
Title:

Field of Application for:
Falcon Stredor® 54 and Strebord®
54 Fire Resisting Doorsets.
60 Minutes Fire Resistance

Issue Date:

18th May 2020

Valid Until:

18th May 2025

Report No:

WF427764

WF Reference:

WF 427764

Prepared for:

Falcon Panel Products Ltd.

Clock House,
Station Approach,
Shepperton,
Middlesex,
TW17 8AN

Contents

Page No.

1 Foreword	3
2 Proposal	4
3 Test Data	4
4 Technical Specification	17
5 Description of Door leaf	24
6 Glazing	27
7 Door Frames	33
8 Overpanels	34
9 Intumescent Materials for Hardware	36
10 Adhesives	36
11 Hardware	37
12 Installation	41
13 Insulation	44
14 Smoke Control	45
15 Conclusion	45
16 Declaration by the Applicant	46
17 Limitations	47
18 Validity	48
 Appendix A Performance Data	 49
Appendix B Revisions	51

1 Foreword

This Field of Application report has been commissioned by Falcon Panel Products Limited and relates to the fire resistance of 60 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: Part 22: 1987.

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

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

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

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

2 Proposal

It is proposed to consider the fire resistance performance of the specified proprietary doorset designs for 60 minutes fire resistance integrity, if the doorset 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 design, which is summarised in section 3. Analysis of specific construction details that require assessment are given within this report against the relevant element of construction, as appropriate.

3 Test 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.

Notes:

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

3.1 Summary of Test Report CFR1812191_1

The referenced test report, the essential details of which are summarised below, is the primary data for: Stredor 54 incorporating a ERA Surefire Classic multi-point locking mechanism.

Date of Test	19.12.2018
Identification of Test Body	Cambridge Fire Research UKAS No. 4319
Sponsor	Falcon Panel Products Ltd
Tested Product	A, 3 point latched, single acting single leaf doorset comprising a Stredor 54 door blank with Pyrobelite 12 EI30/EW60 glazing tested as an insulated doorset.
Tested Orientation	Opening in towards heating condition.
Summary of Test Specimen	<u>LEAF:</u> Overall Size: 2192 (h) x 1046 (w) x 54 (t). Core: Falcon Panel Products Stredor 54 with 4 (T) Poplar ply facings; Lipping: Sapele (640kg/m³), 8mm thick to all four edges, PU. <u>FRAME:</u> Head & Jambs: Sapele (640kg/m³), 90 x 44mm thick, with 15mm thick. integral stop. Frame Fixing: 3No. 3.5 inch x No10 csk steel woodscrews. Threshold: Non-combustible. <u>INTUMESCENT:</u> Frame Reveal: 2no 15x4mm Sealed Tight Solutions STS154 FO fitted. 8mm and 34mm from hinge knuckle face. Bottom Leaf Edge: N/A. <u>HARDWARE:</u> Hinges: 3no Zoo bearing butt hinge per jamb; Closer: Rutland TS9205. Lock/Latch: ERA Surefire Classic; Lock/Latch Size: Forend: 1635(h) x 20(d) x 2.5(t); Centre lock/latch Body: 214(h) x 58(w) x 14(d). Keep: 189(h) x 38(d) x 2(t) including tongue of 68 x 14. Hook boxes: Body: 150(h) x 40(w) x 15(d). Keep: 152(h) x 38(d) x 2(t) including tongue of 47 x 14. Cylinder: ERA Fortress 3* TS007, KM553031. Handle: Zoo ZPS Stainless steel lever handle on rose with escutcheons. <u>HARDWARE PROTECTION:</u> Hinges, lock cases and forends – Sealed Tight Solutions 1mm thick graphite based intumescent. (Keep Plate) – Sealed Tight Solutions 2mm thick graphite based intumescent.

	<u>GLAZING:</u> Glass; AGC Pyrobelite 12mm thick EI30/EW60 glass; Aperture Size: 1215(h) x 523(w). Beading: Sapele beads 30x26mm with mitred corners and a 5x7 bolection with a 25° splay. Bead Fixing: 1.6g x 60mm long steel pins pneumatically fired at 30°-35°, 150mm centres & 50mm from corners. <u>GLAZING SYSTEM:</u> Glazing Perimeter: Sealed Tight Solutions STS104SG 10(w) x 2(t). Glazing Aperture Liner: Sealed Tight Solutions 302GL 30(w) x 2(t).
Test Standard	BS 476: Part 22: 1987.
Performance	Integrity: 71 minutes with low distortion recorded at leaf edges Insulation: 34 minutes

3.2 Summary of Test Report WF412601

The referenced test report, the essential details of which are summarised below, is supporting data to demonstrate comparability of Stredor 54 core alternative production facilities.

Date of Test	18.04.2018	
Identification of Test Body	Warringtonfire Testing and Certification Ltd. UKAS No. 1762	
Sponsor	Falcon Panel Products Ltd	
Tested Product	2 No, unlatched, unglazed, single leaf, double acting doorsets (ULDASD)	
Summary of Test Specimen	Core: Specimen A Stredor 54 Ply (518kg/m³), 54mm thick Facing: 4.5 (thick overall) comprised 4.0(t) Poplar ply with 0.5mm thick Beech veneer outer face. Specimen B Stredor 54 Ply (Overall 548kg/m³), 54mm thick Facing: 4.6 (thick overall) comprised 4.2(t) Poplar ply with 0.4mm thick engineered veneer outer face. <u>Both Specimens:</u> Overall Leaf Size: 2040mm (h) x 926mm (w) x 54mm (t). Lippings: Sapele (635kg/m³), 18mm to hanging side, top & bottom edges; 8mm to lock side. <u>FRAME:</u> Head & Jambs: Sapele (635kg/m³), 100 x 44mm thick, with 8mm scallop @ 58mm radius; Frame Fixing: 4No 5 x 80mm long steel screws per jamb; Threshold: Non-combustible. <u>INTUMESCENT:</u> Frame Reveal: 2 No 15x4 Lorient LP1505. Fitted centrally, 10mm apart. <u>HARDWARE:</u> Hinges (Top Pivot/Strap): Rutland-PS.190; Closer (Floor Spring): Rutland TS7104. <u>HARDWARE PROTECTION:</u> Lining Strap Mortices: 2mm thick Interdens.	
Test Standard	BS 476 Part 22: 1987.	
Performance	Specimen A	Specimen B
	Integrity: 71 minutes Insulation: 71 minutes	Integrity: 71 minutes Insulation: 71 minutes
Failure Mode:	Specimen A: Initial Failure: Sustained flaming top strap position @ 71:26 Further Failure: Sustained flaming top closing position @ 73:02	
	Specimen B: Initial Failure: Cotton Pad at threshold position @ 71:06 Further Failure: Sustained flaming top closing position @ 75:30	

3.3 Summary of Test Report WF401039 Specimen B

The referenced test report, the essential details of which are summarised below, is the primary data for: Strebord 54 incorporating the Glutz 1893 Mint multi-point locking mechanism.

Date of Test	22.06.2018
Identification of Test Body	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor	Falcon Panel Products Ltd
Tested Product	A, 3 point latched, single acting single leaf doorset
Tested Orientation	Opening in towards heating condition
Summary of Test Specimen (mm)	LEAF: Overall Size: 2402mm (h) x 1048mm (w) x 54mm (t). Core: Strebord 54 (570-630kg/m³), 54mm thick. Lipping: Sapele (640kg/m³), 8mm thick to all four edges, PU. FRAME: Head & Jambs: Sapele (640kg/m³), 90 x 44mm thick, with 33 x 15mm thick integral stop. Frame Fixing: 4No 80mm long steel screws per jamb Threshold: Non-combustible. INTUMESCENT: Frame Reveal: 2 No 15x4 Type617. Fitted centrally, 7mm from exposed face, 10mm apart. Bottom Leaf Edge: Lorient 8001Si drop seal. HARDWARE: Hinges: 3 No Royde & Tucker Butt Hinges H207. Closer: Geze Boxer 2-4 concealed overhead type. Lock/Latch: Glutz Mint 1893; Lock/Latch Size: Forend: 1788(h) x 20(d) x 2.5(t); Centre Keep: 210(h) x 25(d) x 2(t) including tongue of 68 x 14 Hook boxes: Body: 150(h) x 40(w) x 15(d). Keeps: 110(h) x 25(d) x 2(t) including tongue of 47 x 14. Cylinder: Glutz Zurich 5088 steel handle on escutcheon Ref 5380C. Glutz brass eye viewer GY3504. HARDWARE PROTECTION: Under Hinges and dropseal: 1mm thick MAP; Under Forend: 2mm thick Lorient graphite; Around lock case: 1mm thick MAP. GLAZING Glass: Pilkington Pyrostop 15mm thick EI30-10. Aperture Size: 1610 high x 410 wide; Expansion allowance: 5 all round Beading: Sapele (640kg/m³), 35 high x 23 deep 30° chamfer & 10x6 bolection; Bead Fixing: 60mm long steel screws, at 30 degrees, 150mm centres & 40mm from corners. GLAZING SYSTEM Lorient RF1: Glazing Perimeter: 27x4mm thick ref: RG2704, between glass & beads. Glazing Aperture Liner: 2 x 54mm Lorient ref: 25402 on 6 (t) Sapele liner to all edges.
Test Standard	BS 476 Part 22: 1987.
Performance	Integrity: 67 minutes with low distortion recorded at leaf edges Insulation: 57 minutes

3.4 Summary of Test Report WF418106 AR1 Specimen B

The referenced test report, the essential details of which are summarised below, is the primary data for: Strebord 54 incorporating the ERA Surefire Classic multi-point locking mechanism.

Date of Test	21.10.2019
Identification of Test Body	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor	Falcon Panel Products Ltd
Tested Product	Glazed, 3 point, latched, single leaf, single acting doorset (LSASD)
Tested Orientation	Opening in towards heating condition
Summary of Test Specimen (mm)	<u>LEAF:</u> Overall Size: 2185mm (h) x 1048mm (w) x 54mm (t) Core: Strebord 54 (630kg/m³), 54mm thick Lipping: Sapele (640kg/m³), 8mm thick to all four edges, PU. <u>FRAME:</u> Head & Jambs: Sapele (640kg/m³), 89 x 32mm thick, with 28 x 14mm thick planted stop. Frame Fixing: 4 No 5ø x 80mm long steel screws per jamb Threshold: Non-combustible. <u>INTUMESCENT:</u> Frame Reveal: 2 no 15x4mm Sealed Tight Solutions STS154 FO, 8.5mm from exposed face, 10mm apart. Bottom Leaf Edge: None fitted. <u>HARDWARE:</u> Hinges: 3 No Arrone Butt Hinges 8182; Closer: Rutland TS11204 face fixed; Lock/Latch: Lock/Latch: ERA Surefire Classic; Lock/Latch Size: Forend: 1630(h) x 25(d) x 2.5(t); Centre lock Body: 214(h) x 61(w) x 19(d); Centre Keep: 190(h) x 24(d) x 2(t). Top & Bottom case Body: 150(h) x 43(w) x 17(d); Keep: 150(h) x 24(w) Cylinder: ERA Fortress 3* 40/40. Lever Handle: Zoo Hardware Ref ZCS030SS; Escutcheon Lock ref: VS001. <u>HARDWARE PROTECTION:</u> Hinges, lock cases, keeps and forends – Sealed Tight Solutions 1mm thick graphite based intumescent. <u>GLAZING</u> Glass: Pilkington Pyrodur 60-10 10mm thick. Aperture Size: 1000 high x 354 wide; Expansion allowance: 5mm. Beading: Sapele (640kg/m³), 30 high x 25 deep 36° chamfer & 6 x 6 bolection; Bead Fixing: Paslode F16 brads, 63mm long, at 30 degrees, 100mm centres & 50mm from corners. <u>GLAZING SYSTEM Intumescent Seals Ltd:</u> Glazing Perimeter: 25x4mm thick ref: Therm-A-Bead, between glass & beads. Glazing Aperture Liner: 2 x 54mm Therm-A-Line.
Test Standard	BS 476: Part 22: 1987.
Performance	Integrity: 66 minutes with low distortion recorded at leaf edges

	Insulation: 66 minutes
--	-------------------------------

3.5 Summary of Test Report CFR1902142

The referenced test report, the essential details of which are summarised below, is the primary data for: Strebord 54 incorporating a Winkhaus AV2 multi-point locking mechanism and Pyroguard UK: T EW60 66.2 RV 12.6mm thick glass.

Date of Test	14.02.2019
Identification of Test Body	Cambridge Fire Research. UKAS No. 4319
Sponsor	Falcon Panel Products and Pyroguard UK Ltd, International House, Millfield Lane, St. Helens, WA11 9GA
Tested Product	Glazed, 3 point, latched, single leaf, single acting doorset (LSASD)
Tested Orientation	Opening in towards heating condition
Summary of Test Specimen	<u>LEAF:</u> Overall Size: 2186mm (h) x 1050mm (w) x 54mm (t). Core: Strebord 54 (630kg/m³), 54mm thick. Lipping: Sapele (640kg/m³), 8mm thick to all four edges, PU. <u>FRAME:</u> Head & Jambs: Sapele (640kg/m³), 90 x 44mm thick, with 33 x 15mm thick integral stop. Frame Fixing: 4No 3.5inch x No10 steel screws per jamb Threshold: Non-combustible <u>INTUMESCENT:</u> Frame Reveal: 2 No 15x4 Therm-A-Seal. Fitted centrally, 6mm from exposed face, 10mm apart. Bottom Leaf Edge: Sealmaster DRP27x12 aluminium. <u>HARDWARE:</u> Hinges: 3 No Zoo Hardware Butt Hinges ref: CF849. Closer: Dorma TS92 face fixed type. Lock/Latch: Winkhaus AV2; Lock/Latch Size: Forend: 1770(h) x 20(d) x 3(t); Centre Keep: 235(h) x 44(d) x 1.5(t) including tongue of 52 x 20 Hook boxes: Body: 114(h) x 41(w) x 15.5(d) Keeps: 175(h) x 33(d) x 1.5(t) including tongue of 112 x 19. Cylinder: Yale Platinum 3* 35/35/70; Zoo escutcheon ref: Serozzetta EP SS; handleset Hafele HL03. UAP eye viewer ref: SWALF14BRASSUP. <u>HARDWARE PROTECTION:</u> Under Hinges: 1mm thick Therm-A-Strip. Under Forend & Keep: 1mm thick Therm-A-Strip. Around lock cases: 1mm thick Therm-A-Strip. Eurocylinder: 2mm thick Therm-A-Strip. Eye viewer: 2mm thick Therm-A-Strip. Automatic Door Seal: 1mm thick Therm-A-Strip to front and rear faces. <u>GLAZING</u> Glass: Pyroguard UK: T EW60 66.2 RV 13mm thick. Aperture Size: 1600 high x 350 wide; Expansion allowance: 10mm all round.

	Beading: Sapele (640kg/m³), 30.5 high x 26 deep 30° chamfer & 6 x 5.7 bolection. Bead Fixing: 4.3 dia x 64mm inch long steel screws, at 30 degrees, 120 -150mm centres & 40mm from corners. <u>GLAZING SYSTEM:</u> Glazing Perimeter: ISL 20 x 5mm thick (uncompressed) ref: ISL60Plus, between glass & beads. Glazing Aperture Liner: 2 x 15mm wide Sealmaster FireGlaze tape between the beads on top of 2 x 54mm ISL ref: Therm-A-Seal with 6 (t) Sapele aperture liner all round.
Test Standard	BS 476: Part 22: 1987.
Performance	Integrity: 63 minutes with low distortion recorded at leaf edges Insulation: 63 minutes

3.6 Summary of Test Report CFR1808152

The referenced test report, the essential details of which are summarised below, is supporting data Pyroguard UK: T EW60 66.2 RV 12.6mm thick glass.

Date of Test	15.08.2018
Identification of Test Body	Cambridge Fire Research. UKAS No. 4319
Sponsor	Pyroguard UK Ltd, International House, Millfield Lane, St. Helens, WA11 9GA
Tested Product	Glazed, 3 point, latched, single leaf, single acting doorset (LSASD)
Tested Orientation	Opening in towards heating condition
Summary of Test Specimen	<u>LEAF:</u> Overall Size: 2178mm (h) x 1046mm (w) x 54mm (t) Core: Strebord 54 (570-630kg/m³), 54mm thick Lipping: Sapele (640kg/m³), 8mm thick to all four edges, PU. <u>FRAME:</u> Head & Jambs: Sapele (640kg/m³), 90 x 30mm thick, with 31 x 15mm thick planted stop. Frame Fixing: 5No 3inch x No10 steel screws per jamb Threshold: Non-combustible <u>INTUMESCENT:</u> Frame Reveal: 2 No 15x4 Therm-A-Seal. Fitted centrally, 7.5mm from exposed face, 8mm apart. Bottom Leaf Edge: None fitted. <u>HARDWARE:</u> Hinges: 3 No Royde & Tucker Butt Hinges H101 Closer: Rutland TS11204 face fixed type Lock/Latch: Winkhaus AV2; Lock/Latch Size: Forend: 1770(h) x 20(d) x 3(t); Centre Keep: 234(h) x 22(d) x 2(t) including tongue of 52 x 20 Hook boxes: Body: 114(h) x 41(w) x 15.5(d) Keeps: 176(h) x 23(d) x 2(t) including tongue of 112 x 14 Cylinder: Unknown with thumbturn on exposed face. <u>HARDWARE PROTECTION:</u> Under Hinges: 1mm thick Therm-A-Strip Under Strike & Hook keeps: 1mm thick Therm-A-Flex Around lock cases: 1mm thick Therm-A-Strip <u>GLAZING</u> Glass: Pyroguard UK: T EW60 66.2 RV 12.6mm thick Aperture Sizes: 1 @ 1602 high x 351 wide; 1@ 1602 high x 201 wide Expansion allowance: 10mm all round Beading: Sapele (640kg/m³), 28.5 high x 22.3 deep 30° chamfer & 8.5x5.7 bolection. Bead Fixing: No8 x 2.5 inch long steel screws, at 30 degrees, 150mm centres & 40mm from corners. <u>GLAZING SYSTEM:</u>

	Glazing Perimeter: ISL 20 x 5mm thick (uncompressed) ref: ISL60Plus, between glass & beads. Glazing Aperture Liner: 2.5 x 13mm wide Sealmaster FireGlaze tape between the beads on top of 2 x 52mm ISL ref: Therm-A-Sol.
Test Standard	BS 476: Part 22: 1987
Performance	Integrity: 56 minutes; initial failure recorded at the latch handle position. No failures were recorded at the glazing prior to termination of the test at 68 minutes. Insulation: 56 minutes

3.7 Summary of Test Report CFR1810311

The referenced test report, the essential details of which are summarised below, is supporting data for the Pyroguard UK: T EW60 66.2 RV 12.6mm thick glass in an Argon Filled IGU installed in a Strebord 54 leaf.

Date of Test	31.OCT.2018
Identification of Test Body	Cambridge Fire Research UKAS No. 4319
Sponsor	Dixon International Group Ltd & Pyroguard UK Ltd
Tested Product	An unlatched, single-acting, single-leaf doorset with two IGU panels – ULSASD
Tested Orientation	Hung opening in towards heating condition
Summary of Test Specimen	<u>LEAF:</u> Overall Size: 2179mm(h) x 1046(w) x 54mm(t). Core: Falcon Panel Products Strebord 54mm particleboard (570kg/m³). Lipping: Sapele (640kg/m³), 8mm thick to all four edges. <u>FRAME:</u> Head & Jambs: Sapele (640kg/m³), 90mm(d) x 32mm(w), with 34.5mm(w) x 15.5mm(d) pinned sapele stop. Frame Fixing: 5No. 10 x 3" steel woodscrews. Threshold: Non-combustible. <u>INTUMESCENT:</u> Frame Reveal: 2no 15x4mm Intumescent Seals Limited Therm-A-Seal graphite seals. Positioned 8mm and 32mm from the exposed face. <u>GLAZING:</u> Both Apertures: 12mm Pyroguard T-EW60/6 VF RV, 6mm spacer bar and 4mm toughened counter piece. An argon gas filled double glazed unit comprising of toughened, laminated glass with a PVB interlayer, a 6mm deep spacer and a 4mm thick toughened float glass. IGU set on calcium silicate setting blocks. • L/H Glazing Dimensions (12mm Pyroguard to exposed side): ○ Aperture Size: 1640mm(h) x 386mm(w) • R/H Glazing Dimensions (4mm Toughened to exposed side): ○ Aperture Size: 1640mm(h) x 236mm(w) Beading: Sapele (640kg/m³), 18.7mm(w) x 29.5mm(h) with 20° chamfer and a 10x5.5mm bolection. Bead Fixing: 2.5" steel countersunk screws at 30° to the glass, set at 150mm centres & 50mm from corners. <u>GLAZING SYSTEM:</u> Glazing Perimeter: 23x2.5mm Sealmaster Fireglaze intumescent tape Glazing Bead/Glass: 20x5mm Intumescent Seals Limited ISL 60 Plus, compressed to 3mm. Glazing Liner: 54x2 Intumescent Seals Limited Therm-A-Sol sodium silicate based intumescent.

	<u>HARDWARE:</u> Hinges: 3no Phoenix stainless steel lift-off; Closer: Dorma TS68 Lock/Latch: Winkhaus AV2 3-point lock/latch with a Eurocylinder (thumbturn to exposed face), lock/Latch Status: Engaged for test. Handle: Plated aluminium lever on rose. <u>HARDWARE PROTECTION:</u> Under Hinge: 1mm thick Intumescent Seals Limited Therm-A-Strip MAP based intumescent. Lock/Latch: • Top/bottom keep: 1mm thick Intumescent Seals Limited Therm-A-Strip MAP based intumescent. • Top/bottom case: 1mm thick Intumescent Seals Limited Therm-A-Strip MAP based intumescent. • Centre keep: 1mm thick Intumescent Seals Limited Therm-A-Strip MAP based intumescent. Centre case: 1mm thick Intumescent Seals Limited Therm-A-Strip MAP based intumescent.
Test Standard	BS 476: Part 22: 1987.
Performance	Integrity: 40* minutes Insulation: N/A *no failure recorded for glazing prior to termination of the test at 68 minutes

3.8 Summary of Test Report WF413865

The referenced test report, the essential details of which are summarised below, is the primary data for: Strebord 54 incorporating the ERA Surefire Classic multi-point locking mechanism.

Date of Test	13.05.2019
Identification of Test Body	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor	Falcon Panel Products Ltd
Tested Product	Unlatched, double leaf, single acting doorset (ULSADD)
Tested Orientation	Opening in towards heating condition
Summary of Test Specimen (mm)	LEAF: Overall Size: 2135mm (h) x 935/935mm (w) x 54mm (t) Core: Strebord 54 (590kg/m³), 54mm thick Lippings: Strelip® 60 (661kg/m³), 8mm thick to all four edges of each leaf, PUR. FRAME: Head & Jambs: Sapele (644kg/m³), 100 x 32mm thick, with 32 x 12mm thick planted stop; Frame Fixing: 4No 5ø x 100mm long steel screws per jamb. Threshold: Non-combustible. INTUMESCENT: Meeting Stiles: 2no 15x4mm Lorient Polyproducts Ltd LP1504 type 617, fitted 7mm and 32mm from the exposed face of the master leaf. Frame Reveal: 2no 15x4mm Lorient Polyproducts Ltd LP1504 type 617, fitted 7mm and 32mm from the exposed face of the frame reveal. Bottom Leaf Edge: None fitted. HARDWARE: Hinges: 4no Carlisle Brass/Eurospec HIN1433/13; Closer: Astra Door Controls 4003 concealed jamb mounted closer; Lock/Latch: Eurospec Easi-Exit DLS7260ESC; Forend plate: 235mm(h) x 24mm(w) x 5mm(t). Cylinder: Assa Abloy/Union J2X28 Euro Thumbturn Cylinder. Lever Handle: Zoo Hardware Stanza ZPZ090SC lever on rose; Escutcheon: Eurospec A Spec Euro, Ø50mm x 6mm(t). HARDWARE PROTECTION: Under all hinge blades: 1mm thick Intumescent Seals Ltd Therm-A-Strip. Encasing closer body: 1mm thick Intumescent Seals Ltd Therm-A-Strip. Under closer forend (hinge & leaf sides): 1mm thick Intumescent Seals Ltd Therm-A-Strip. Around lockcase (cheeks only): 1mm Lorient Polyproducts Ltd MAP. Under lockcase forend plate and keep: 1mm Lorient Polyproducts Ltd MAP.
Test Standard	BS 476: Part 22: 1987.
Performance	Integrity: 70 minutes with low distortion recorded at leaf edges Insulation: 70 minutes

4 Technical Specification

4.1 General

The technical specification for the proposed door assemblies 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 Leaf

4.3.1 Leaf Option 1 – Stredor® 54

See section 5 for details of the required makeup of the Stredor® 54 leaf types.

The comparative test WF412601 is suitable supporting evidence for the use of either of the two leaf types. Based on the similarity of performance seen between specimens A and B in test WF412601 the two leaf types may be freely interchanged when used as for producing door leaves for use in door assemblies based on this field of application report.

Minimum door leaf thickness without permitted decorative facings/finishes 53.0mm.

Minimum door leaf thickness with decorative facing/finishes 54.0mm.

The door design can include, and this Field of Application report discusses:

1. Glazing
2. Decorative facings
3. Decorative planted on timber mouldings
4. Timber frames option
5. Sealed Tight Solutions intumescent seals
6. Configurations. LSASD.

4.3.2 Leaf Option 2 – 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.

Minimum door leaf thickness without permitted decorative facings/finishes 52.8mm.

Minimum door leaf thickness with decorative facing/finishes 53.8mm.

The door design can include, and this Field of Application report discusses:

1. Glazing.
2. Decorative facings.
3. Timber substrate facings
4. Decorative planted on timber mouldings.
5. Timber frame options
6. Seal type options - Sealed Tight Solutions, Lorient Polyproducts and ISL intumescent
7. Configurations. LSASD.

4.4 Door Frames

4.4.1 Frame Option 1 – Timber with Leaf Option 1 & 2

The construction of the door frames include the following material and size requirements. For further information on the specification and construction of the door frames see section 7.

1. Hardwood timber frame (excluding Beech, *Fagus sylvatica* and other related species)
2. Minimum dimensions 90 x 29mm.

4.5 Doorset Configurations & Maximum Leaf Sizes.

4.5.1 General

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

- the margin of over performance above 60 minutes integrity for the design
- the characteristics exhibited during test
- the doorset configuration(s) tested.

The evaluation of the permitted configuration included in this field of application is based on the configuration tested. The principle is that the more components i.e. door leaves and overpanels – the harder it becomes to achieve a successful test result. This is because the junction between two door leaves or door leaf and overpanel introduces a discontinuity into the doorset which can cause premature failures.

This leads to the following statements:-

- A test on a double doorset is more onerous than a test on a single doorset
- 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 leaves
- A test on an unlatched doorset is more onerous than a test on a latched doorset
- A test on an unlatched single acting doorset is considered to be equivalent to a double acting doorset – BUT this does not cover doorsets with flush overpanels
- A doorset with transomed overpanel is considered to perform as the same as 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 intumescent specification and frame option. The following section details the maximum leaf size for each door leaf option and configuration based on the intumescent, hardware and frame details tested.

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

4.5.2 Orientation

The 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.

Additionally the two Stredor® 54 specimens tested in WF412601 were tested as unlatched double acting specimens, and the Strebord® 54 design has been tested in WF408989 (summarized in appendix A) which compared the results of two essentially identical specimens, one installed opening away from the furnace and one opening towards.

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. This is confirmed in table 2 of clause 13.4.1 BS EN 1634-1:2014 +A1:2018.

4.5.3 Configurations

The table below shows a list of the different doorset configurations, their abbreviations and full description. The following sections detail the permitted leaf sizes for the listed configurations based on the intumescent and door frame.

Doorset Configurations	
Abbreviation	Description
3pt - LSASD	3 Point - Latched Single Acting Single Doorset

Notes:

1. A table of essential hardware is given for each doorset configuration, as a baseline for the doorset described. Changes to hardware can affect the intumescent specification and frame details which are subsequently considered in section 4.5.
2. A transomed overpanel is permitted if installed in line with section 8.

4.5.3.1 Explanation for following sections

The performance of a doorset in terms of configuration and size is dependent on the leaf type, intumescent and frame type and are performances are not automatically interchangeable. The following sections present the envelopes for the 2 leaf types and single frame type. Each envelope is linked to a specific intumescent which is given a unique reference and is based directly on test evidence.

The envelopes are presented as follows:-

- for LSASD configuration, each leaf 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.

All the specific variations between configuration, door type, frame option, intumescent and the maximum leaf sizes can be found in the tables and graphs in section 4.5.4.

4.5.4 LSASD Configuration: Intumescent, Essential Hardware & Leaf Sizes

4.5.4.1 Intumescent Specification

Doorset Option 1 (Stredor® 54)

Intumescent Specification for Door Option 1 Stredor® 54 LSASD			
Intumescent Spec. Ref. (Test Ref)	Type	Manufacturer / Supplier	Location, Size & Quantity
A1 (CFR1812191)	STS154 FO	Sealed Tight Solutions Ltd	Frame Head and Jambs: 2No 15 x 4mm seals fitted centrally 10mm apart

Doorset Option 2 (Strebord® 54)

Intumescent Specification for Door Option Strebord® 54 LSASD			
Intumescent Spec. Ref. (Test Ref)	Type	Manufacturer / Supplier	Location, Size & Quantity
A2 (WF401039)	Type617	Lorient Polyproducts	Frame Head and Jambs: 2No 15 x 4mm seals fitted centrally 10mm apart
A3 (WF418106)	STS154 FO	Seal Tight Solutions Ltd	Frame Head and Jambs: 2No 15 x 4mm seals fitted centrally 10mm apart
A4 (CFR1902142)	Therm-A-Seal	Intumescent Seals Ltd	Frame Head and Jambs: 2No 15 x 4mm seals fitted centrally 10mm apart

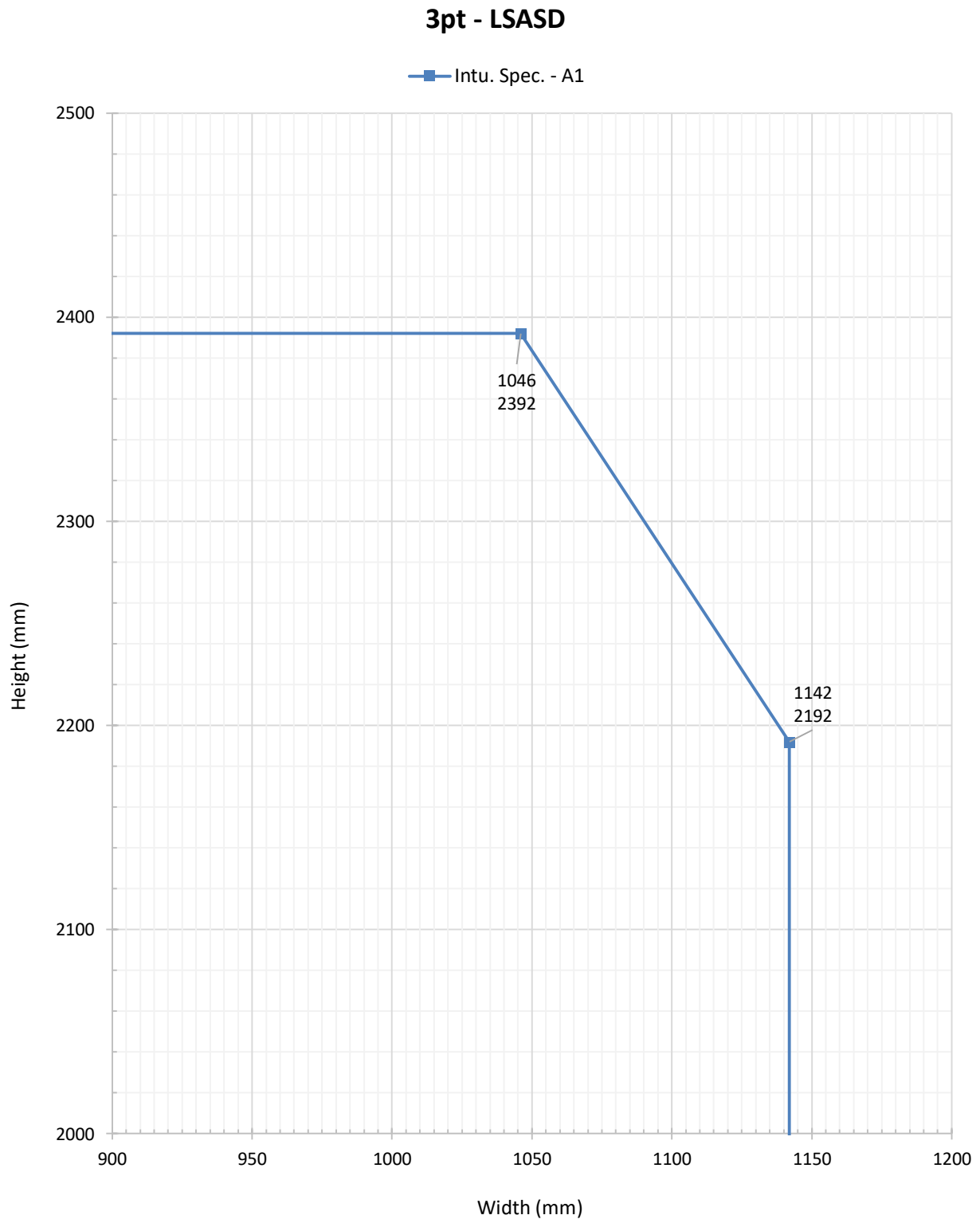
4.5.4.2 Essential Hardware

Essential Hardware for LSASD	
Hardware	Specification
1. Hinge	See section 11.2 and 11.3.2
2. Latch/Lock	Multipoint See section 11.2 and 11.3.1
3. Closer	Overhead type, face fixed see section 11.2 and section 11.3.3 or Concealed closers, fixed into door leaf head see section 11.3.3

4.5.4.3 Maximum Leaf Sizes

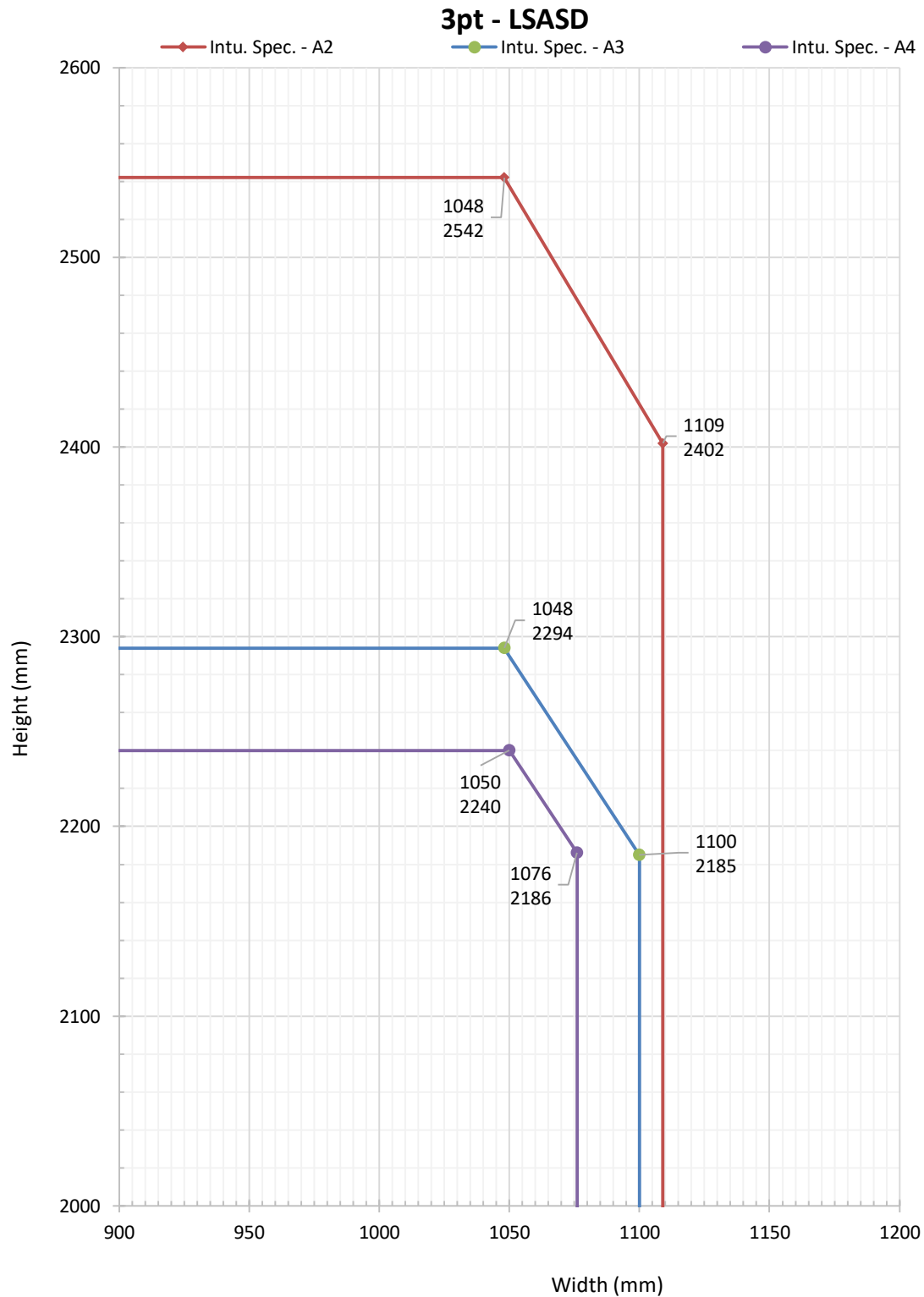
(Dimensions herein are for fire resisting applications only and do not supersede those in the security certificate)

Figure 4.1 : Graph Showing Maximum Leaf Size Envelope for Stredor®54



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

Figure 4.2 : Graph Showing Maximum Leaf Size Envelope for Strebord®54



5 Description of Door leaf

The basic tested construction for door leaves of this design comprises the following.

The overall leaf thickness is 54mm thick.

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

5.1 Leaf Option 1 – Stredor® 54

5.1.1 Stredor® 54 Type A

The primary tested facing materials based on for the Stredor® 54 Type A doorset design are detailed in the table below. Where specified the leaves are lipped with hardwood.

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 & Pine lamels	20.5 (t) x 28 (w) (nominal individual lamel size)	480 ¹
Facings	Inner	Cross grain Poplar	4 (t)	510 ¹
	Outer	Beech veneer	0.5 (t)	600 ¹
Adhesive	Lippings	PU	-	-
	Facings to core	Melamine Urea Formaldehyde	-	-

1 Stated nominal densities.

5.1.2 Stredor® 54 Type B

The primary tested facing materials based on for the Stredor® 54 Type B doorset design are detailed in the table below. Where specified the leaves are lipped with hardwood.

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	20.0 (t) x 25-35 (w) (nominal individual lamel size)	480 ¹
Facings	Inner	Cross grain Poplar	4.2 (t)	510 ¹
	Outer	Beech veneer	0.4 (t)	600 ¹
Adhesive	Lippings	PU	-	-
	Facings to core	Melamine Urea Formaldehyde	-	-
Lippings – all edges		Sapele	6 (t)	640 ²

1 Stated nominal densities.

5.2 Leaf Option 2 – 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.

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

5.3 Timber Lippings

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

Doorset Lipping Specification		
Material	Size (mm)	Min. Density (kg/m ³)
Hardwood ¹ must be straight grained, joinery quality hardwood, free from knots, splits and checks	1. Flat = 6 - 12 thick with a maximum of 2mm profiling permitted at corners of lipping (see diagrams in section 7.1)	640
	2. Rounded = not permitted	
	3. Rebated = not permitted	

Notes:

1. Based on the results of test WF413865, Strelip® 60 material may also be used for lippings. Minimum density must be 661kg/m³, permitted Strelip® 60 thickness is minimum 8mm to maximum 13mm
2. Overpanels must be lipped on all edges
3. A 2.5° chamfer is permitted to the lipping at the leading edge of leaves providing the door gaps meet the requirements of section 12.1.

5.4 Decorative Facings

The following additional facing materials are permitted for these door designs since they would degrade rapidly under test conditions without significant effect.

Facing Material	Maximum Permitted Thickness (mm)
Paint	0.5
Timber veneers	1.8
PVC & Plastic laminates	2.0
Cellulosic/non-metallic foil	0.4

Notes:

1. Metallic facings are not permitted (except push plates and kick plates)
2. The door leaf thickness may be reduced by a total maximum of 0.5mm to each face (a maximum of 1.0mm 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 and plastic laminates must not be applied to the edges of leaves.

5.4.1 Timber Substrate Facings

Tests carried out on Strebord® 54 leaf design have demonstrated that the application of facings considered structural have not been detrimental to fire integrity performance. The following additional facing materials may be applied as a facing material provided they are adhered using PVA/PU/UF adhesive.

Facing Material	Maximum Permitted Thickness (mm)
MDF	6

Notes:

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 5.4.2 may be applied in addition to these timber substrate facings
4. Hardware incorporated into doorsets must be capable of accommodating the adjusted weight after additional facings are applied
5. Timber based substrate facings may be routed or recessed for decorative purposes, prior to or after application, in any location provided the recessing does not break the surface of the Strebord® door leaf detailed in section 5.2
6. Timber substrate facings may be applied to Strebord® 54 leaves only.

5.4.2 Decorative Planted Timber Mouldings

Decorative mouldings can be applied to Falcon Stredor® 54 and Strebord® 54 door leaves 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.

5.5 Leaf size adjustment prior to machining

Stredor® 54 and Strebord® 54 door leaves may be altered as follows prior to the machining for hardware.

Pre-Machining Leaf Size Adjustment Specification	
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 during the manufacturing process , providing a minimum thickness of 6mm of lipping is maintained

6 Glazing

6.1 General

The testing conducted on Falcon Panel Products Limited Stredor® 54 and Strebord® 54 has demonstrated that the designs are capable of tolerating glazed apertures, whilst providing a margin of over performance. All door leaf options have successful test evidence with glazing:

Stredor®54 – CFR1812191_1.

Strebord®54 – WF401039, WF418106, CFR1902142 and CFR1808152.

Glazing is therefore acceptable within the following parameters.

The maximum assessed glazed area for all configurations is 1.0m² per leaf. Multiple apertures are acceptable within this permitted glazed area, with a minimum dimension of 80mm of door core separating the apertures.

Glazed openings must not be less than 150mm from any door edge.

The Strebord® 54 design has been successfully tested in CFR1808152 with two apertures, the Stredor® 54 door design has not been tested with multiple apertures but in the opinion of Warringtonfire when a distance of 150mm (as tested in CFR1808152) is used to separate the apertures sufficient structural integrity will remain between the aperture during the fire test and any charring around the glazed aperture will not be affected by the adjacent aperture. Based on charring rates given EN1995-1-2 table 3.1.

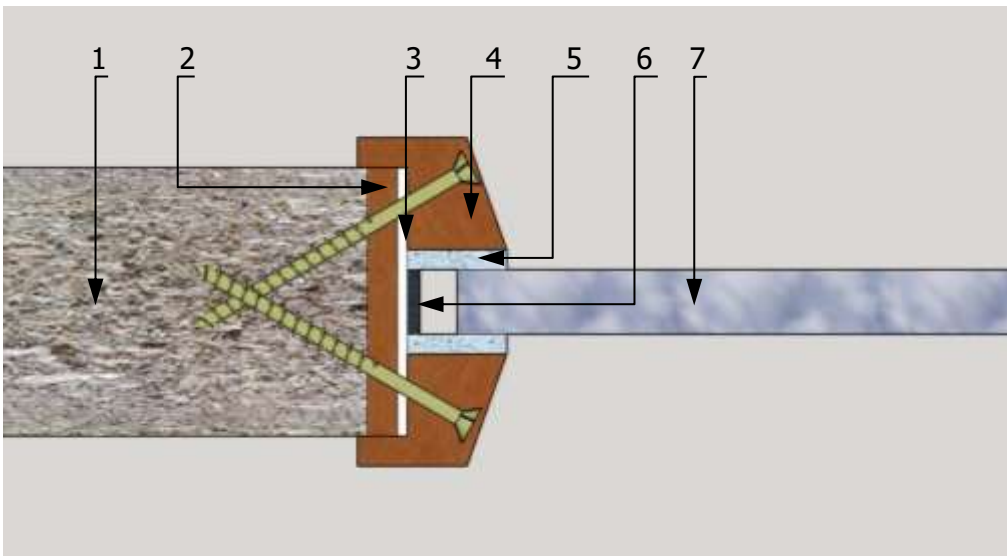
6.2 Glass and Glazing Systems

6.2.1 Pyroguard UK Ltd - T EW60 66.2 RV 13mm thick

The glazing system must be the following tested system which must utilise the tested Pyroguard glass type.

Test CFR1902142 and CFR1808152 incorporated the tested details shown below.

The Pyroguard glass type must be fitted in accordance with the manufactures' tested details/instruction requirements, particularly with respect to edge cover and expansion clearance.



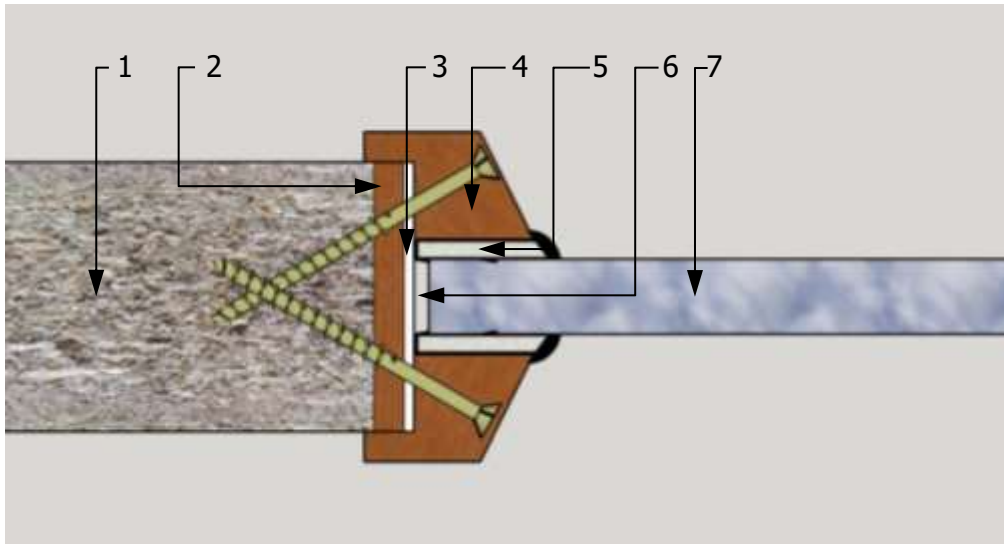
Tested in CFR1902142 and CFR1808152

- (1) Stredor® 54 or Strebord® 54 leaf
- (2) Minimum 6mm thick hardwood aperture liner (optional for Strebord 54), timber must be a minimum density of 640kg/m³ excluding Beech (*Fagus sylvatica*) and related species
- (3) 2mm x 54mm ISL ref: Therm-A-Seal lining aperture
- (4) Hardwood beading measuring 30.5mm high x 26mm wide including a minimum 5mm x 7mm bolection return and a 20-30° chamfer, fitted around the glazing apertures on both faces. The beading must be a minimum density of 640kg/m³ excluding Beech (*Fagus sylvatica*) and related species. Timber for glazing beads must be straight grained, joinery quality hardwood, free from knots, splits and checks
- (5) ISL 20 x 5mm thick (uncompressed size) ref: ISL60Plus intumescent fitted between the glass and beads on both faces
- (6) 2 x 13mm wide Sealmaster FireGlaze tape between the edge of the glass and leaf
- (7) Pyroguard UK Ltd - T EW60 66.2 RV 13mm thick
- (8) Glazing system can be fitted within the Stredor® 54 and Strebord® 54 door designs.

6.2.2 NSG Pilkington Pyrostop EI30-10, 15mm

The glazing system must be the following tested system.

The Pyrostop glass must be fitted in accordance with the manufactures' tested details/instruction requirements, particularly with respect to edge cover and expansion clearance.



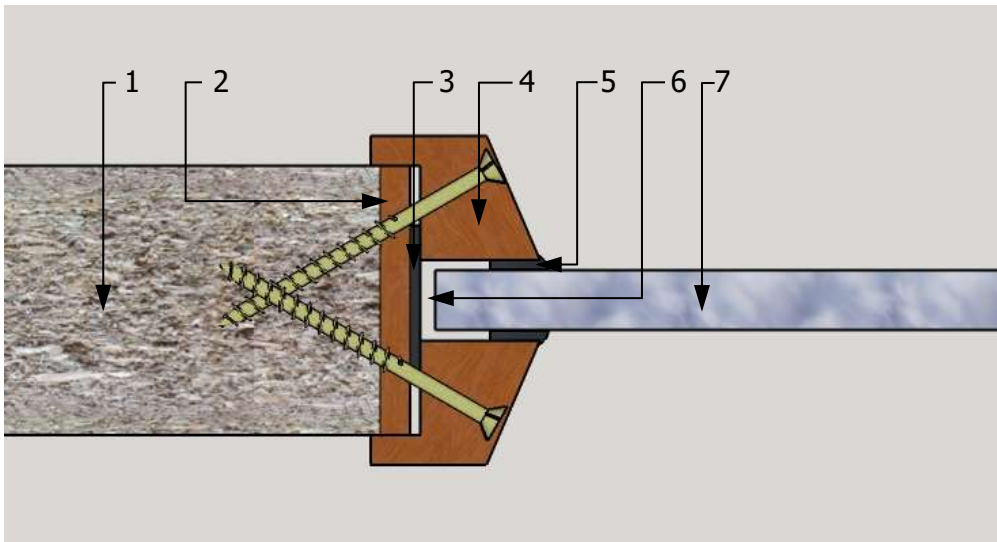
Tested in WF401039

- (1) Stredor® 54 or Strebord® 54 leaf
- (2) Minimum 6mm thick hardwood aperture liner, timber must be a minimum density of 640kg/m³ excluding Beech (*Fagus sylvatica*) and related species
- (3) 2mm x 54mm Lorient Polyproducts Ltd Ref: B25402 sodium silicate lining aperture (part of Lorient Polyproducts RF1 system)
- (4) Hardwood beading measuring 35mm high x 23mm wide including a 10mm x 6mm bolection return and a 20°-30° chamfer, fitted around the glazing apertures on both faces. The beading must be a minimum density of 640kg/m³ excluding Beech (*Fagus sylvatica*) and related species. Timber for glazing beads must be straight grained, joinery quality hardwood, free from knots, splits and checks
- (5) 24mm x 6.5mm (size as uncompressed) Lorient Polyproducts Ltd Ref: RG2704 (part of Lorient Polyproducts RF1 system) fitted between the glass and beads on both faces
- (6) 3 - 5mm gap for expansion
- (7) NSG Pilkington Pyrostop EI30-10, 15mm thick
- (8) Glazing system can be fitted within the Stredor® 54 and Strebord® 54 door designs.

6.2.3 AGC Pyrobelite 12/Pyrobelite 12EG

The glazing system must be the following tested system.

The Pyrobelite glass must be fitted in accordance with the manufactures' tested details/instruction requirements, particularly with respect to edge cover and expansion clearance.



Tested in CFR1812191_1

- (1) Stredor® 54 or Strebord® 54 leaf
- (2) Minimum 6mm thick hardwood aperture liner (optional), timber must be a minimum density of 640kg/m³ excluding Beech (*Fagus sylvatica*) and related species
- (3) 2mm x 30mm Sealed Tight Solutions Ltd Ref: 302GL graphite, lining aperture
- (4) Hardwood beading measuring 30mm high x 26mm wide including a 5mm x 7mm bolection return and a 20°-30° chamfer, fitted around the glazing apertures on both faces. The beading must be a minimum density of 640kg/m³ excluding Beech (*Fagus sylvatica*) and related species. Timber for glazing beads must be straight grained, joinery quality hardwood, free from knots, splits and checks
- (5) 10mm x 2mm Sealed Tight Solutions Ref: STS104SG fitted between the glass and beads on both faces
- (6) 3 - 5mm gap for expansion
- (7) AGC Pyrobelite 12 / Pyrobelite 12 EG
- (8) Glazing system can be fitted within the Stredor® 54 and Strebord® 54 door designs.

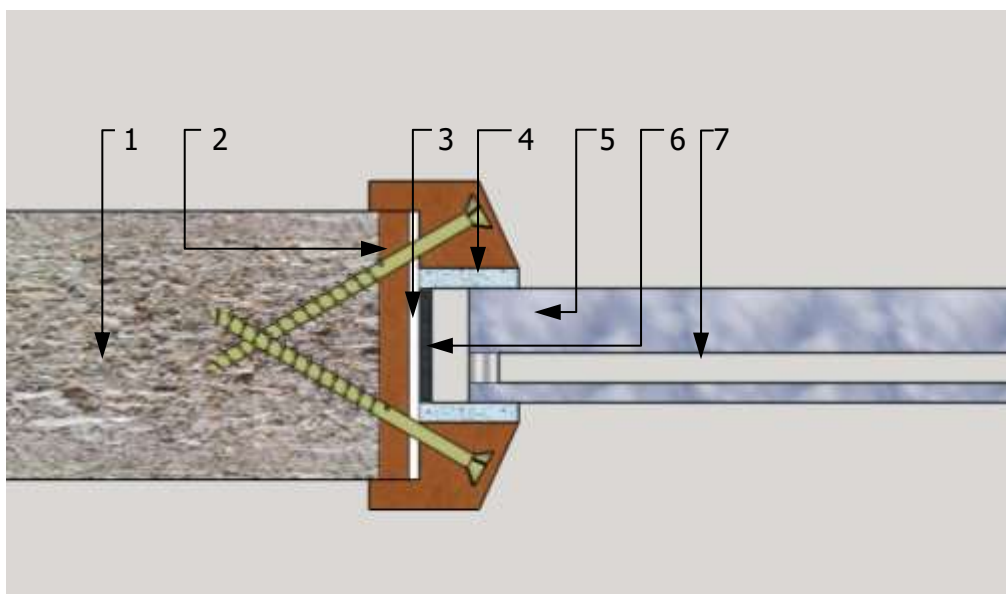
6.2.4 Glazing Beads & Installation for glass types above

1. Glazing beads must be retained in position with minimum 4ømm (No. 8 – 10) x 60mm (2.5 inch) long steel screws or minimum 1.6mm x 60mm pins (pneumatically fired pins permitted), inserted at 25° - 35° to the vertical at no more than 50mm from each corner and at 150mm maximum centres
2. A 6 – 10mm thick square aperture liner may be used, constructed from hardwood of a minimum density of 640kg/m³ and glued in position using a PVA/PU/UF type adhesive
3. Square Beads are not permitted
4. False timber beads must not be applied across the glass face without specific test evidence to justify the system used.
5. Timber for glazing beads must be straight grained, joinery quality hardwood, free from knots, splits and checks.
6. The shape of glazed apertures is not restricted providing the glazing system can accommodate the profile.

6.2.5 Pyroguard UK Ltd - T EW60 66.2 RV 13:6mm Argon, 4mm Toughened IGU 23mm thick

The glazing system must be the following tested system. There were two samples of the IGU tested in CFR1810311; 1No oriented with the Pyroguard toward the furnace conditions and 1No with the toughened glass oriented toward the furnace conditions. Therefore the IGU, as specified below, may be installed in doorsets oriented in either direction with respect to the fire risk.

The Pyroguard IGU must be fitted in accordance with the manufactures' tested details/instruction requirements, particularly with respect to edge cover and expansion clearance.



Tested in CFR1810311

- (1) Strebord® 54 leaf, not permitted within Stredor® 54 leaf
- (2) Minimum 6mm thick hardwood aperture liner, timber must be a minimum density of 640kg/m³ excluding Beech (*Fagus sylvatica*) and related species
- (3) 2mm x 54mm ISL ref: Therm-A-Sol lining aperture
- (4) Hardwood beading measuring 30mm high x 19mm wide including a 10mm x 6mm bolection return and a 20°-30° chamfer, fitted around the glazing apertures on both faces. The beading must be a minimum density of 640kg/m³ excluding Beech (*Fagus sylvatica*) and related species. Timber for glazing beads must be straight grained, joinery quality hardwood, free from knots, splits and checks
- (5) ISL 20 x 5mm thick (uncompressed size) ref: ISL60Plus intumescent fitted between the glass and beads on both faces
- (6) 2 x 20mm wide Sealmaster FireGlaze tape between glass and leaf
- (7) Pyroguard UK Ltd - T EW60 66.2 RV 13mm thick:6mm Argon/Air Space:4mm Clear Toughened 23mm Thick IGU
- (8) Glazing system can be fitted within the Strebord® 54 door design only.

Notes on glazing beads and installation for IGU:

1. Glazing beads must be retained in position with 4.3ømm (No. 8 – 10) x 60mm (2.5 inch) long steel screws, inserted at 25° - 35° to the vertical at no more than 50mm from each corner and at 150mm maximum centres
2. A 6 – 10mm thick square aperture liner is required for use, constructed from hardwood of a minimum density of 640kg/m³ and glued in position using a PVA/PU/UF type adhesive
3. Square Beads are not permitted
4. False timber beads must not be applied across the glass face without specific test evidence to justify the system used.
5. Timber for glazing beads must be straight grained, joinery quality hardwood, free from knots, splits and checks.
6. The shape of glazed apertures is not restricted providing the glazing system can accommodate the profile.

7 Door Frames

7.1 Door Frame Construction

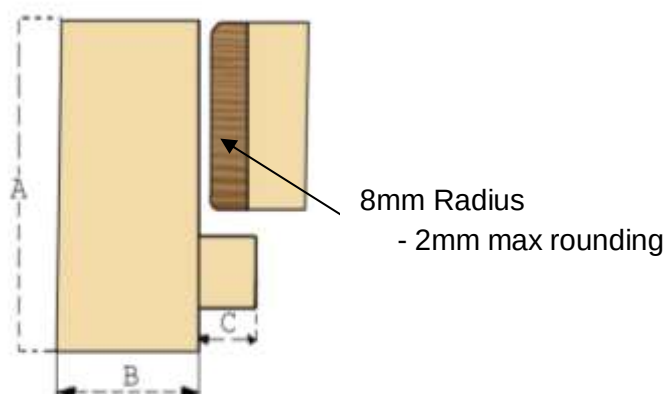
Door frames for Stredor® 54 and Strebord® 54 doorsets must be timber and constructed as follows.

Door Frame Specification for Falcon Stredor® 54 and Strebord® 54			
Frame Option	Material	Minimum Section Size(mm)	Min. Density (kg/m ³)
1	Hardwood ¹	90 x 29	640

Notes:

1. Hardwood excludes Beech (*Fagus sylvatica*) and other related species
2. Frame width does not include the stop thickness
3. All door frame timber must meet or exceed class J30 as specified in BS EN 942: 2007 (subject to adequate repair of any defects)
4. Rounded or rebated quirk edges to door frames are not permitted
5. A 12mm deep planted or integral stop is adequate for single acting frames
6. Frame joints must be mortice and tenoned, mitred, half lapped or butt jointed, with no gaps and must additionally be mechanically fixed with appropriately sized ring shank nails or wood screws
7. To create a maximum 2mm rounded profile to the edges of square leaves, the maximum permitted radius to the corners of the leaf is 8mm (see diagram below).

The following diagram depicts the assessed frame profiles and dimensions:



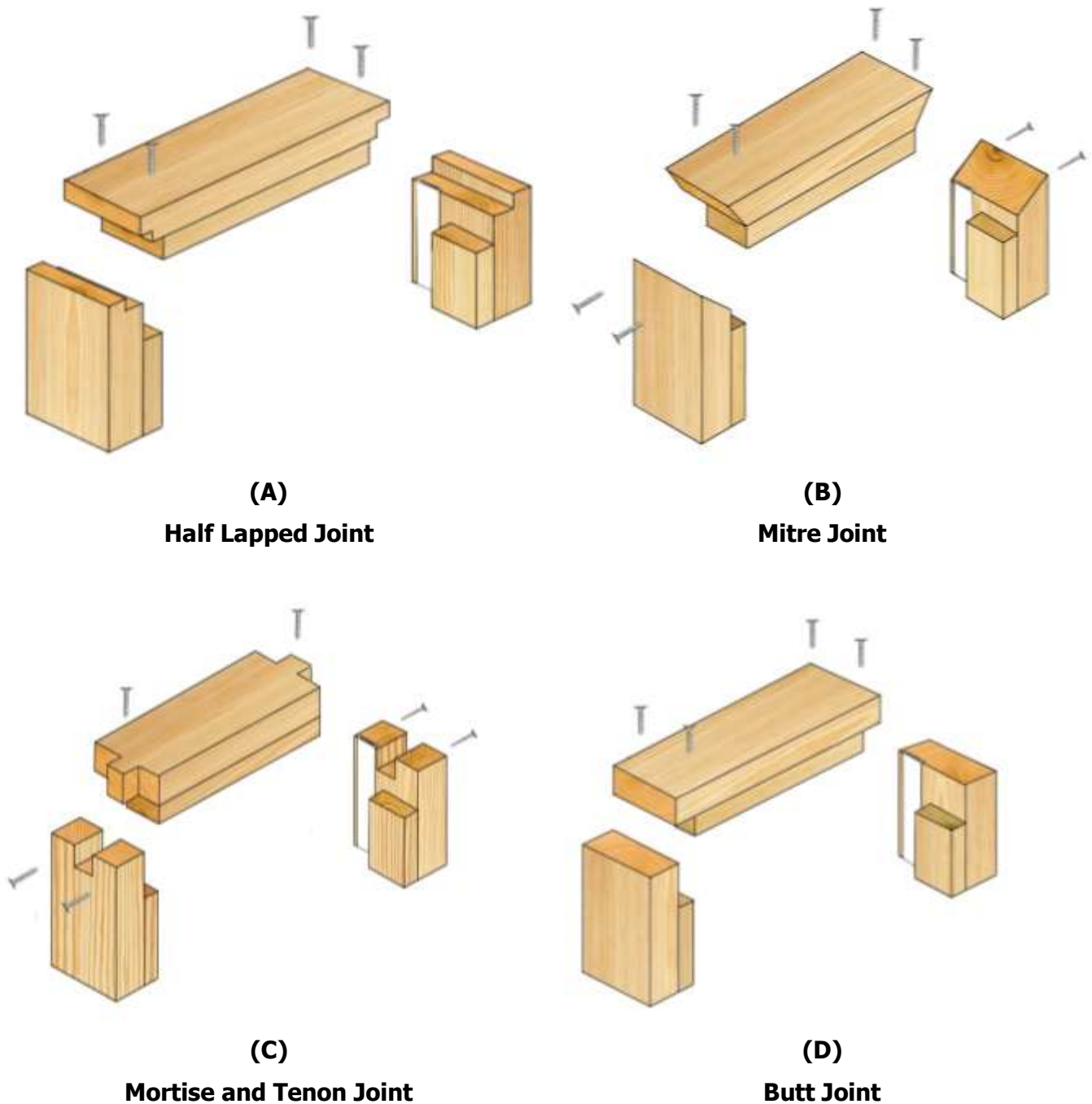
A = min. 90mm

B = min. 29mm

C = min. 12mm

7.2 Door Frame Joints

Figure 7.1 : Door Frame Joint Detail



8 Overpanels

8.1 Solid

Overpanels of the same construction as the door leaves may be used when separated by a transom and must be lipped on all edges. 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 may be either mortise 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 or equivalent.

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 Section 4.5 must also be fitted to all four edges of the overpanel. The seals may be fitted in the overpanel edges or alternatively in the frame reveal.

Maximum overpanel dimensions are given as follows:

Maximum Overpanel Dimension Specification		
Configuration	Height (mm)	Width (mm)
Single Doorsets	2000	Overall door width

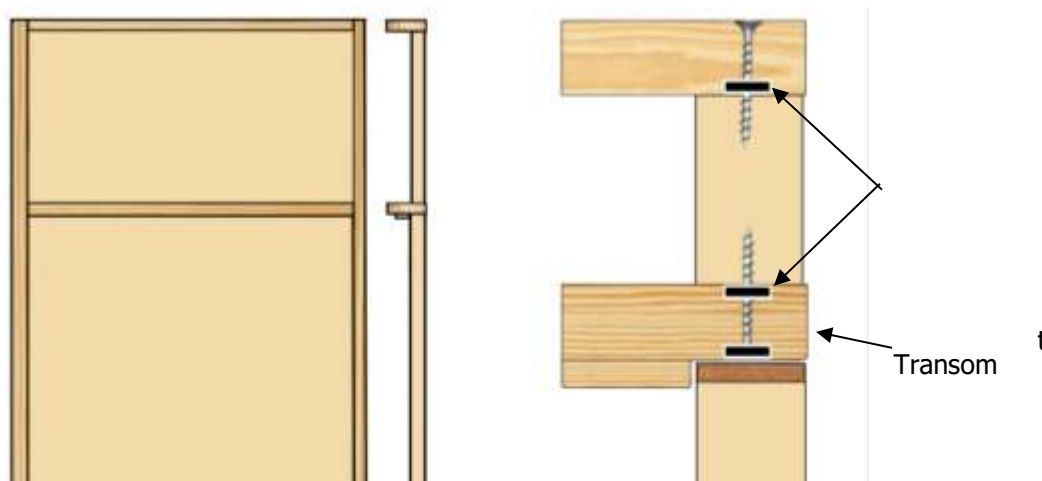


Figure 8.1 : Overpanel Construction Detail

8.2 Glazed Fanlights

The installation of glazed fanlights is not permitted.

9 Intumescent Materials for Hardware

The intumescent materials tested and assessed for this doorset design are as follows. The intumescent protection must be fitted to all relevant items of hardware as listed below. The seal specification for each doorset configuration is shown in Section 4.

Hardware Intumescent Specification		
Application	Location	Product/Manufacturer
Hinges	Underneath both hinge blade	1. 2mm Interdens – Dufaylite Developments Ltd.
3 Point - Lock/latches	Fitted under latch and keep forend	2. 2mm MAP paper – Lorient Polyproducts Ltd 3. 2mm Pyrostrip 300 – Mann McGowan Ltd 4. 2mm Therm-A-Strip – Intumescent Seals Ltd. 5. 1mm Graphite – Seal Tight Solutions Ltd
Concealed closer	See section 11.3.3	-
Lining drop seal mortice	Lining drop seal mortice	1. 1mm MAP paper – Lorient Polyproducts Ltd 2. 1mm Therm-A-Strip – Intumescent Seals Ltd.

10 Adhesives

The following adhesives must be used in construction.

Stredor® 54

Element	Product
Core	MUF/PVAc-D2 (details held on file by Warringtonfire)
Lipping ¹	Polyurethane/PUR
Facings	MUF (details held on file by Warringtonfire)
Door Frame Joints	PVA/PU

¹Where Strelip® 60 is used for lippings, PUR must be used.

Strebord® 54

Element	Product
Core	Manufacturers Specification
Lipping ¹	Polyurethane/PUR
Door Frame Joints	PVA/PU

¹Where Strelip® 60 is used for lippings, PUR must be used.

11 Hardware

11.1 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 CE Mark:

1. Single axis hinges: Test Standard EN 1935
2. Controlled door closing devices: Test Standard EN 1154
3. Electrically powered hold-open devices: Test Standard EN 1155
4. Emergency exit hardware: Test Standard EN 179
5. Panic exit hardware: Test Standard EN 1125.

11.2 Tested Hardware

The following hardware has been successfully incorporated in the tests on the Stredor® 54 and Strebord® 54 doorset designs:

Element	Product	Reference
Hinges	Zoo bearing butt hinge	-
	Royde & Tucker Butt Hinge	H207
	Arrone Butt Hinges	8182
	Zoo Hardware Butt Hinges	CF849
	Royde & Tucker Lift-Off Hinges	H101
	Carlisle Brass	HIN1433/13
Closer	Concealed Closers	
	Geze concealed closer ¹	Boxer 2-4
	Astra Door Controls - Jamb Mounted	4003
	Face Fixed Overhead Closer	
	Arrone overhead closer	AR1500
	Rutland overhead closer	TS11204
3 POINT - Locks²	Dorma overhead closer	TS92
	ERA Multipoint latch	Surefire Classic
	Glutz Multipoint latch	Mint 1893/18931
	Winkhaus Multipoint latch	AV2
	ERA Cylinder	Fortress 3*
	Glutz Cylinder 35/35	GC0009 3*
Furniture	Yale Cylinder 35/35	Platinum 3*
	UAP eye viewer	SWALF14BRASSUP
	Glutz brass eye viewer	GY3504
	Zoo lever handles	ZPS 030SS
	Zoo escutcheon	ZPS 001SS
	Glutz Zurich lever handles	5088/5620 rose
	Glutz escutcheon	5380C.3
	Hafele handleset	HL03
	Escutcheon	Serozzetta EP SS
	Easi-Exit Escutcheon	DLS7260ESC
	Zoo Hardware Lever Handle	Stanza ZPZ090SC

Notes:

¹ See section 11.3.3.1 for full requirements of the Geze Boxer concealed closer

² See section 11.3.1 for details of required installation method for multipoint locksets

³ Glutz Mint latch was tested with centre latch only engaged.

11.3 Additional & Alternative Hardware

11.3.1 Latches & Locks

The tested ERA Surefire Classic, Glutz Mint 1893 or Winkhaus AV2 multipoint latch may be utilised with either of the Strebord® 54 and Stredor® 54 door designs.

The installed latch must be protected with the tested intumescent protection detailed below. It is preferable the latch be kept locked at all 3 locking points when not in active use.

Element		Specification (mm)
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	1. 1mm thick raw graphite - Sealed Tight Solutions Ltd 2. 1mm thick Therm-A-Strip – Intumescent Seals Ltd 3. 1mm thick MAP – Lorient Polyproducts Ltd 4. 1mm Interdens – Dufaylite Developments Ltd.
	Under all Forends	1. 1mm thick raw graphite - Sealed Tight Solutions Ltd 2. 1mm thick Therm-A-Strip – Intumescent Seals Ltd 3. 2mm thick MAP – Lorient Polyproducts Ltd 4. 2mm Interdens – Dufaylite Developments Ltd.
	Under all and Keeps	1. 2mm thick raw graphite - Sealed Tight Solutions Ltd 2. 2mm thick Therm-A-Strip – Intumescent Seals Ltd 3. 2mm thick MAP – Lorient Polyproducts Ltd 4. 2mm Interdens – Dufaylite Developments Ltd.
Materials		All parts essential to the latch must remain as tested
Location		Centre latch nib to be installed between 950mm and 1050mm from the threshold

For fire resistance performance, alternative cylinders, handles and security furniture to that tested with the latches and listed in section 11.2 may be utilised provided they are of no larger dimensions and comprised of the same, tested materials. The PAS24:2016 test standard allows for alternative items provided they have a combined TS007 rating of 3 stars or above.

11.3.2 Hinges

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

Alternative hinges not listed in section 11.2 must be Certifire approved for 60 minutes in ITT doorsets with solid timber door leaves.

Element	Specification
Blade height	90 – 120mm
Blade width (excluding knuckle)	30 – 35mm
Blade thickness	2.5 - 4mm
Fixings	Minimum of 4No. 30mm long No. 8 or No. 10 steel wood screws per blade
Materials	Steel or stainless steel
Hinge positions (to top of blade)	Top: 100 – 180mm from the head of the leaf Middle: Equispaced between top and bottom hinges Bottom: 150 – 250mm from the foot of the leaf
Intumescent protection	see section 9

11.3.3 Automatic Closing

Alternative overhead face fixed closers not listed in section 11.2 must be Certifire approved for 60 minutes in ITT doorsets with solid timber door leaves.

11.3.3.1 Geze Boxer Concealed Closer

The Geze Boxer concealed closer was tested in report WF401039 and is permitted for installation subject to the following requirements;

1. May only be fitted into the Strebord® 54 doorset design using intumescent specification A2 in section 4.5.4.1. No increase in frame head thickness or leaf lippings is required
2. The closer must be fitted with the following intumescent protection:
 - Closer arm partially interrupts both seals in the frame head, leaving 8mm of each continuous
 - 1mm thick Lorient MAP or Interdens must be installed lining all sides of the closer body rebate in the leaf head and on top of the closer body.
3. The concealed closer must be installed as per the manufacturer's instructions.

11.3.3.2 Astra Door Controls 4003 concealed, jamb mounted closer

Based on the results of WF413865, the 4003 concealed, jamb mounted closer is permitted for installation subject to the following requirements:

1. May be fitted to either Stredor® 54 or Strebord® 54 door designs
2. The closer must be mounted between 600 – 1000mm above the threshold
3. The closer must be fitted with the following intumescent protection:
 - 1mm thick Intumescent Seals Ltd Therm-A-Strip must be installed Encasing closer body and under the forends in both leaf and door frame
 - The closer reaction plate (forend) in the door frame will partially interrupt both intumescent seals leaving 4mm of each seal running continuous past the plate.

11.3.4 Pull Handles

These may be surface-fixed to the door leaf provided that they are steel or stainless steel and the length is limited to 1200mm between the fixing points. No additional intumescent protection is required provided that the hole for the bolt through the leaf is tight.

11.3.5 Push Plates/Kick Plates

Steel or stainless steel face-fixed hardware such as push plates and kick plates may be fitted to the doorsets. 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.

11.3.6 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.

11.3.7 Door Security Viewers

The UAP and Glutz door security viewers were successfully tested in reports CFR1902142 and WF401039. Alternative door security viewers with steel or stainless 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.

11.3.8 Air transfer grilles

Air transfer grilles must be Certifire approved for 60 minutes in ITT doorsets with solid timber door leaves. Restriction relating to size, location and intumescent protection around the air transfer grille must be complied with.

The area occupied by the air transfer grille must not exceed 0.2m² and must be deducted from the area of glazing, if both elements are fitted.

11.3.9 Environmental Seals

Silicon based flame retardant acoustic, weather and dust seals (e.g. Lorient IS1212, IS1511, IS7025, IS7060, Sealmaster Delta or Sealed Tight Solutions Ltd. ST1009) may be fitted to this doorset design without compromising the performance, providing their fitting does not interfere with the activation of the intumescent seals or hinder the self-closing function of the leaves.

The Sealmaster 'Delta' smoke seal was successfully tested in report CFR1902142. This seal must be fitted to upstand of the stop in the frame. The seal must be installed as per the manufactures instructions.

11.3.10 Threshold drop Seals

A Lorient 8001Si and Sealmaster DRP drop seals were successfully tested in reports WF401039 and CFR1902142 and are acceptable in all door designs. The drop seal must be fitted with 1mm thick Interdens to all sides of the rebate under the drop seal. The following types of automatic threshold drop seals may be recessed into the bottom of leaves without compromising the performance.

Product	Manufacturer
IS8010si, IS8010Si	Lorient Polyproducts Ltd.
RP8Si	Raven Products Ltd.
Schall-Ex Duo L-15	Athmer HG
NOR810, NOR810S, NOR810dB+	Norsound Ltd.
FAS45	Fire & Acoustic Seals Ltd.
DRP2712	Sealmaster (Dixon International Group Ltd)
STS 422, STS 422GT	Sealed Tight Solutions Ltd

All drop seals must be fitted in line with the manufacturing's instructions and intumescent protections for 60 minutes in the appropriate door blank.

11.3.11 Letter Boxes/Plates

Letter boxes/plates must be Certifire approved for 60 minutes in ITT doorsets with solid timber door leaves. Restriction relating to size, location and intumescent protection around the Letter box/plate must be complied with.

The area of the letter plate (and air transfer grille if present) plus any glazing must not exceed the total permitted area for glazing in the leaf.

12 Installation

12.1 Door Gaps

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

Location	Dimensions
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	10mm between bottom of leaf and top of floor covering ¹

Note:

¹ Tolerances are for fire resistance performance. Refer to section 14 for smoke control tolerances.

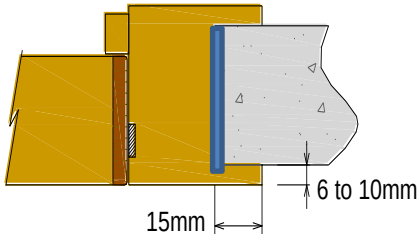
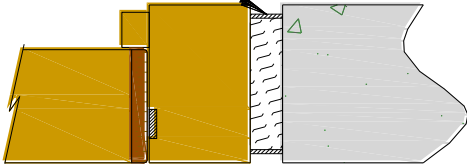
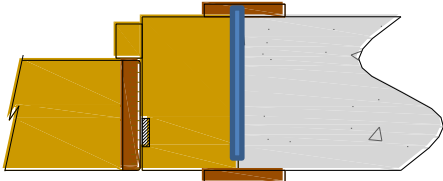
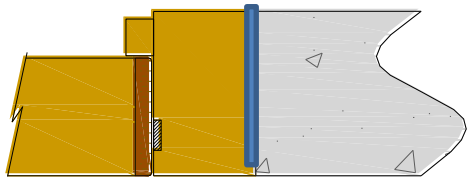
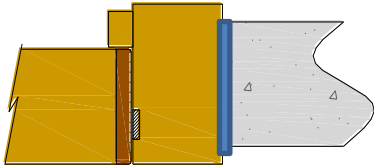
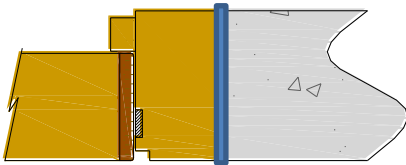
12.2 Onsite Leaf Size Adjustment

Door leaves may be altered as follows.

Element	Reduction
Lipping	The lipping thickness can be reduced by 1mm to assist with onsite fitting of leaf.

12.3 Door Frame Installation

Diagrams indicate acceptable and unacceptable configurations for frame installations:

Permitted Installations	
 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.	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 junction 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.
 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 12.5.	 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.
Installations Not Permitted	
 Unless the frame thickness is increased to include the thickness of a bolection return, (i.e. 47mm) 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.	 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.

Notes:

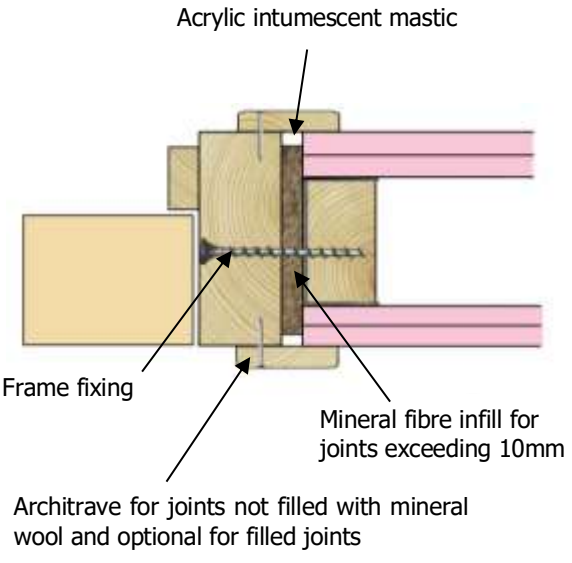
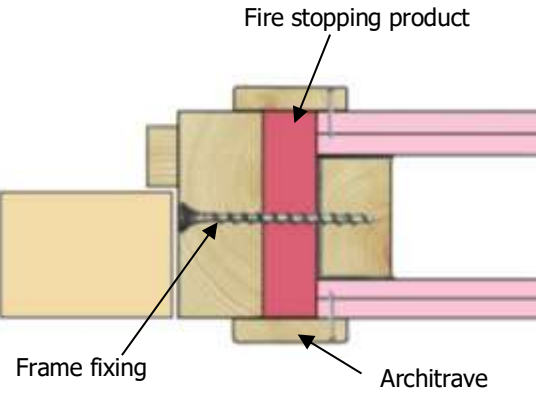
1. Dark brown = lippings and architraves; blue = 5-10mm fitting tolerance for sealing.
2. Structural openings (walls) may be thicker than frames providing the minimum frame sections in section 7 are maintained and frame to structural opening junctions are sealed in accordance with section 12.5.
3. The diagrams above are representative; actual installation must be as the text within this document specifies.

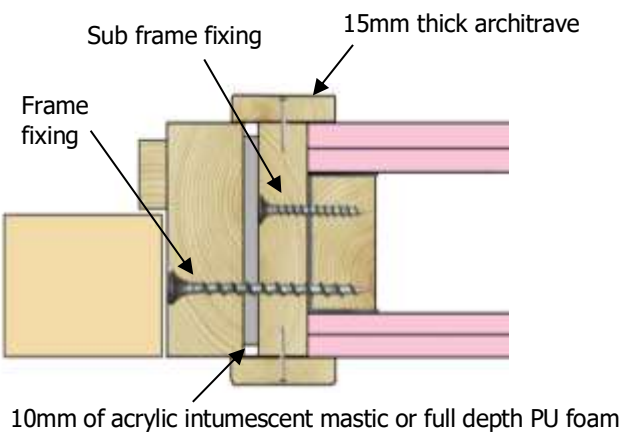
12.4 Fixings

The supporting construction must be capable of staying in place and intact for the full period of fire resistance required from the doorset. The frame jambs 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.

12.5 Sealing to Structural Opening

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

Door Frame to Supporting Structure Fire Stopping Specification	
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. Joints must be fitted with 15mm thick architraves overlapping at least 15mm each side.	 Acrylic intumescent mastic Frame fixing Mineral fibre infill for joints exceeding 10mm Architrave for joints not filled with mineral wool and optional for filled joints
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.	
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. Joints can be fitted without architrave if this has been successfully tested. If this isn't the case, a 15mm thick architraves overlapping at least 15mm each side.	 Fire stopping product Frame fixing Architrave

Door Frame to Supporting Structure Fire Stopping Specification	
4. Timber based or non-combustible subframe 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. Joints must be fitted with 15mm thick architraves overlapping at least 15mm each side.	

Note:

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

13 Insulation

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

Insulation Performance Specification	
Type	Details
Partially insulating	Doorsets incorporating up to 20% of non-insulating glass
Fully insulating	Unglazed doorsets

14 Smoke Control

14.1 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 $3\text{m}^3/\text{m}/\text{hour}$ (head and jambs only) when tested at 25Pa under BS 476 *Fire tests on building materials and structures*, Section 31.1 - *Methods for measuring smoke penetration through doorsets and shutter assemblies, Method of measurement under ambient temperature conditions*; or
- (b) meet the additional classification requirement of Sa when tested to BS EN 1634-3: 2004 - *Fire resistance tests for door and shutter assemblies, Part 3 – Smoke control doors*.

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.

14.2 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.

15 Conclusion

If Falcon Panel Products Ltd. Stredor® 54 or Strebord® 54 Fire Resisting 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 60 minutes integrity and insulation, subject to section 13.

16 Declaration by the Applicant

We the undersigned confirm that we have read and comply with obligations placed on us by FTSG Resolution No. 82: 2001.

We confirm that the component or element of structure, which is the subject of this Field of Application, has not to our knowledge been subjected to a fire test to the Standard against which this assessment is being made.

We agree to withdraw this Field of Application 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.

We are not aware of any information that could adversely affect the conclusions of this Field of Application.

If we subsequently become aware of any such information, we agree to ask the assessing authority to withdraw the Field of Application.

Signed:

Name:

For and on behalf of: **Falcon Panel Products Ltd.**

17 Limitations

The following limitations apply to this Field of Application:

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

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

This Field of Application has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.

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

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

This Field of Application 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 authority as sufficient for that or any other purpose. This Field of Application 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.

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.

18 Validity

The Field of Application is initially for 5 years from the date of issue, after which time it must be submitted to Warringtonfire for technical review and revalidation.

This Field of Application report is not valid unless it incorporates the declaration given in Section 16, duly signed by the applicant.

Signature:		
Name:	A M Winning	Dr K D S Towler
Title:	Senior Product Assessor	Senior Product Assessor

Appendix A – Performance Data (Primary Data)

Report No.	Configuration	Leaf Size (mm)	Test Standard	Performance (mins)	
CFR1812191-1 (Primary evidence Stredor 54 STS seals)	LSASD (Glazed)	2192 1046 54		Integrity	71
				Insulation	34
WF401039 (Primary evidence Strebord 54 Type 617 seals)	LSASD (Glazed)	2402 1048 54		Integrity	67
				Insulation	57
WF418106 (Primary evidence Strebord54 STS seals)	LSASD (Glazed)	2185 1048 54		Integrity	66
				Insulation	66
CFR1902142 (Primary evidence Strebord 54 ISL seals)	LSASD (Glazed)	2186 1050 54		Integrity	68
				Insulation	63

Supporting Test Data

CFR1808152 (Supporting data for Pyroguard UK: T EW60 66.2 RV glass)	LSASD (Glazed)	2178 1046 54	BS 476: Part 22: 1987	Integrity	68
				Insulation	56
WF412601 (Comparison of Stredor 54 core production facilities)	A&B ULDASD	A&B 2040 926 54		A&B Integrity	71
				A&B Insulation	71
CFR1810311 (Supporting data for Pyroguard UK: T EW60 66.2 RV glass in IGU)	ULSASD	2179 1046 54		Integrity	40*
WF408989 (Identical Strebord 54 specimens) Specimen A opening away from furnace Specimen B opening towards furnace	A&B ULSASD	A&B 2033 925 54		A Integrity	78
				A Insulation	78
				B Integrity	71
				B Insulation	71

* No failures related to the glazing installation recorded prior to termination of the test at 68 minutes.

Supporting Test Data for additional substrate facings (see section 5.4.1)

Report No.	Configuration	Leaf Size (mm)	Test Standard	Performance (mins)	
WF414534 (Strebord 54 specimen with 5mm MDF facings opening in towards furnace)	ULSADD	2495 1132/1132 64	BS 476: Part 22: 1987	Integrity	73
WF414539 (Strebord 54 specimen with 5mm MDF facings opening away from furnace)	ULSADD	2495 1130/1130 64		Integrity	75
WF414536 (Identical Strebord 54 specimens with 5mm MDF facings) Specimen A opening away from furnace Specimen B opening in towards furnace	A&B ULSASD	A&B: 2370 937 65		A Integrity	83
				B Integrity	85

Appendix B – Revisions

Revision	Warringtonfire Reference	Date	Description