not interfere with the self-closing action of the door leaf. Products that are invasive will require fire resistance test/assessment evidence to support their use.

10.8.5 Environmental Seals

Acoustic, weather and dust seals (for example LAS1212, LAS1511, LAS7025, LAS7060 or 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.

10.8.6 Knockers, Numerals & Signage

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 specifications:

Knockers:

- Steel, stainless steel, aluminium or bronze knockers, may be surface fixed or bolted through the door leaf, providing they are fitted no closer than 75mm from the leaf edge, other elements of building hardware or to any glazing and are no greater than 200mm high x 120mm wide. If through fixed, there must be no more than 1mm clearance between the hole and stud. It is only permitted to fit 1No. knocker to any one doorset.

Numerals & Signage:

- Steel, stainless steel, aluminium or bronze numerals or signage may be surface fixed to the door leaf, providing they are fitted no closer than 35mm from the leaf edge, other elements of building hardware or to any glazing. The dimension of each numeral or sign must be no greater than 200mm high x 100mm wide x 4mm thick. Up to 5No. numerals or signs may be applied to a doorset, numerals and signs may be applied adjacent to each other providing the 35mm from other elements as detailed above is maintained.

10.8.7 Panic Hardware

These items are suitable for all frame types and doorsets configurations.

Panic hardware may be fitted, providing the installation does not require the removal of any timber from the leaf, stop or frame reveal and it does not interfere with the self-closing action of the door leaf.

The fitting of panic hardware is not considered to change the latching arrangement of the doorset and therefore the permitted leaf size shall be established using unlatched doorset configurations as detailed within section 4.5.

10.8.8 Fire Door Identification Plates

Plastic or metal fire door identification plates may be glued or screwed to the face of the door leaves providing they are fitted no closer than 35mm from the leaf edge, other elements of building hardware or to any glazing. The dimension of any applied plate must be no greater than 100mm high x 100mm wide x 3mm thick.

As examples, these may be required to identify the following:

- 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).

When applied to a door leaf the plate shall be surface mounted to the face without removing material from the leaf.

10.8.9 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.

11 Installation


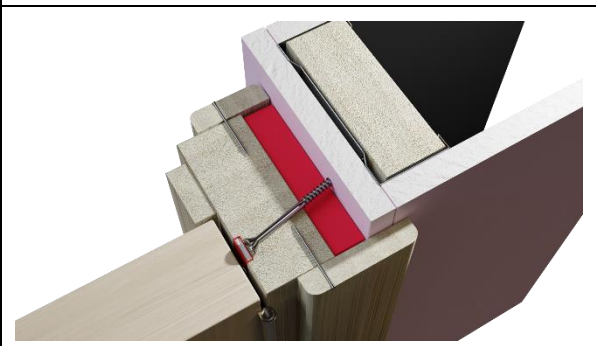

11.1 General

This section considers the installation of doorsets. This section considers:

- the door frame and architrave installation position relative to the wall
- the fire stopping between the frame and the wall
- 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.

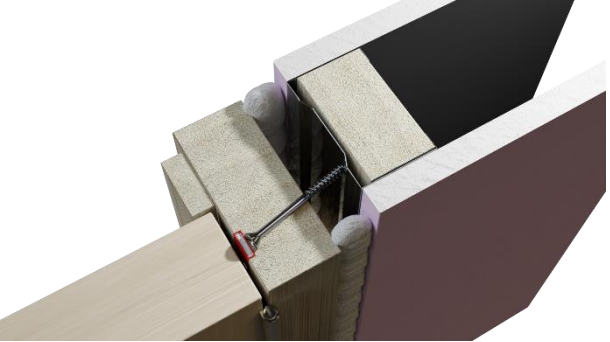
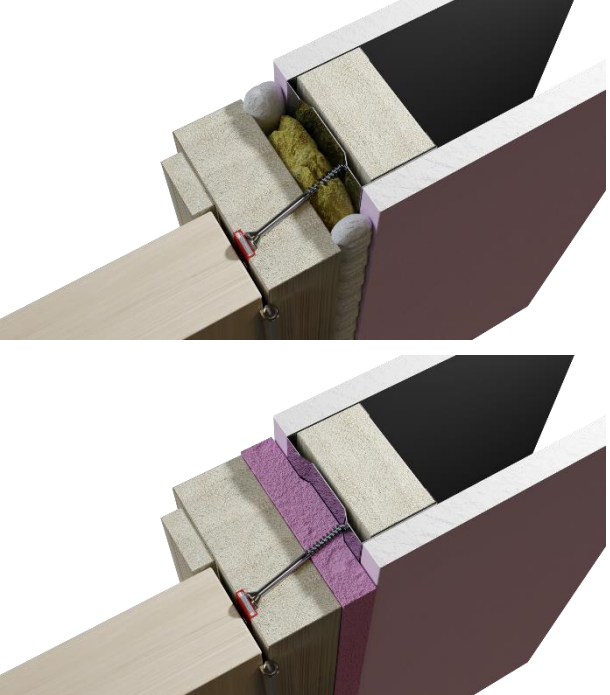
Permitted Installations	
	<p>Instances where the door frame and the wall of the same depth such that architraves are fitted flush to both faces. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see door frame section.</p> <p>Architraves 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>In this scenario timber architraves of minimum 18mm thick may be fitted to both faces, fitted with a minimum 15mm overlap to the door gap, other than when the architrave abuts the wall.</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>

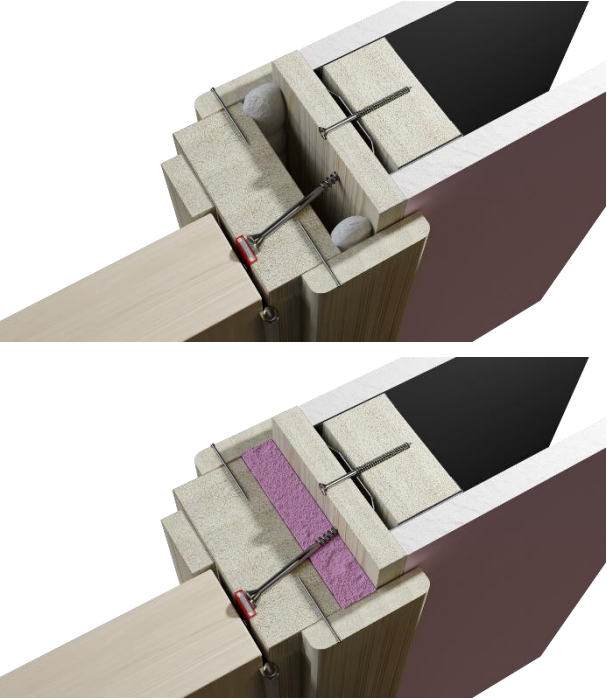
Note:

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 or UPVC architraves up to a maximum 6mm thick may 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 may be fitted to both faces, fitted with a minimum 15mm overlap to the door gap.	

Gap (mm)	Requirement	3D model depiction
Over 20	<p>This would be considered a poor preparation of the structural opening. 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 door frame and wall.</p>	

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 side panels, 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.

11.6 Post Production (Onsite) Leaf Size Adjustment

The Falcon Duocore 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 This is the maximum tolerance for fire resistance only.	8mm between bottom of leaf and top of floor covering.

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)

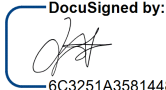
13 Conclusion

If Falcon Duocore 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: 
6C3251A35814487...

Name: Josh Clare

Position: Technical Manager

Date: 11-Dec-2023

For and on behalf of: Falcon Timber Limited

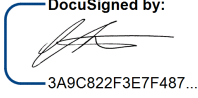
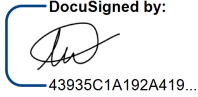
15 Limitations

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.

Position:	Assessor	Reviewer
Signature:	 3A9C822F3E7F487...	 43935C1A192A419...
Name:	C Newton*	N Whitelock*
Title:	Product Assessor	Technical Manager, Doors & Smoke Leakage

* For and on behalf of Warringtonfire

Appendix A: Revisions

Rev.	WF Ref.	Date	Description
A	WF375236	19.12.16	Addition of test WF369451 to permit assessment of core Type 2 (Note: in revision B the referencing has been amended to Type 1a & Type 1b)
B	WF652245	31.08.22	<p>Revised and revalidated version of report. Report rebranded in the Warringtonfire name and styling and updated following general requirements of EN 15725: 2010 and PFPF guidance to undertaking technical assessments.</p> <p>Alternative glazing scopes expanded based on Certifire scopes.</p> <p>Lipping thicknesses reduced to correspond with the dimensions tested.</p> <p>Test WF414781 added as supporting evidence for larger lock sizes and Strelip.</p> <p>Test WF414882 added supporting the use of Fire & Acoustic Mastic details for frame to partition gaps.</p> <p>Test WF386959 added supporting the use of Sealed Tight Solutions details for frame to partition gaps.</p> <p>Removal of: Door selectors, letterplates, threshold seals & Air Transfer Grilles</p> <p>Smoke control section removed</p>
C	WF534941	07/12/2023	<p>Revised and revalidated version of report. Format of report amended to current styling.</p> <p>Test WF523027 added as direct supporting evidence for larger lock sizes, Streframe and Strelip.</p> <p>Removal of:</p> <ul style="list-style-type: none"> • Double acting configurations • Pivots • Flushbolts • WF386959 & WF414882 – details covered in firestopping section <p>Glass and glazing section amended.</p>