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Title:

Field of Application for :

Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 Doorsets

30 Minutes Fire Resistance Assessment

Valid From: 5th March 2019

Valid Until: 5th March 2024

WF Report No:

WF407090 Revision A

Job Number

422364

Prepared for:

Falcon Panel Products Ltd

Clock House

Station Approach

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Contents

1 Foreword

This assessment report has been commissioned by Falcon Panel Products Ltd, and relates to the Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 Doorsets, which are required to provide 30 minute fire resisting performance.

This assessment 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, as appropriate.

This assessment uses established empirical methods of extrapolation and experience of fire testing similar door assemblies, in order to extend the scope of application by determining the limits for the design based on the tested constructions and performances obtained. The assessment is an evaluation of the potential fire resistance performance, if the elements were to be tested in accordance with BS 476: Part 22: 1987, and is only valid if presented in its entirety. This assessment cannot therefore be considered for a CE marking application nor can the conclusion be used to establish a formal classification against EN13501-2.

This assessment has been written using appropriate test evidence generated at a UKAS accredited laboratory 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 defined scope presented in this assessment report relates to the behaviour of the proposed door designs under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the door assemblies in use.

This assessment has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the PFPF guidelines to undertaking assessments in lieu of fire tests. 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 in lieu of fire tests for building control and other purposes.

The PFPF guidelines are produced by the UK Fire Test Study Group (FTSG) an association of the major fire testing laboratories in the UK and are published by the PFPF, the representative body for the passive fire protection industry in the UK.

2 Proposal

It is proposed to consider the fire resistance performance of the doorset designs described in the technical specification in section 4 of this assessment report, for 30 minutes fire resistance, if the designs were to be tested to the requirements of BS 476: Part 22: 1987, *Fire tests on building materials and structures – Part 22: Method for determination of the fire resistance of non-load bearing elements of construction*.

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

3 Test Evidence

The following documentation has been submitted to support the proposed door assemblies.

3.1 Test WF386959

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

Test Date	18th August 2017
Identification of test body:	Exova Warringtonfire, Chiltern House, Stocking Lane, Hughenden Valley, High Wycombe, Buckinghamshire, United Kingdom, HP14 4ND. UKAS notified body: 1762
Test Sponsor:	Falcon Panel Products
Summary of test construction (mm)	Timber based Strebord® 44 - single leaf, single acting configuration. Leaf Size (mm): 2438 (h) x 950 (w) x 44 (t)
Test Standard:	BS476: Part 22:1987
Test Results	Integrity: 32 minutes Insulation: 32 minutes
	Test terminated with no integrity failure recorded, specimen was mounted in a softwood door frame installed with STS STS154FO leaf edge seals and ST99 foam as fire-stopping material; specimen included an 11mm diameter hole drilled across the leaf width to simulate the wireways required for electric strikes; hardware tested included a 3 pt latch, ITS11204 concealed closer, STS eye viewer and Assa EA280 cable loop mounted in the hanging edge of the leaf.

3.2 Test WF391032

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

Test Date	26th October 2017	
Identification of test body:	Exova Warringtonfire, Chiltern House, Stocking Lane, Hughenden Valley, High Wycombe, Buckinghamshire, United Kingdom, HP14 4ND. UKAS notified body: 1762	
Test Sponsor:	Sealed Tight Solutions, Units 1B & 1C, Princes Court, Low Prudhoe Industrial Estate, Prudhoe, Northumberland, NE42 6PL	
Summary of test constructions (mm)	Specimen A: Timber based Stredor® 54 - single leaf, single acting configuration. Leaf Size (mm): 2395 (h) x 1180 (w) x 54 (t)	
	Specimen B: Timber based Strebord® 54 - single leaf, single acting configuration. Leaf Size (mm): 2395 (h) x 1180 (w) x 54 (t)	
Test Standard:	BS476: Part 22:1987	
Test Results	Specimen A: Integrity: 43 minutes Insulation: 19 minutes	Specimen B: Integrity: 37 minutes Insulation: 19 minutes
	Test terminated with no integrity failure recorded, specimens were mounted in Sapele hardwood door frames installed with STS STS154 leaf edge seals, ST99 foam as fire-stopping material, St100 hardware gaskets and ST1009 acoustic/smoke seals; specimen B included an 11mm diameter hole drilled across the leaf width complete with cabling required for electric strikes; hardware tested included a 3 pt latch, ITS11205 concealed closer, STS eye viewer, letterplate – STS4001with intumescent protection and STH004 aluminium threshold and a stainless steel cable loop mounted in the hanging edge of the leaf.	

3.3 Test WF391843

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

Test Date	11th November 2017	
Identification of test body:	Exova Warringtonfire, Chiltern House, Stocking Lane, Hughenden Valley, High Wycombe, Buckinghamshire, United Kingdom, HP14 4ND. UKAS notified body: 1762	
Test Sponsor:	Falcon Panel Products	
Summary of test constructions (mm)	Specimen A: Timber based Strebord® 44 - single leaf, single acting configuration. Leaf Size (mm): 2235 (h) x 1050 (w) x 44 (t)	
	Specimen B: Timber based Stredor® 44 - single leaf, single acting configuration. Leaf Size (mm): 2140 (h) x 916 (w) x 44 (t)	
Test Standard:	BS476: Part 22:1987	
Test Results	Specimen A: Integrity: 51 minutes Insulation: 36 minutes	Specimen B: Integrity: 47 minutes Insulation: 39 minutes
	Specimens A & B constructed identically apart from overall dimensions. Stredor (specimen B) result has been used to establish the 44mm thick leaf size envelope given in appendix C since this result represents the lowest integrity performance achieved by the performance data herein. Both specimens were mounted in a softwood door frame installed with STS STS104FO leaf edge seals and ST88 mastic as fire-stopping material; both doorsets contained glazing incorporating 12mm thick AGC Pyrobelite protected with STS 105-GT-3-DS glazing system; hardware included 3 pt latch, Astra 4000 concealed closer.	

3.4 Test EFR-18-H-003671

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

Test Date	15th November 2018	
Identification of test body:	EFECTIS France, Voie Romaine, F-57280 Maizieres-Les-Metz. Certification body No: 1-1762	
Test Sponsor:	Falcon Panel Products	
Summary of test constructions (mm)	Specimens A & B: Timber based Stredor® 44 - single leaf, single acting configuration. Leaf Size (mm): 2402 (h) x 1047 (w) x 44 (t)	
Test Standard:	EN 1634-1:2014+A1: 2018 and EN1363-1: 2012	
Test Results	Specimen A: Integrity: 36 minutes Insulation: 21 minutes	Specimen B: Integrity: 36 minutes Insulation: 32 minutes
	Specimens A & B were constructed identically apart from the direction of opening which is used to support the assessment in section 6 of this report. Both specimens were mounted in a softwood door frame installed with STS STS104FO leaf edge intumescent seals; both doorsets contained glazing incorporating 12mm thick AGC Pyrobelite 9EG protected with STS 105-3-DS glazing system; hardware included a 3 pt latch and Astra 4000 concealed closer.	

3.5 Test WF402305

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

Test Date	2nd August 2018
Identification of test body:	Exova Warringtonfire, Chiltern House, Stocking Lane, Hughenden Valley, High Wycombe, Buckinghamshire, United Kingdom, HP14 4ND. UKAS notified body: 1762
Test Sponsor:	Aynsley Doors, 640 Armytage Road, Armytage Road Industrial Estate, Brighouse, Yorkshire, HD6 1PT
Summary of test constructions (mm)	Timber based Strebord® 44 - single leaf, single acting configuration. Leaf Size (mm): 2405 (h) x 1046 (w) x 43 (t)
Test Standard:	BS476: Part 22:1987
Test Results	Integrity: 51 minutes In accordance with section 9.6.1 of BS476: Part 22:1987, the specimen was not evaluated for insulation
	The intumescent protection utilised in this specimen has been used to establish that required for all door core types permitted by this assessment on the basis of comparing performance for the various cores under test conditions.

3.6 Test WF416690

The tested specimens comprised of two Latched Single Acting Single Leaf Doorsets. Specimens are referenced as Doorset A and Doorset B, both with glazing.

The test provides evidence for the incorporation of a Letter Plate on Stredor® 44 doorsets.

A summary of the tested specimens is given in the table below.

Test Date :	8th August 2019
Identification of Test Body :	Warringtonfire Testing and Certification. UKAS No. 1762
Test Sponsor :	Falcon Panel Products Ltd
Tested Product :	2No. Latched Single Acting Single Leaf Doorsets – with glazing. Doorset A : Tested opening away from the furnace. Doorset B : Tested opening towards the furnace.
Summary of Test Specimen :	**Doorset A & B** ***Leaf :*** Core – Falcon Panel Products Ltd, Ref. Stredor 44 EV Ply. Size – 2153 (h) x 933 (w) x 44 (t) Lipping – Sapele, 10mm (t), all four edges. ***Frame :*** Material – Sapele Size – 44 (t) x 80 (d), including a 12 (t) x 33 (d) rebated stop. ***Intumescent :*** Frame Reveal – Pyroplex Ltd, 2No.10 x 4 Ref. 8500. ***Smoke Seal :*** Frame Reveal – Norseal Ltd, Ref. NOR710 ***Hardware :*** Hinge – Zoo, Ref. ZHSS243RS, 102 (h) x 31 (w) blade. Closer – HOPPE, Ref. AR1500 Lockset/Latch – ERA, SureFire Classic 2 hook multi-point doorlock. (lock was engaged at all points) Lockcase – Bright Zinc Plated Steel with Cr3 Passivate Forend – Stainless Steel 430, 1634 (h) x 20 (w) Cylinder with Thumbturn – ERA, Ref. Fortress 3

		Lever Handles – ERA, Ref. 1X000 Letter Plate – ERA, Ref. Fab&Fix Nu Mail Door Letterplate. Door Viewer – ERA, Ref. Fab&Fix Spyhole Security Chain – ERA, Ref. PVCu/Timber Door Chain 791-65 Numerals – ERA, Ref. Fab&Fix Door Numerals FFNUM8BC. Door Knocker – ERA, Ref. Ingot Knocker – 4A550 ***Hardware Protection :*** Hinge – 1mm MAP Lockset/Latch – 1mm Graphite (Seal Tight Solutions Ltd) Letter Plate – 40 x 2mm (t) Graphite (Sealed tight Solutions Ltd) Door Viewer – 0.5mm Graphite wrap. ***Glazing – Top & Bottom Pane :*** Type – Fireglass UK, Ref. Pyrobelite 9EG, 11mm (t) Aperture Size (top) – 230 (w) x 990 (h) Aperture Size (bottom) – 230 (w) x 638 (h) Location (top) – 150mm from head of leaf, 150mm from closing edge of leaf. Location (bottom) – 250mm from threshold of leaf, 150mm from closing edge of leaf. Beading – Sapele, 19 (w) x 21 (h) overall. Sealant – 10 (w) x 4 (t), Sealmaster, Ref. Black Glazing Tape (BGT)
Test Standard :		BS EN 1634-1:2014 + A1:2018
Performance	**Doorset A**	Integrity : 34 minutes Insulation : 33 minutes
	Doorset B	Integrity : 50 minutes Insulation : 29

3.7 Test WF414162

The tested specimens comprised of two Latched Single Acting Single Leaf Doorsets. Specimen are referenced as Doorset A and Doorset B, with decorative inserts on both door leaves

The test provides evidence for the incorporation of a Letter Plate on Strebord® 44 doorsets.

A summary of the tested specimens is given in the table below.

Test Date :	14th May 2019
Identification of Test Body :	Warringtonfire Testing and Certification. UKAS No. 1762
Test Sponsor :	Falcon Panel Products Ltd
Tested Product :	2No. Latched Single Acting Single Leaf Doorsets – with decorative inserts. Doorset A : Tested opening towards the furnace. Doorset B : Tested opening away from the furnace.
Summary of Test Specimen :	**Doorset A & B** ***Leaf :*** Core – Falcon Panel Products Ltd, Strebord particleboard Size – 2045 (h) x 925 (w) x 44 (t) Lippings – Ash, 10mm (t), vertical edges only. Decorative Inserts – Ash, 10 x 10, including a 3 x 3 groove. Fitted 50mm down with 200mm centres ***Frame :*** Material – Ash Size – 32 (t) x 143 (d), with 15 (t) x 48 (d) planted stop. ***Intumescent :*** Frame Reveal – 1No. 10 x 4 Pyroplex Rigid Box Seal, Ref. FO8500 Frame Reveal – 1No. 10 x 4 Pyroplex Rigid Box SealTwin Flipper, Ref. 30150 Bottom Leaf Edge – 20 (h) x 12 (w), Norseal Ref. 8105 drop seal Weather Seal – Lorient Polyproducts Ltd, 14mm (w), Ref. LAS 1206 ***Hardware :*** Hinge – 3No. Royde & Tucker Hi-Load 207 bearing butt hinge, 101 x 76. Closer – Arrone AR7383, concealed overhead closer

		Latch – Winkhaus AV3 Autofire multipoint lock with ERA fortress 35/35 with Eurocylinder with Thumbturn (lock was engaged at all points) Forend Size – 1770 x 20 Lever Handles – Serozzetta Plaza. And Smith & lock escutcheon, Ref. 4378H Letter Plate – Royde & Tucker Ref. LP008 Security Viewer – Jedo, Ref. JV942 Numerals – ERA, Fab&Fix Door Numerals Ref. FFNUM8BC. ***Hardware Protection :*** Hinge – 1mm (t) Sealmaster Graphite Closer – 2mm (t) Arrone Intumescent kit Latch – 1mm (t) Interdens Eye Viewer – 1mm (t) Jedo JV942 Kit Graphite Letter Plate – Royde & Tucker LP008 Kit, supplied with Letter Plate.
Test Standard:		BS 476 Part 20 & 22:1987
Performance	**Doorset A**	Integrity : 36 minutes Insulation : 36 minutes
	Doorset B	Integrity : 38 minutes Insulation : 38 minutes

3.8 Test WF414882

The tested specimen comprised of an Unlatched Single Acting Double Leaf Doorset, with glazing.

The test provides evidence for the incorporation of a Letter Plate with a Security Shield on Strebord® 44 doorsets.

A summary of the tested specimen is given in the table below.

Test Date :	11th June 2019
Identification of Test Body :	Warringtonfire Testing and Certification. UKAS No. 1762
Test Sponsor :	Falcon Panel Products Ltd
Tested Product :	Unlatched Single Acting Double Leaf Doorset – with glazing. Doorset tested opening towards the furnace
Summary of Test Specimen :	***Leaf – Both Leaves:*** Core – Falcon Panel Products Ltd, Strebord graduated density particleboard. Size – 2040 (h) x 926 (w) x 44 (t) Lippings – Falcon Panel Products Ltd, Streframe®, 8mm (t), all edges. ***Frame :*** Material – European Redwood Size – 32 (t) x 102 (d), with a 12 (t) x 32 (d) planted MDF stop. ***Intumescent :*** Right Leaf Meeting Edge – Lorient Polyproducts Ltd, 10 x 4, Ref. LP100DS. And 10 x 4, Pyroplex Rigid Box Seal, Ref. 8700 Bottom Leaf Edge – Fire & Acoustic Seals Ltd, 28 x 12, Ref. FAS45 drop seal. Frame Reveal – Pyroplex Ltd, 15 x 4, Pyroplex Rigid Box Seal, Ref. 8700 Fire & Smoke Seal – Fire & Acoustic Seals Ltd, 12 x 5, Ref. FAS35 ***Hardware :*** Hinge – Vier (ZOO hardware), Ref. VLHL243RS & VLHR243RS, 101 x 76 Closer – Rutland, Ref. TS9205, overhead surface mounted closer Latch – Vier (ZOO hardware), key/thumbturn cylinder, Ref. ZL30T/30CAS (lock disengaged) Handle – HOPPE, stainless steel inline lever type handle

	Forend Size – 235 x 22 Case size – 165 x 90 x 15 Letter Plate – Fab&Fix letterplate, Ref. 3C018 & security shield, Ref. 3F005 Flush Bolt – ZOO, Ref. ZAS03RSS ***Hardware Protection :*** Hinge – 1mm (t) Fire & Acoustic Seals Ltd intumescent sheet Latch – 1mm (t) Fire & Acoustic Seals Ltd intumescent sheet Letter Plate – Fire & Acoustic Seals Ltd, 100 x 40 x 1.3, Spartan hardware protection, Ref. FASGP1013 ***Glazing – Both Leaves*** Type – Fireglass UK, Ref. Pyrobelite 7 EW30 – (B)3-34db, 7mm (t) Aperture Size – 186 (w) x 1436 (h) Location – 149mm from closing edge, 148mm from head of the leaf. Beading – MDF, 22 (h) x 21 (d) Glazing Intumescent – Closed cell foam, Fire & Acoustic Seals Ltd intumescent Acoustic Acrylic Sealant.
Test Standard:	BS EN 1634-1:2014 + A1:2018 & BS EN 1363-1:2012
Performance	Integrity : 32 minutes Insulation : 13 minutes

4 Technical Specification

4.1 General

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

4.2 Intended Use

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

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

4.3 General Description of Construction

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

As stated in section 3.3, the results for specimen B in test WF391843 are used as the basis to determine the leaf size envelope for 44mm thick designs.

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

4.3.1 Strebord® 44

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

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

4.3.2 Stredor® 44

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

Element		**Material**	**Dimensions** (mm)	**Minimum Density** (kg/m^3)
Stiles & rails		None fitted	-	-
Core	Inner core	Cross Grain Poplar	2.1 (t)	510[1]
	Outer core	Vertically orientated finger-jointed spruce lamels	18.8 (t) x 28 (w) (nominal individual lamel size)	480[1]
Facings	Inner	Cross grain Poplar	1.4 (t)	510[1]
	Outer	Long grain Beech	0.6 (t)	600[1]
Adhesive	Lippings	PU	-	-
Lippings – all edges		Sapele	6 (t)	640[2]

1 Stated nominal densities

2 From BMTRADA database.

4.3.3 Strebord® 54

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

- A solid sheet of 54mm thick Strebord® 54 three layered particleboard (density held on file by Warringtonfire). Where specified the leaves are lipped with hardwood.

4.3.4 Stredor® 54

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

Element		**Material**	**Dimensions** (mm)	**Minimum Density** (kg/m^3)
Stiles & rails		None fitted	-	-
Core	Inner core	Cross Grain Poplar	4 (t)	510[1]
	Outer core	Vertically orientated finger-jointed spruce lamels	20.5 (t) x 24 (w) (nominal individual lamel size)	480[1]
Facings	Inner	Cross grain Poplar	1.4 (t)	510[1]
	Outer	Long grain Beech	0.6 (t)	600[1]
Adhesive	Lippings	PU	-	-
Lippings – all edges		Sapele	6 (t)	640[2]

1 Stated nominal densities

2 From BMTRADA database.

5 Leaf Sizes

The approval for increased leaf dimensions is based on the tests listed in section 3 and takes into account the margin of over-performance above 30 minutes integrity for the design and the characteristics exhibited during test. Data sheets specifying the maximum approved leaf sizes and graphs showing the permitted gradient between maximum height and width are contained in Appendix C.

Doorsets with reduced dimensions are deemed to be less onerous. Therefore, doors with dimensions that are less than those tested and stated in Appendix C may be manufactured.

6 Door Configurations and Orientation

Based on the test evidence listed in section 3, this assessment covers the following doorset configurations.

Abbreviation	**Description**
LSASD	Latched, single acting, single doorsets

The primary fire resistance tests for the Strebord® 44, Strebord® 54 and Stredor® 54 doorsets was 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 of timber based door leaves hung in timber door frames.

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

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

7 Leaf Size Adjustment

The Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 Doorset door leaf designs may be altered as follows.

Element	Reduction
Leaf	Due to the stability of the designs in fire test conditions and the absence of internal frame work such as stiles and rails, the door leaf can be reduced in height or width for manufacturing purposes, without restriction
Lipping	Lippings may be adjusted by a maximum of 3mm post-manufacture for on-site fitting purposes, providing a minimum thickness of 6mm of lipping is maintained.

8 Glazing

The testing conducted on the Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 designs has demonstrated that the designs are capable of tolerating glazed apertures, whilst providing a margin of over-performance. Glazing is therefore acceptable within the following parameters:

The maximum assessed glazed area for all configurations is 0.60m².

8.1 Assessed Glazing Systems

The glazing system must be the following tested system.

Glazing System		Manufacturer	Max. Area (m^2)
Reference	Dimensions (mm)		
105GT-3-DS	10 x 3	Sealed Tight Solutions Ltd.	0.60

See appendix A for illustrations of glazing system and associated bead profiles.

8.2 Assessed Glass Products

Assessed glass types are as follows.

Glass Type	Manufacturer	Thickness (mm)	Max. Area (m^2)
1 Pyrobelite 12	AGC Flat Glass UK	12	0.29
2 Pyrobelite 9EG[1]	AGC Flat Glass UK	12	0.60
3 Pyrodur 60-20	Pilkington Group UK.	13	0.60
4 Pyroguard EI 30	Pyroguard UK Ltd	15	0.60
5 Pyrostop 30-10	Pilkington Group UK	15	0.60
6 Pyrobel 16	AGC Flat Glass UK	16	0.60

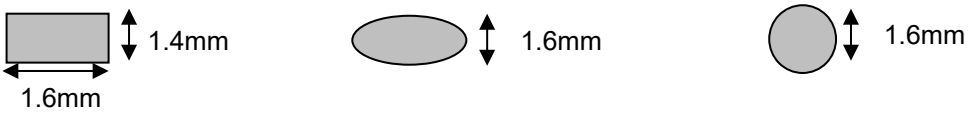
1. An STS glazing liner must be installed lining all sides of glazed apertures where Pyrobelite 9EG is installed, see drawings in appendix A
2. Glass types 3 - 6 are fully insulating for 30 minutes in terms of the criteria set out in BS 476: Part 20: 1987
3. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion clearance, see illustrations in appendix A.

8.3 Glazing Beads & Installations

Glazing beads must be as specified in the following table.

Material	**Profile**	**Min. Density** (kg/m^3)	**Dimensions** (mm)
Hardwood	Splayed	640	22 (h) x 21 (d)[1] with 8 x 7 bolection return and 16^O chamfer

1. For installation in Strebord® 54 and Stredor® 54, bead depth must be increased to 26mm.
2. For glazing system and bead profiles see illustrations in appendix A.
3. A 6mm thick aperture must be installed for installations in Strebord® 44 and Strebord® 54 leaves, only. The liner must be hardwood of minimum density of $640kg/m^3$, adhered in position using PU adhesive as specified in section 14.
4. Glazing beads must be retained in position with 50mm long x4mm diameter steel pins or screws , inserted at 35 - 40° to the vertical, at 150mm maximum centres and no more than 50mm from each corner
5. Alternatively, the following pin specification has been tested and assessed for steel round, oval and rectangular shaped gun fired pins



6. Pins with dimensions less than those stated above are not covered by this assessment
7. Glazed opening must not be less than 150mm from any leaf edge. Multiple apertures are acceptable within the permitted glazed area, with a minimum dimension of 140mm between apertures
8. Aperture shape is not restricted, providing the glazing system and beads can effectively accommodate the required profile
9. False timber beads may be applied to glass types 1 - 5 using one of the following intumescent glazing products.

Glazing System	**Manufacturer**
1. Therm-A-Strip 30	Intumescent Seals Ltd
2. Fireglaze 30	Sealmaster Ltd
3. Firestrip 30	Hodgson Sealants Ltd
4. Envirograf Product 77 - G10/10	Intumescent Systems Ltd
5. Intumescent mastic or silicone tested for glazing applications to BS 476: Part 22: 1987 or BS EN 1634-1	Various

All seals must be a minimum of 10mm wide x 0.5 - 3mm thick. Preformed strip systems 1 - 4 may be self-adhesive and grooved into the rear of the glazing bars.

10. Timber for glazing beads must be straight grained, joinery quality, free from knots, splits and checks

9 Overpanels

Overpanels of the same construction as the door leaves may be used only when separated by a transom. The overpanel must be fully contained within the door frame (see following diagram).

The transom required to separate the leaf heads from the overpanel must be to the same specification as the door frame.

Door frame joints, including the transom, must utilise mortice and tenon joints (including combed type) - see section 10.1

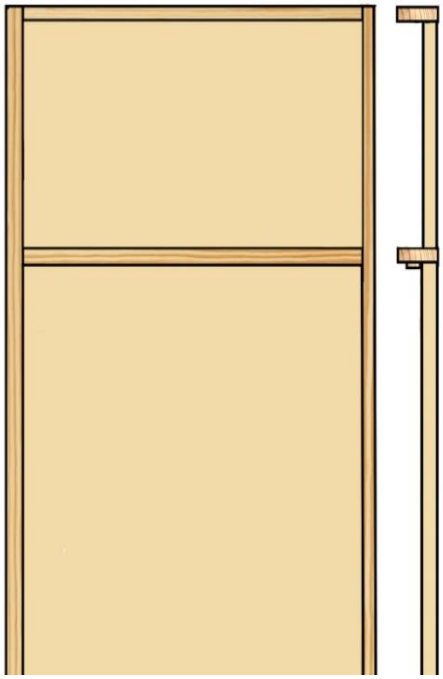
Joints must be tight, with no gaps. Joints require mechanical fixing with the appropriate size ring shank nails or screws must be additionally bonded with the adhesive shown in section 14.

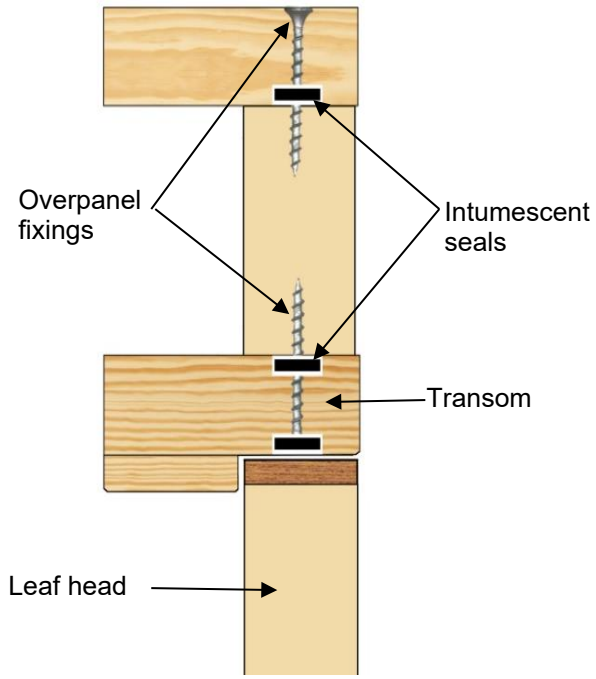
The overpanels must be fixed by screwing through the rear of the frame with steel screws passing at least 30mm into the centre line of the overpanel. Fixings must be no more than 100mm from each corner and a maximum of 250mm centres in between.

The intumescent seals specified for the jambs in Appendix C, must also be fitted to all concealed edges of the overpanel. The seals may be fitted in the overpanel edges or alternatively in the frame reveal. A maximum 2mm gap is permitted between the edge of the overpanel and the frame reveal.

Maximum overpanel heights are as follows:

Configuration	**Max. Overpanel Height** (mm)
Single doorsets	2000





10 Door Frames

Timber based door frames for the door leaf designs referred herein must be constructed to meet the following.

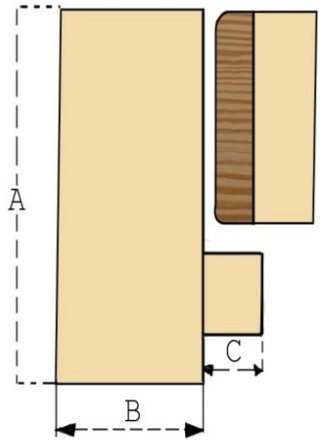
Material	**Section Size*** (mm)	**Min. Density** (kg/m^3)
Softwood or Hardwood	90 x 29 (excluding the stop)	510

All door frame timber must be straight grained, joinery quality, free from knots, splits and checks.

A 15mm deep integral or planted stop is adequate for single acting frames (see diagram below).

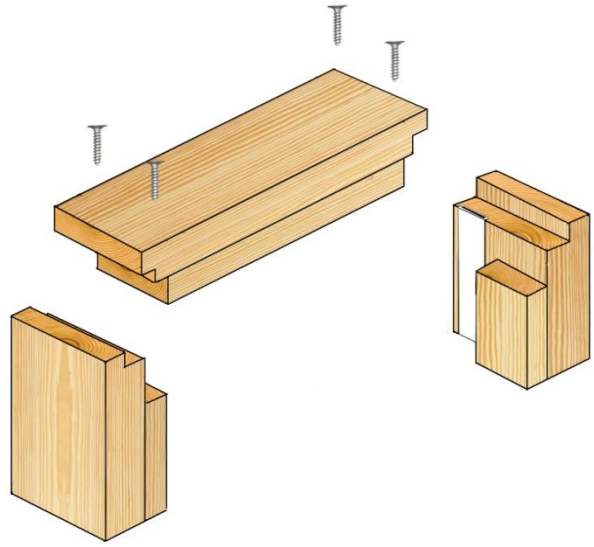
Frame joints may be mortice and tenoned (combed type is acceptable), mitred, half lapped or butted and with no gaps (see section 10.1). Joints require mechanical fixing with the appropriate size ring shank nails or screws must be additionally bonded with the adhesive shown in section 14.

The following diagram depicts the assessed frame profiles and dimensions:

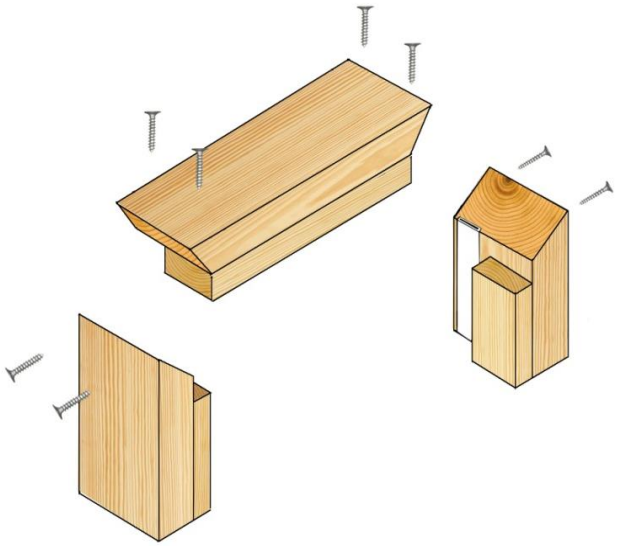


A = Min. 90mm
B = Min. 29mm (see table above)
C = Min. 15mm

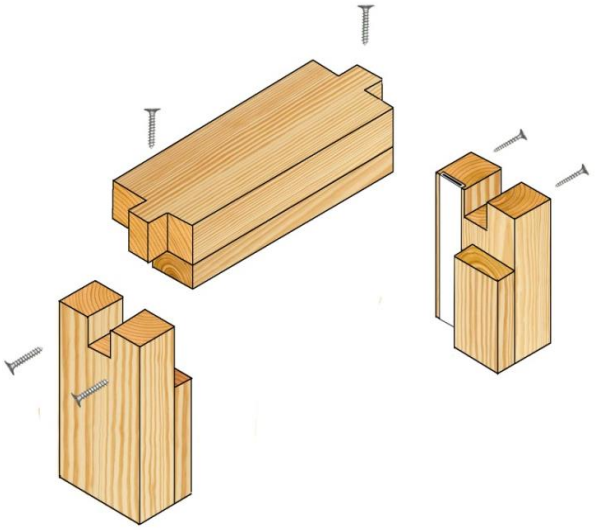
10.1 Door Frame Joints



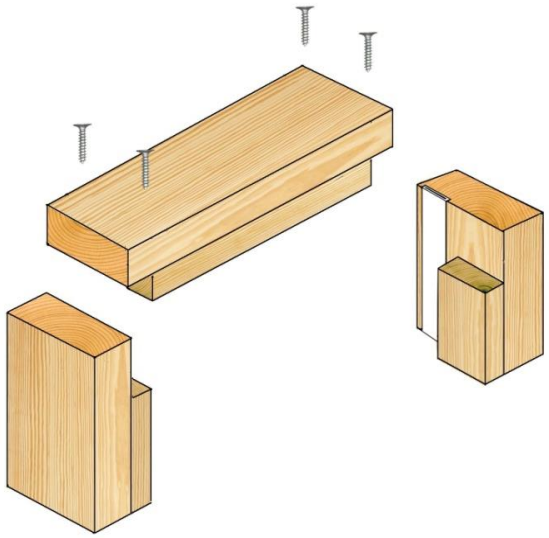
Half Lapped Joint



Mitre Joint



Mortice & Tenon (Combed) Joint



Butt Joint

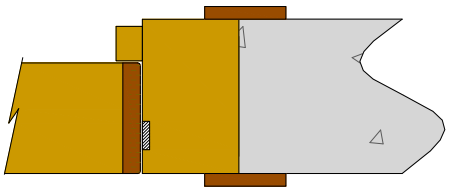
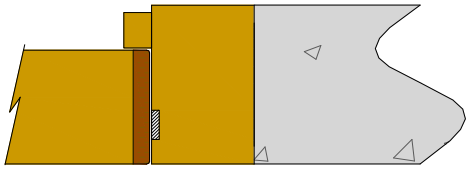
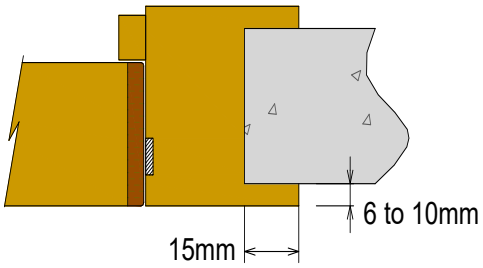
10.2 Thresholds

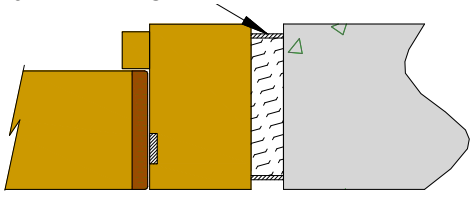
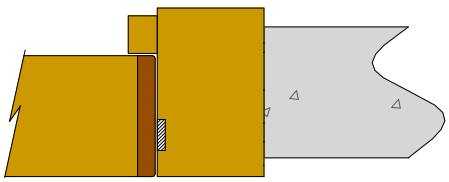
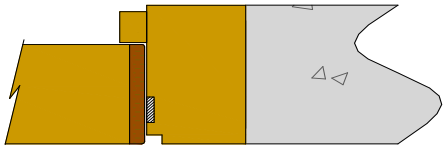
The following tested thresholds may be used with the Falcon Panel Products Ltd. Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 doorsets.

- Sealed Tight Solutions STH004
- Exitex aluminium threshold ref: MXS/FS15
- Stormguard Slimline
- Hardwood (min density 640kg/m^3).

10.3 Door Frame Installation

The following diagrams indicate acceptable and unacceptable door frame installations.

<table>
<tr><th colspan="2">Permitted Installations</th></tr>
<tr><td> 
Architraves overlapping the frame to structural surround junction are always permitted where required but may be mandatory depending on the size of frame to surround junction gap and the fire stopping used. See section on Sealing to the Structural Surround.</td><td> 
Depending on the size of the frame to surround junction gap and the fire stopping methods used, it may be permitted to install doorsets without architraves. See section on Sealing to the Structural Surround.</td></tr>
<tr><td> 

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

11 Facings

11.1 Structural Facings

11.1.1 Strebord® 44 and Strebord® 54

The facings for Strebord® 44 and Strebord® 54 are integral with the core construction and therefore alternative materials are not considered.

11.1.2 Stredor® 44

The primary tested facing materials based on for the Stredor® 44 doorset design are an inner facing of 1.4mm thick cross grain Poplar and an outer timber veneered facing 0.4- 0.6mm thick.

Further testing conducted on the Stredor doorset design has successfully evaluated the use of 2mm thick MDF facings, replacing both the 1.4mm thick cross grain Poplar inner and outer veneer facings as above. Door leaves may therefore be produced with either the 2 layer timber veneer facings above or 2mm thick MDF.

In either case the minimum finished leaf thickness must be 44mm, irrespective of facing thickness.

11.1.3 Stredor® 54

The primary tested facing materials based on for the Stredor® 54 doorset design are an inner facing of 4mm thick cross grain Poplar and an outer timber veneered facing 0.4- 0.6mm thick.

At the tested 4mm thickness, facings are considered structural and alternatives are not therefore assessed for use.

11.2 Decorative & Protective Facings

11.2.1 Timber Substrate Facings

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

Facing Materials	Maximum Permitted Thickness (mm)
MDF	6

1. Facings may be fixed to the core before or after hardwood edges/lippings are applied
2. Facings must be balanced (i.e. the same thickness and material applied to both faces)
3. Decorative facings in section 11.2.2 may be applied in addition to these timber substrate facings
4. Hardware incorporated into doorset must be capable of accommodating the adjusted weight and thickness after additional facings are applied
5. Timber substrate facings may be routed, recessed or machined in any location provided either:
   a. Machining does not impact the core as described in section 4 or
   b. Any machining that breaches the core surface is in accordance with section 11.3.

11.2.2 Decorative Facings

The following additional facing materials are permitted for Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 door designs since they would degrade rapidly under test conditions without significant effect.

Facing Materials	**Maximum Permitted Thickness** (mm)
Paint	0.5
Timber veneers	2
PVC/Plastic laminates	2
Decorative paper/non-metallic foil	0.5

1. Metallic facings are not permitted except for push plates and kick plates
2. The door leaf thickness may be reduced by a total maximum of 0.6mm to each face (a maximum of 1.2mm in total) for calibration purposes, only in order to accommodate one of the additional facings shown in the table above
3. Materials must not conceal intumescent strips
4. PVC/Plastic laminates must not return around leaf edges.

11.3 Decorative Grooves

11.3.1 Strebord® 44 and Strebord® 54

The Strebord® 44 door leaf may be grooved to the following specification.

Element	**Details** (mm)	
Max. groove size (mm)	10 wide x 10 deep. Grooves must be infilled with hardwood of minimum density 640kg/m^3, infills may be grooved to a maximum 5 wide x 4 deep	
Proximity to door edges (mm)	Horizontal grooves	≥95 from top & bottom
	Vertical grooves	≥95 from sides
Groove spacing (mm)	≥240	
Orientation	Vertical or horizontal	

Notes:

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

11.3.2 Strebord® 54 Only

The Strebord® 54 door leaf may be grooved to the following specification.

Element	Details	
Max. groove size (mm)	10 wide x 5 deep	
Proximity to door edges (mm)	Horizontal grooves	≥100 from top & bottom
	Vertical grooves	≥100 from sides
Groove spacing (mm)	≥100	
Orientation	Vertical or horizontal	

A maximum of 4No. vertical and 4No. horizontal grooves are permitted perpendicular to one another, providing all other details meet the specification given in the table above. Grooves may intersect one another.

12 Intumescent Materials

The intumescent materials tested and assessed for these doorset designs are as follows.

Application	Location	Product/Manufacturer
Edge seals	Fitted in the frame reveals only	1. ST104FO – Sealed Tight Solutions Ltd. 2. ST154FO – Sealed Tight Solutions Ltd.
Hinges	Not required	1mm thick raw graphite – Sealed Tight Solutions Ltd may be used if desired
Eye Viewer	Lining cut-out through leaf	1mm thick raw graphite – Sealed Tight Solutions Ltd.
Multi-point lock/latch	See section 16.2	

The seal specification for each doorset configuration is contained in Appendix C

13 Timber Lippings

Strebord® 44, Stredor® 44, Strebord® 44 and Stredor® 54 leaves must be lipped on all edges in accordance with the following specification.

Material	Size (mm)	Min. Density (kg/m^3)
Timber - must be straight grained, joinery quality Hardwood, free from knots, splits and checks	1. Flat = 6 – 18[2] thick with a maximum of 2mm profiling permitted at corners of lipping (see section 10)[1,2] 2. Rounded - Not permitted 3. Rebated = Not permitted	640

1. On-site adjustment of the lippings by a maximum of 3mm for fitting purposes is permitted, providing the minimum dimension of 6mm stated above is maintained
2. Where concealed overhead closers are fitted at the head of leaves, lippings must meet the requirements of section 16.1.

14 Adhesives

The adhesives used in construction are as follows.

Strebord® 44

Element	Product
Core	Manufacturers Specification
Lipping	Polyurethane/PUR
Door Frame Joints	PVA Wurth/Morrells D4

Stredor® 44

Element	Product
Core	PVAc-D2 (details held on file by Warringtonfire)
Lipping	Polyurethane/PUR
Facings	MUF (details held on file by Warringtonfire)
Door Frame Joints	PVA Wurth/Morrells D4

Strebord® 54

Element	Product
Core	Manufacturers Specification
Lipping	Polyurethane/PUR
Door Frame Joints	PVA Wurth/Morrells D4

Stredor® 54

Element	Product
Core	PVAc-D2 (details held on file by Warringtonfire)
Lipping	Polyurethane/PUR
Facings	MUF (details held on file by Warringtonfire)
Door Frame Joints	PVA Wurth/Morrells D4

15 Tested Hardware

The following hardware has been successfully incorporated in the tests on Strebord® 44, Stredor® 44 Strebord® 54 and Stredor® 54 doorsets.

Element	Manufacturer & Product Reference
Hinges	1. Royde & Tucker H101 lift-off type hinges 2. Cooke Bros CB7765 & CB7766 lift-off type hinges 3. Royde & Tucker H207 butt type hinges
Closers	1. Rutland TS3204 overhead closer 2. Rutland ITS11204 concealed closer 3. Rutland ITS11205 concealed closer 4. Astra 4000 jamb mounted concealed closer 5. Dorma TS73V overhead closer 6. Dorma TS71 overhead closer 7. Briton 1110 overhead closer
Locks & latches	1. ERA Surefire Multipoint – DLSF-609-45-85[1] 2. ERA Autofire MLP Motorbox[2]
	ERA Cylinder – Fortress 3 star (TS007)
Furniture	1. Fab & Fix inline lever handle ref: 1A000 2. Fab & Fix 'Balmoral' coated zinc lever handle 3. Stainless steel lever handles 4. Sealed Tight Solutions – Ref:STS4008 eye viewer 5. Sealed Tight Solutions – Ref:STS4001 letterplate 6. Cable loop – Ironmongery Direct 633311 7. Cable Loop – Assa Abloy EA280
Letter Plate	1. Fab & Fix Nu Mail Door Letterplate 2. Royde & Tucker, Ref. LP008 3. Fab & Fix, Ref. 3C018 Letter Plate. Plus Fab & Fix, Ref. 3F005 Security Shield

Notes:

1. The ERA Surefire multi-point lock/latch can only be installed with the tested intumescent protection detailed in section 16.2
2. The ERA Autofire MLP Motorbox can only be installed in Strebord® 54 and Stredor® 54 leaves and must use the tested intumescent protection detailed in section 16.2.1.

16 Additional & Alternative Hardware

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 CE Mark:

- Latches & Locks: Test Standard EN 12209
- Single Axis Hinges: Test Standard EN 1935
- Controlled Door Closing Devices: Test Standard EN 1154
- Door Co-ordinators: Test Standard EN 1158
- Electro-Mechanically Operated Locks: Test Standard EN 14846.

Where alternative hardware to that tested is permitted in the following sections, 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.

This route cannot be used where only specific hardware options stated by the doorset manufacturer are permitted (i.e. where alternative hardware is not permitted)

16.1 Automatic Closing

16.1.1 General

Automatic closing devices must either be as tested or components of equal specification that have demonstrated contribution to the required performance of these types of 30 minute doorset designs, when tested to BS 476: Part 22: 1987 or BS EN 1634-1 or BS EN 1634-2.

16.1.2 Concealed Closer - ITS11204

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

Lipping at the head of the Strebord® 44 leaf must be 18 - 23mm thick, otherwise meeting the requirements in section 13.

The Rutland supplied intumescent kit (ref: Rutland IP114) must be installed. The closer arm rebate in the door frame will fully interrupt both intumescent seals required.

16.1.3 Concealed Closer - ITS11205

Based on results of WF391032, the Rutland ITS11205 concealed, head mounted closer may be used with the Strebord® 54 door design. It is not permitted in the Strebord® 44, Stredor® 44 or Stredor® 54 door designs.

Lipping at the head of the Strebord® 54 leaf must be 18 - 23mm thick, otherwise meeting the requirements in section 13.

The Rutland supplied intumescent kit which is supplied with the ITS11205 closer must be installed in full.

The closer arm rebate in the door frame partially interrupts the first intumescent seal with the second seal uninterrupted.

16.1.4 Concealed Closer - Astra 4000

Based on results of WF391843, the Astra 4000 concealed, jamb mounted closer may be used with any of the Strebord® 44, Stredor® 44, Strebord® 54 or Stredor® 54 door designs. The closer must be mounted between 800 – 1200mm above the threshold. Provided the rebates required for installation are as tight as possible to the closer hardware, no additional intumescent protection is required. The closer reaction plate in the door frame will fully interrupt both intumescent seals.

16.2 Latches & Locks

The tested ERA Surefire multipoint latch may be utilised with any of the Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 door designs, the latch must be installed with the tested intumescent protection detailed below. The latch must be kept locked at all 3 locking points when not in active use.

Element	**Specification** (mm)
Forend	1630 high by 20 wide
Centre Keep	190 high x 24 wide
Top & Bottom Keeps	180 high x 24 wide
Latch Body	200mm high by 48mm wide by 18mm thick
Lock Cylinder	A lock cylinder must always be installed
Intumescent protection	Fitted to both sides of centre latch body, fully encasing whole lock body of top and bottom lock bodies - 1mm thick raw graphite - Sealed Tight Solutions Ltd Under all latch Forends and Keeps – 1mm thick raw graphite - Sealed Tight Solutions Ltd
Materials	All parts essential of the ERA Surefire latch must remain as tested
Location	Centre latch nib to be installed between 950mm and 1050mm from the threshold

16.2.1 Latch Motorbox

Test WF391032 incorporated the ERA Autofire MPL Motorbox in combination with the ERA Surefire multipoint latch in a Strebord® 54 door assembly. The ERA Autofire MPL Motorbox may be installed within Strebord® 54 and Stredor® 54 leaves, only. It is not permitted to use this product in the Strebord® 44 and Stredor® 44 designs.

The gearbox body must be encased in 1mm thick Sealed Tight Solutions Ltd raw graphite, as tested.

16.2.2 Cableways

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

The cable-way must be concealed in the following way:

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

16.3 Hinges

Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 leaves must be hung on a minimum of 3 hinges. Hinges with the following specification are acceptable.

Element	Specification	
Blade height	90 - 120mm	
Blade width (excluding knuckle)	30 - 35mm	
Blade thickness	2.5 - 4mm	
Fixings	Minimum of 4No. 5ø x 30mm long fully threaded 'twinfast' or chipboard screws per blade	
Materials	Steel or stainless steel	
Hinge positions	Top	150 - 180mm from the head of the leaf to the top of the hinge
	2nd & 3rd	Equispaced between top and bottom
	Bottom	180 - 250mm from the foot of the leaf to the bottom of the hinge
Intumescent protection	Not required	

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

16.4 Pull Handles

Handles may be fixed or bolted through the door leaf, providing they are steel or brass and 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.

16.5 Push Plates/Kick Plates

Steel, stainless steel or brass plates 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.

16.6 Door Security Viewers

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 +1mm). Lenses must be glass and the item must be bedded into a tested intumescent mastic. The Sealed Tight Solutions Ltd ST4008 viewer has been tested for fire resistance performance using the intumescent protection shown in section 12.

16.7 Panic Hardware

Panic hardware may be fitted, provided that its installation does not require the removal of any timber from the leaf, stop or frame reveal and it in no way interferes with the self-closing action of the door leaf.

16.8 Environmental Seals

Silicon based flame retardant acoustic, weather and dust seals (e.g. Sealed Tight Solutions Ltd. ST1009) may be fitted to this doorset design without compromising the performance, providing their fitting does not interfere with the activation of the intumescent seals or hinder the self-closing function of the leaves.

16.9 Threshold Seals

The following types of automatic threshold drop seals have been tested for this application and may be recessed in to the bottom rail of leaves to this design without compromising the fire resistance performance.

Manufacturer	Product Reference
Sealed Tight Solutions Ltd	ST422

16.10 Letter Boxes/Plates

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

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

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

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

16.10.1 Strebord® 44 and Stredor® 44

Door Leaf	Manufacturer	Product Ref.	Intumescent
Strebord® 44	ERA	Fab & Fix Letter Plate. Ref. 3C018 Fab & Fix Letter Plate Security Shield. Ref. 3F005	Fire & Acoustic Seals Ltd 100 x 40 x 1.3, Spartan hardware protection, Ref. FASGP1013.
	Royde & Tucker	Ref. LP008	Intumescent Kit supplied with Letter Plate for 44mm thick door leaves
Stredor® 44	ERA	Fab & Fix Nu Mail Door Letter Plate	Sealed tight Solutions Ltd 40 x 2mm Graphite.

16.10.2 Strebord® 54 and Stredor® 54

Door Leaf	Manufacturer	Product Ref.	Intumescent
Strebord® 54	ERA	Fab & Fix Letter Plate. Ref. 3C018 Fab & Fix Letter Plate Security Shield. Ref. 3F005	Fire & Acoustic Seals Ltd 100 X 50 X 1.3 Spartan hardware protection, Ref. FASGP1013.
	Royde & Tucker	Ref. LP008	Intumescent Kit supplied with Letter Plate for 54mm thick doors
	Seal Tight Solutions	Letter plate STS75	STS 2mm graphite lining cut out of leaf and STS 1mm graphite lining inside of letter plate body
Stredor® 54	ERA	Fab & Fix Nu Mail Door Letter Plate	Sealed Tight Solutions Ltd 50 x 2mm Graphite
	Seal Tight Solutions	Letter plate STS75	STS 2mm graphite lining cut out of leaf and STS 1mm graphite lining inside of letter plate body

16.11 Identification Plates

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

a) To be kept closed when not in use (Fire Door Keep Shut)

b) To be kept locked shut when not in use (Fire Door Keep Locked Shut)

c) Held open by an automatic release mechanism or free swing device (Automatic Fire Door Keep Clear).

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

17 Door Gaps

For fire resistance applications, door gaps and alignment tolerances must fall within the following range.

Location	Dimensions
Door edge gaps	Representative of those tested but as a guideline, a minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud from the door frame by more than 1mm
Threshold	10mm between bottom of leaf and top of floor covering, see section 22 for cold smoke control considerations

18 Structural Opening

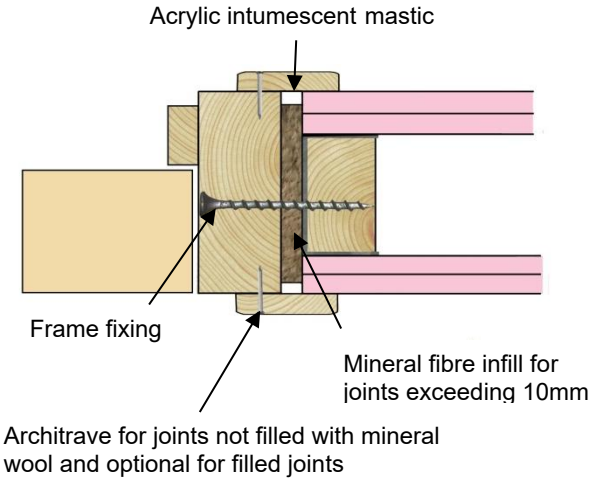
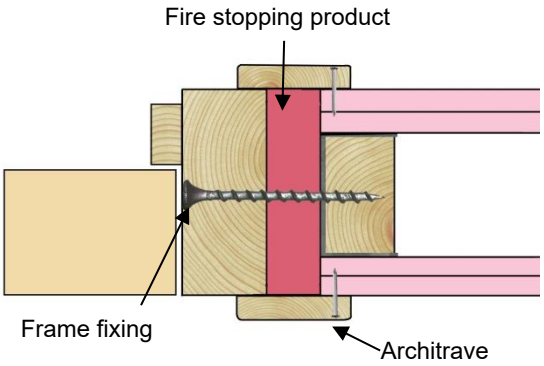
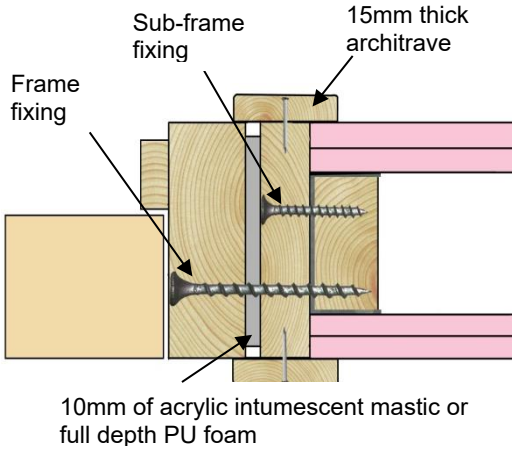
The supporting construction must provide the required level of fire resistance designated for the doorset design and be a suitable medium to permit adequate fixity.

19 Fixings

The frame jambs are to be fixed to the supporting construction using steel fixings at 600mm maximum centres. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 40mm. It is not necessary to fix the frame head, although packers must be inserted.

20 Sealing to Structural Opening

The door frame to structural opening gap must be protected using one of the following methods.

<table>
<tr><td>1. Gaps up to 10mm 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. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.</td><td rowspan="2"> 
</td></tr>
<tr><td>2. Gaps between 10mm and 20mm 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. Architraves are optional.</td></tr>
<tr><td>3. Gaps up to 20mm filled with proprietary fire stopping product (e.g. expanding PU foam or preformed compressible intumescent foam). Products must be tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side. Sealed Tight Solutions Ltd ST99 expanding foam has been successfully tested for this application.</td><td> 
</td></tr>
<tr><td>4. Timber based or non-combustible sub-frame up to 50mm thick, with gaps up to 10mm between the components filled on both sides with 10mm depth of acrylic intumescent mastic or full depth expanding PU foam, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.</td><td> 
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</table>

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

21 Insulation

Insulation performance may be claimed for Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 doorset designs meeting the following criteria.

Type	Details
Partially insulating	Doorsets incorporating up to 20% of non-insulating glazing
Fully insulating	Doorsets including 30 minute insulating glazing (see section 8.2)

22 Smoke Control

22.1 General

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

(a) have a leakage rate not exceeding $3m^3/m$/hour (head and jambs only) when tested at 25Pa under BS 476 *Fire tests on building materials and structures*, Section 31.1 - *Methods for measuring smoke penetration through doorsets and shutter assemblies, Method of measurement under ambient temperature conditions*; or

(b) meet the additional classification requirement of Sa when tested to BS EN 1634-3: 2004 - *Fire resistance tests for door and shutter assemblies*, Part 3 – *Smoke control doors*.

Smoke seals or combined intumescent/smoke seals that are fitted to the door to achieve the performance requirements specified above, must have been tested in accordance with the associated test method. Providing the smoke seals, any interruptions, door gaps, and the type/configuration of the doorset are consistent with the detail tested, the doorset will comply with current smoke control legislation under Approved Document B; and a suffix ‘S’ or ‘Sa’, as appropriate, may be added to the designation. Any other components installed where smoke leakage may occur must also be taken into account.

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

22.2 Further Considerations

Note that there is other guidance available, including BS EN 9999-2017 - *Code of practice for fire safety in the design, management and use of buildings,* which may impose different or additional requirements, such as consideration of the gap between door leaf and threshold.

Responsibility for the appropriate smoke sealing specification and performance of the doors should be agreed between the relevant parties (i.e. specifier, manufacturer, contractor) prior to commencing manufacture and/or installation.

23 Conclusion

If the Falcon Panel Products Ltd. Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 door leaf designs, constructed in accordance with the specifications documented in this global assessment, were to be tested in the appropriate configuration 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 21.

24 Declaration by the Applicant

1) We the undersigned confirm that we have read and comply with obligations placed on us by FTSG Resolution No. 82: 2001.
2) We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which this assessment is being made.
3) We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.
4) We are not aware of any information that could adversely affect the conclusions of this assessment.
5) If we subsequently become aware of any such information, we agree to ask the assessing authority to withdraw the assessment.

Signed:

Name: N Harrison

For and on behalf of: Falcon Panel Products Ltd.

25 Limitations

The following limitations apply to this assessment:

1) This assessment addresses itself solely to the elements and subjects discussed and does not cover any other criteria. All other details not specifically referred to should remain as tested or assessed.

2) This assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available, Exova Warringtonfire reserves the right to withdraw the assessment unconditionally, but not retrospectively.

3) This assessment has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.

4) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

5) This assessment relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions. It does not purport to be a complete specification ensuring fitness for purpose and long-term serviceability. It is the responsibility of the client to ensure that the element conforms to recognised good practice in all other respects and that, with the incorporation of the guidance given in this assessment, the element is suitable for its intended purpose

6) This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with BS 476: Part22: 1987, on the basis of the evidence referred to in section 3. We express no opinion as to whether that evidence, and/or this assessment, would be regarded by any Building Control authority as sufficient for that or any other purpose. This assessment is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

7) This report may only be reproduced in full. Extracts or abridgements of reports shall not be published without permission of Warringtonfire. All work and services carried out by Warringtonfire Testing and Certification Limited are subject to, and conducted in accordance with, the Standard Terms and Conditions of Warringtonfire Testing and Certification Limited, which are available at https://www.element.com/terms/terms-and-conditions or upon request.

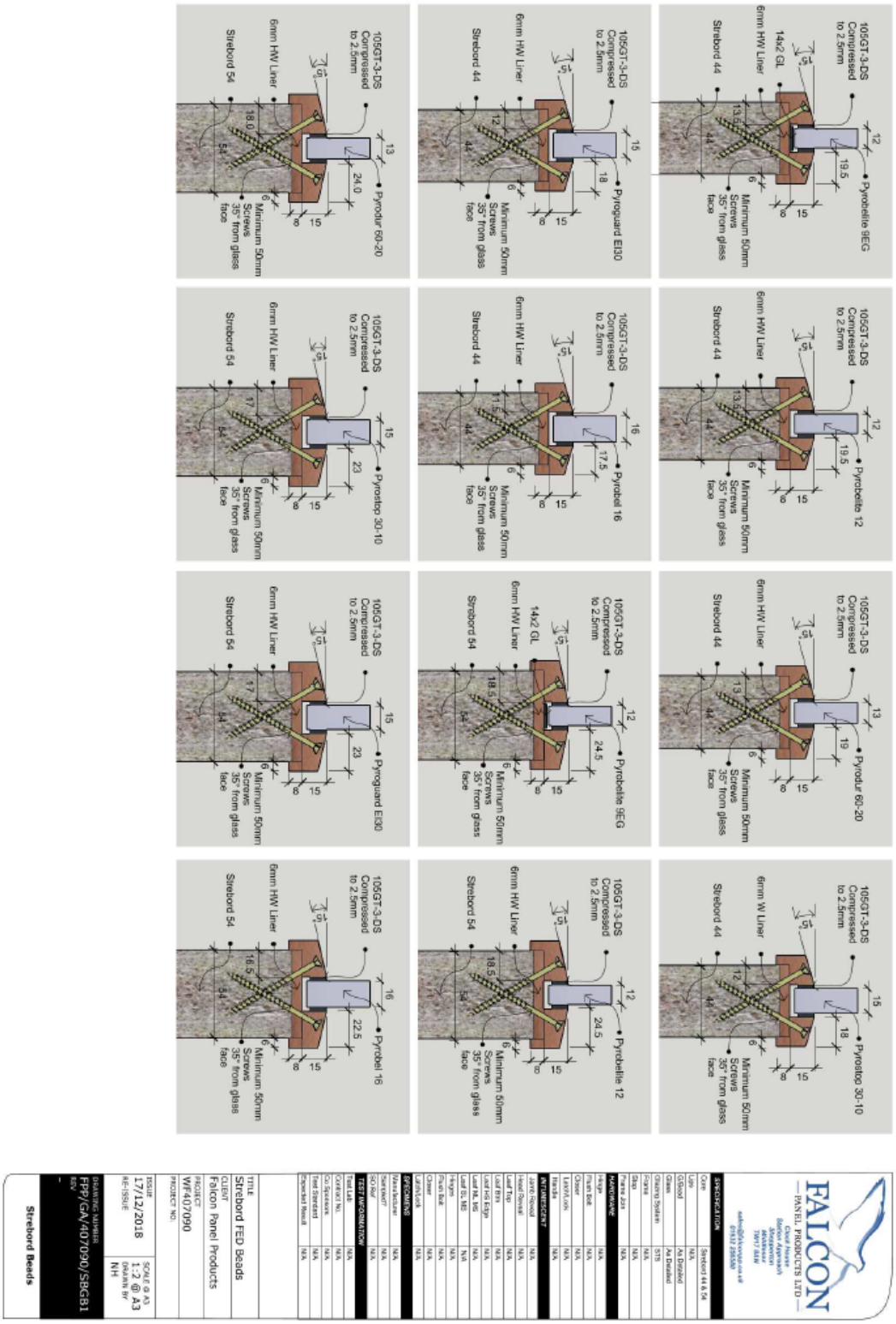
26 Validity

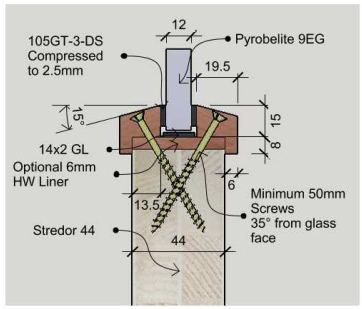
1) The assessment is initially valid for five years from the date of issue, after which time it must be submitted to Warringtonfire for re-appraisal
2) This assessment report is not valid unless it incorporates the declaration given in Section 24, duly signed by the applicant.

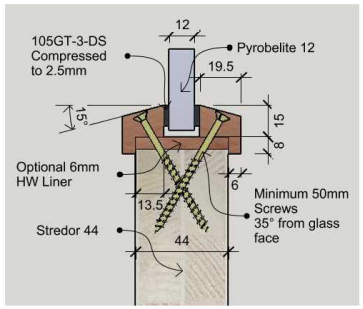
Signature:		
Name:	**K. Towler**	**P N Barker**
Title:	Product Assessor	Technical Manager

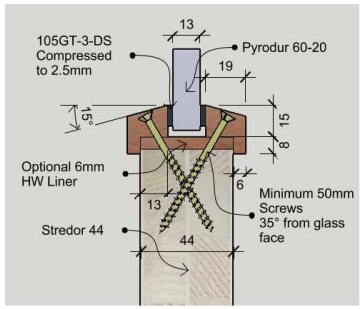
Appendix A

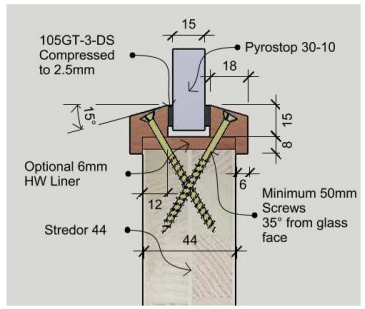
Glazing Installation Diagrams

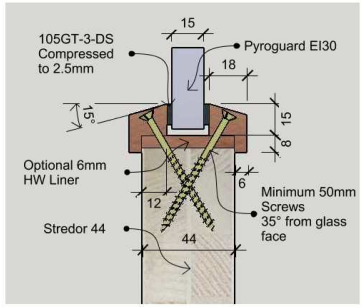


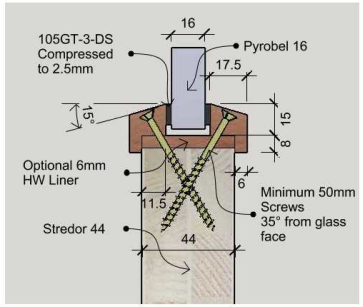


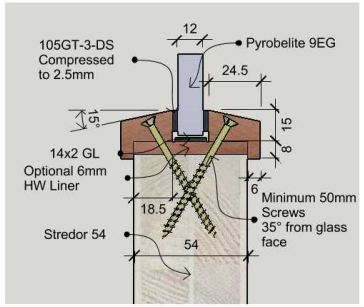


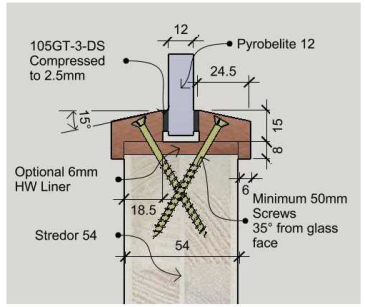


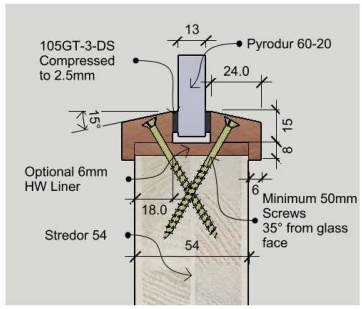


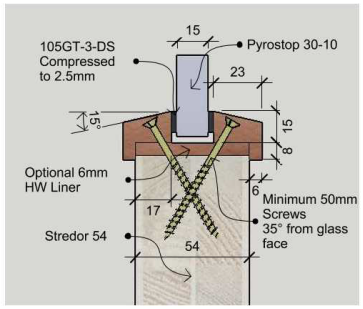


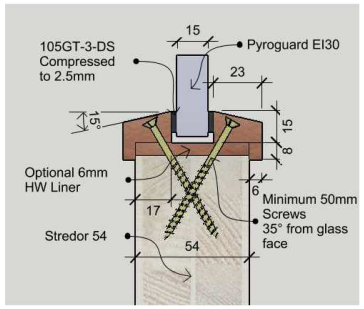


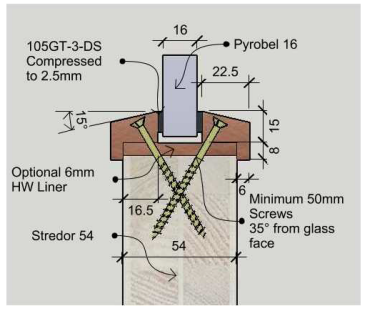












FALCON
PANEL PRODUCTS LTD
Clock House
Station Approach
Shepperton
Middlesex
TW17 8AN
sales@falconpp.co.uk
01932 256580

SPECIFICATION	
Core	Stredor 44 & 54
Lips	N/A
G/Bead	As Detailed
Glass	As Detailed
Glazing System	STS
Frame	N/A
Stop	N/A
Frame Join	N/A
HARDWARE	
Hinge	N/A
Flush Bolt	N/A
Closer	N/A
Latch/Lock	N/A
Handle	N/A
INTUMESCENT	
Jamb Reveal	N/A
Head Reveal	N/A
Leaf Top	N/A
Leaf Btm	N/A
Leaf HS Edge	N/A
Leaf ML MS	N/A
Leaf SL MS	N/A
Hinges	N/A
Flush Bolt	N/A
Closer	N/A
Latch/Lock	N/A
SPECIMENS	
Manufacturer	N/A
Sampled?	N/A
SO Ref	N/A
TEST INFORMATION	
Test Lab	N/A
Contract No.	N/A
Co Sponsors	N/A
Test Standard	N/A
Expected Result	N/A

TITLE
Stredor FED Beads

CLIENT
Falcon Panel Products

PROJECT
WF407090

PROJECT NO.

ISSUE
17/12/2018
RE-ISSUE

SCALE @ A3
1:2 @ A3
DRAWN BY
NH

DRAWING NUMBER
FPP/GA/407090/SDGB1
REV
-

Stredor Beads WF40709

Appendix B

Revisions

Rev.	WF Ref.	Date	Description
A	422364	11-12-2019	Revision to add 3 additional test evidence for: Fab&Fix Nu Mail Door Letterplate, LP008 & Fab&Fix 3C018+3F005 Letter Plate systems. Test Evidence include: WF416690, WF414162 & WF414882 Remove intumescent specification in section 12 for Letter plate

Appendix C

Data Sheets for:

(Dimensions herein are for fire resisting applications only and do not supersede those in the security certificate)

Falcon Panel Products Ltd.

Strebord® 44, Stredor® 44, Strebord® 54 and Stredor® 54 Doorset

30 Minute Fire Resisting Doorsets

Falcon Panel Products Ltd. – Strebord® 44 & Stredor® 44

Latched Single Acting, Single Doorsets

Sheet 01	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	Maximum:	2746	x	1175
Maximum Overpanel Height (mm)		Transomed	2000		

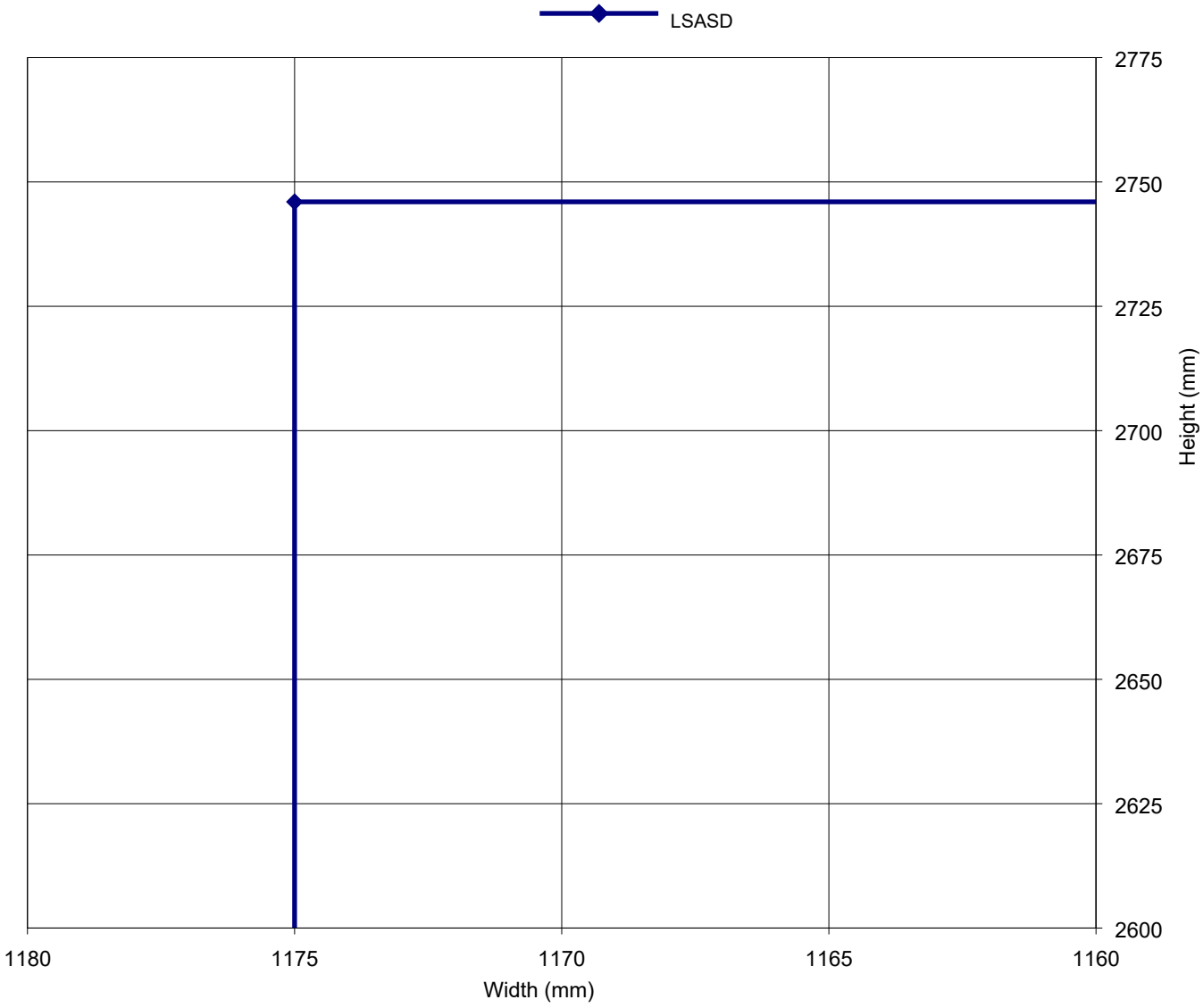
INTUMESCENT MATERIALS: STS Fire – Sealed Tight Solutions Ltd.

HEAD: 2No. 10x4mm strips fitted 5mm either side of the centreline in the frame reveal

JAMBS & OVERPANEL:
2No. 10x4mm strips fitted 5mm either side of the centreline in the frame reveals

HARDWARE PROTECTION: See section 12

Maximum Door Leaf Size



Falcon Panel Products Ltd. – Strebord® 54 & Stredor® 54

Latched Single Acting, Single Doorsets

Sheet 02	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	Maximum:	2814	x	1386
Maximum Overpanel Height (mm)		Transomed	2000		

INTUMESCENT MATERIALS: STS Fire – Sealed Tight Solutions Ltd.

HEAD: 2No. 15x4mm strips fitted 5mm either side of the centreline in the frame reveal

JAMBS & OVERPANEL:
2No. 15x4mm strips fitted 5mm either side of the centreline in the frame reveals

HARDWARE PROTECTION: See section 12

Maximum Door Leaf Size