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Title

Field of Application for:

Falcon Strebord® 54 Doorsets

For 60 Minutes Fire Resistance

Report No.:

Chilt/A02067 Revision N

Issue Date:

31st January 2025

Valid Until:

31st January 2030

Job Reference:

WF547265

Prepared for:

Falcon Timber Limited.
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The version/revision stated on the front of this Field of Application supersedes all previous versions/revisions and must be used to manufacture doorsets from the stated validity date on this front cover. Previous revisions of the Field of Application cannot be used once an updated Field of Application has been issued under a new revision.

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1 Foreword

This field of application report has been commissioned by Falcon Timber Limited and relates to the fire resistance of 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 476-22: 1987.

This field of application has been written using appropriate test evidence generated at UKAS accredited laboratories[1], to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturers stated door design and is summarised in section 3.

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

This field of application has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the Passive Fire Protection Forum (PFPF) *'Guide to Undertaking Technical Assessments of the Fire Performance of Construction Products Based on Fire Test Evidence'*. The aim of the PFPF guidelines is to give confidence to end-users that assessments that exist in the UK are of a satisfactory standard to be used for building control and other purposes.

Valid Certifire and field of application supporting documentation has been used to increase the scope of application of this report. It is the responsibility of users to check that the cited versions of such supporting documentation remain valid at the time of use. Where new revisions or revalidations of supporting documentation have been issued they must be checked against those referenced in this report and, if their scope has changed, Warringtonfire must be consulted to review and consider the effect of these changes on the scope and conclusions of this report.

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

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

2 Proposal

It is proposed to consider the fire resistance performance of the specified proprietary Strebord® 54 doorset designs, for 60 minutes fire resistance integrity performance (and where appropriate insulation performance), if the doorset designs were to be tested to the requirements of BS 476-22: 1987, *Methods for determination of the fire resistance of non-loadbearing elements of construction.*

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

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

2.1 Assumptions

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

3 Test Data

The test evidence summarised below has been generated to support the fire resistance performance of the door designs that are the subject of this field of application. The summary details are considered to be the key aspects of the design tested. These test summaries are not intended to be a definitive guide to constructing a doorset. The details for the construction of a doorset must be taken from other sections within this field of application.

Note:

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

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

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

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

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

It is therefore the opinion of Warringtonfire that the evidence citied in the following section, tested to both named standards referenced above can be utilised in this assessment which will conclude in terms of the fire resistance performance of the Strebord® 54 doorset designs if tested in accordance with BS 476: Part 22: 1987.

3.1 Primary Test Evidence

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

3.1.1 Test Report WF518622 – Doorset A

The test evidence summarised below has primarily been used to support the Strebord® doorset design with four sided frames, located on an upstand of up to 250mm and including various hardware items.

Date of Test:	26th May 2022
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Single Leaf doorset mounted on a 250mm upstand. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	Sampling of the doorsets was conducted by a representative of BM Trada between 16/05/2022 & 24/05/2022, sampling contract SC22098.
Test Standard:	BS 476-22:1987 Clause 6
Performance:	**Integrity:** 64 minutes **Insulation:** 64 minutes
Summary of Test Specimen	**Leaf Size:** 2156mm (h) x 1045mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t) density 630kg/m^3. **Lipping:** Strelip® 10mm Engineered Hardwood, density 720kg/m^3. Applied to all four edges. **Door Frame:** Sapele 95 (d) x 30 (t)mm with planted stop 30 (d) x 12 (t). to all four sides. **Intumescent and Environmental Seals:** Frame: 2No. Mann McGowan 500P seals 15 (w) x 4 (t)mm fitted 7mm and 32mm from the frame face to all frame components. **Hardware:** 3 No Arrone AR812-SS Ball Bearing Butt Hinges with 102 (h) x 30 (w) x 3 (t) blades. Arrone AR1500 -SSS-SSS overhead closer 255 (w) x 67 (w) footprint size. Arrone AR8100-R-60-SSS sashlock, positioned 1600mm from the bottom of the door leaf. Arrone AR-KD-5121-CC-NP Cylinder Arrone AR961/60-SP-SSS-SS304 19mm RTD Lever handle on rose. Arrone AR525-MC Digi Lock –(Code 871355560 c/w tubular latch and keep. Positioned 700mm from the bottom of the door leaf. Pull Handles – Touchpoint S/S Bolt through -Ø19 x 300mm centres. Push Plates: 350x75x1.5mm Stainless steel to unexposed face Kick Plates: 1000x200x1.5mm Stainless Steel to both faces. **Hardware Protection:** **Hinges:** 1mm Mann McGowan Pyrostrip Interdens **Latch:** 1mm Mann McGowan Pyrostrip Interdens around the latch body, under forend and keep.

3.1.2 Test Report Chilt/RF99113

The test evidence summarised below has primarily been used to support the Strebord® doorset design with Lorient Polyproducts perimeter intumescents.

Date of Test:	24th November 1999
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf doorset. (ULSADD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987 Method 7
Performance:	**Integrity:** 61 minutes **Insulation:** 61 minutes
Summary of Test Specimen	**Leaf Size:** 2135mm (h) x 935mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t) density 630kg/m^3. **Lipping:** Sapele, 10mm Hardwood, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Sapele, density 640kg/m^3, 70 (d) x 32 (t) with a Sapele planted stop 12.5 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Lorient Polyproducts Ltd. LP1504, 15 (w) x 4 (t) spaced 10mm apart and fitted centrally to the leaf thickness in the frame head and jambs. **Door Leaf:** Meeting Edge - 2No. Lorient Polyproducts Ltd. LP1504, 15 (w) x 4 (t) spaced 10mm apart and fitted centrally to one leaf only. **Glazing:** **Glass:** Pilkington Pyroshield 6mm thick **Aperture size:** 1200x300mm **Position:** 150mm from the leaf head and meeting edge. **Glazing Beads:** Sapele, 22 (h) x19 (w) with a 5.5 (h) bolection return. **Fixings:** No.8 x50mm long steel screws positioned at 150mm centres and at 45° to the glass **Glazing System:** Lorient Polyproducts Ltd System 90 Plus glazing channel around the glass edge **Glazing Liner:** Lorient Polyproducts Ltd, LX5402 54(w) x 2 (t) liner around the glazing cut out in the door leaf. **Hardware:** 3 No Royde & Tucker H105 Lift Off Hinges 101 (h) x 31 (w) x 3 (t)mm blades. Dorma TS83V overhead surface mounted closer. Henderson Hardware 63mm tubular mortice latch – disengaged for the duration of the test. Aluminium lever handles 113(h) x 31(w). **Hardware Protection:** **Hinges:** None fitted **Latch:** None fitted

3.1.3 Test Report Chilt/RF00169

The test evidence summarised below has primarily been used to support the Strebord® doorset design with Lorient Polyproducts perimeter intumescents.

Date of Test:	18th December 2000
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf doorset. (ULSADD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987 Method 7
Performance:	**Integrity:** 62 minutes **Insulation:** 62 minutes
Summary of Test Specimen	**Leaf Size:** 2135mm (h) x 935mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t) density 630kg/m^3. **Lipping:** Sapele, 10mm, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Sapele, density 640kg/m^3, 70 (d) x 32 (t) density 640kg/m^3 with a Sapele planted stop 12.5 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Lorient Polyproducts Ltd. LP1504, 15 (w) x 4 (t) spaced 10mm apart and fitted centrally to the leaf thickness in the frame head and jambs. **Door Leaf:** Meeting Edge - 2No. Lorient Polyproducts Ltd. LP1504, 15 (w) x 4 (t) spaced 10mm apart and fitted centrally to one leaf only. **Glazing:** **Glass:** Pilkington Pyroshield 6mm thick **Aperture size:** 1200x300mm **Position:** 150mm from the leaf head and meeting edge. **Glazing Beads:** Sapele, 22 (h) x19 (w) with a 5.5 (h) bolection return. **Fixings:** No.8 x50mm long steel screws positioned at 150mm centres and at 45° to the glass **Glazing System:** Lorient Polyproducts Ltd System 90 Plus glazing channel around the glass edge **Glazing Liner:** Lorient Polyproducts Ltd, LX5402 54(w) x 2 (t) liner around the glazing cut out in the door leaf. **Hardware:** 3 No Royde & Tucker H105 Lift Off Hinges 101 (h) x 31 (w) x 3 (t)mm blades. Dorma TS83V overhead surface mounted closer. Henderson Hardware 63mm tubular mortice latch – disengaged for the duration of the test. Aluminium lever handles 113(h) x 31(w). **Hardware Protection:** **Hinges:** None fitted **Latch:** None fitted

3.1.4 Test Report Chilt/RF02020

The test evidence summarised below has primarily been used to support the Strebord® doorset design with over panels with a rebated head to flush overpanel junction using Lorient Polyproducts intumescents.

Date of Test:	26th March 2002
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf doorsets with over panel (ULSADD-OP).
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987 Method 6
Performance:	**Integrity:** 62 minutes **Insulation:** 62 minutes
Summary of Test Specimen	**Leaf Size:** 2135mm (h) x 915mm (w) x 54mm (t) **Over panel Size:** nominally 600mm (h) x 1840mm (w) **Door leaf & Overpanel:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t) density 650kg/m^3. **Lipping** **Door Leaf:** Sapele, 10mm Hardwood, density 640kg/m^3. Applied to bottom and vertical edges. Top Edge, Sapele, 20mm Hardwood, density 640kg/m^3. c/w 32 (w) x 13 (d) rebate. **Overpanel:** Sapele, 10mm Hardwood, density 640kg/m^3. Applied to top and vertical edges. Bottom Edge, Sapele, 20mm Hardwood, density 640kg/m^3. c/w 22 (w) x 13 (d) rebate. **Door Frame:** Sapele, density 640kg/m^3, 70 (d) x 32 (t) a Sapele planted stop 25 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Lorient Polyproducts Ltd. LP1504, 15 (w) x 4 (t) spaced 10mm apart and fitted centrally to the leaf thickness in the frame head and jambs. **Door Leaf & Overpanel** **Meeting Edge:** 2No. Lorient Polyproducts Ltd. LP1504, 15 (w) x 4 (t) centrally to one leaf only. **Leaf Head:** 1No. Lorient Polyproducts Ltd. LP2504, 25 (w) x 4 (t) fitted centrally in the rebate. **Over panel – Bottom Edge:** 1No. Lorient Polyproducts Ltd. LP1504, 15 (w) x 4 (t) fitted centrally in the rebate. **Hardware:** 3 No Royde & Tucker H105 Lift Off Hinges 100 (h) x 35 (w) blades. Dorma TS83V overhead surface mounted closer. 63mm tubular mortice latch – disengaged for the duration of the test. Aluminium lever handles 120(h) x 42(w). **Hardware Protection:** **Hinges:** 1mm thick Lorient Polyproducts Ltd. Interdens under both hinge blades. **Latch:** 1mm thick Lorient Polyproducts Ltd. Interdens around the latch body and under the forend and keep.

3.1.5 Test Report Chilt/RF07035

The test evidence summarised below has primarily been used to support the Strebord® doorset design with Intumescent Seals Ltd intumescents and alternative hardware.

Date of Test:	26th April 2007
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf doorset. (ULSADD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987 Method 6
Performance:	**Integrity:** 62 minutes **Insulation:** 62 minutes
Summary of Test Specimen	**Leaf Size:** 2135mm (h) x 932mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 630kg/m^3. **Lipping:** Sapele, 10mm, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Sapele, density 640kg/m^3, 70 (d) x 32 (t) with a Sapele planted stop 15 (w) x 13 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Intumescent Seals Ltd, Therm-A-Seal, 15 (w) x 4 (t) spaced 10mm apart and fitted centrally to the leaf thickness in the frame head and jambs. **Door Leaf:** Meeting Edge - 2No. Intumescent Seals Ltd, Therm-A-Seal, 15 (w) x 4 (t) spaced 10mm apart and fitted centrally to one leaf only. **Hardware:** 3 No Royde & Tucker H105 Lift Off Hinges 100 (h) x 35 (w) blades. Dorma TS83V overhead surface mounted closer. Footprint size 60 (h) x 293 (w). E*S tubular mortice latch 56 (h) x 25 (w) – disengaged for the duration of the test. Aluminium lever handles 103(h) x 40(w). **Hardware Protection:** **Hinges:** Intumescent Seals Ltd, 2mm thick Therm-A-Strip under each hinge blade. **Latch:** Intumescent Seals Ltd, 2mm thick Therm-A-Flex under the latch forend and keep.

3.1.6 Test Report Chilt/RF08051

The test evidence summarised below has primarily been used to support the Strebord® with Intumescent Seals Ltd intumescents.

Date of Test:	26th May 2008
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products LTD.
Tested Product:	Unlatched, Single Acting, Double Leaf doorset. (ULSADD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987 Method 6
Performance:	**Integrity:** 61 minutes **Insulation:** 61 minutes
Summary of Test Specimen	**Leaf Size:** 2135mm (h) x 932mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 630 - 635kg/m^3. **Lipping:** Sapele, 10mm, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Sapele, density 640kg/m^3, 70 (d) x 32 (t) with a Sapele planted stop 14 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 1No. Intumescent Seals Ltd, Therm-A-Seal, 15 (w) x 4 (t) 8mm from the frame edge and 1No. Intumescent Seals Ltd, Therm-A-Blade, 15 (w) x 4 (t) 33mm from the frame edge. **Door Leaf:** Meeting Edge - 1No. Intumescent Seals Ltd, Therm-A-Seal, 15 (w) x 4 (t) 7mm from the exposed leaf face and 1No. Intumescent Seals Ltd, Therm-A-Blade, 15 (w) x 4 (t) 8mm from the unexposed leaf face. **Hardware:** 3 No Royde & Tucker H105 Lift Off Hinges 100 (h) x 35 (w) blades. Dorma TS83V overhead surface mounted closer. Footprint size 60 (h) x 293 (w). Tubular mortice latch 57 (h) x 26 (w) – disengaged for the duration of the test. Aluminium lever handles 100(h) x 38(w). **Hardware Protection:** **Hinges:** Intumescent Seals Ltd, 2mm thick Therm-A-Strip under each hinge blade. **Latch:** Intumescent Seals Ltd, 2mm thick Therm-A-Flex under the latch forend and keep.

3.1.7 Test Report Chilt/RF08161 Revision A

The test evidence summarised below has primarily been used to support the Strebord® blank with Intumescent Seals Ltd intumescents.

Date of Test:	26th November 2008
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf doorset. (ULSADD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987 Method 6
Performance:	**Integrity:** 63 minutes **Insulation:** 63 minutes
Summary of Test Specimen	**Leaf Size:** 2135mm (h) x 936mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 533kg/m^3. **Lipping:** Sapele, 10mm, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Sapele, density 640kg/m^3, 70 (d) x 32 (t) with a Sapele planted stop 14 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 1No. Intumescent Seals Ltd, Therm-A-Seal, 15 (w) x 4 (t) 8mm from the frame edge and 1No. Intumescent Seals Ltd, Therm-A-Blade, 15 (w) x 4 (t) 33mm from the frame edge. **Door Leaf:** Meeting Edge - 1No. Intumescent Seals Ltd, Therm-A-Seal, 15 (w) x 4 (t) 7mm from the exposed leaf face and 1No. Intumescent Seals Ltd, Therm-A-Blade, 15 (w) x 4 (t) 8mm from the unexposed leaf face. **Hardware:** 3 No Royde & Tucker H105 Lift Off Hinges 100 (h) x 35 (w) blades. Dorma TS83V overhead surface mounted closer. Footprint size 60 (h) x 293 (w). Tubular mortice latch 57 (h) x 26 (w) – disengaged for the duration of the test. Aluminium lever handles 100(h) x 38(w). **Hardware Protection:** **Hinges:** Intumescent Seals Ltd, 2mm thick Therm-A-Strip under each hinge blade. **Latch:** Intumescent Seals Ltd, 2mm thick Therm-A-Flex under the latch forend and keep.

3.1.8 Test Report Chilt/RF09140 Doorset B

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design with Pyroplex perimeter intumescents and Interdens hardware protection.

Date of Test:	26th August 2009
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Latched, Single Acting, Single Leaf doorset. (LSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987 Method 6
Performance:	**Integrity:** 72 minutes **Insulation:** 72 minutes
Summary of Test Specimen	**Leaf Size:** 2742mm (h) x 928mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 630kg/m^3. **Lipping:** Sapele, 6mm Hardwood, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Sapele, density 640kg/m^3, 70 (d) x 32 (t) with a Sapele planted stop 15 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Pyroplex Rigid Box seals FO8700, 15 (w) x 4 (t), 8mm apart and 8mm from the frame edge. **Hardware:** 4 No Royde & Tucker H105 Lift Off Hinges 100 (h) x 35 (w) blades. Dorma TS83V overhead surface mounted closer. Footprint size 60 (h) x 293 (w). Tubular mortice latch 57 (h) x 26 (w) – engaged for the duration of the test. Aluminium lever handles 100(h) x 38(w). **Hardware Protection:** **Hinges:** Interdens, 1mm thick under each hinge blade. **Latch:** Interdens, 1mm thick under the latch forend and keep.

3.1.9 Test Report Chilt/RF10011 Doorset B

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design with an MDF frame, Pyroplex perimeter intumescents and Dufaylite Interdens hinge protection.

Date of Test:	24th February 2010
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Single Leaf doorset. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987 Method 6
Performance:	**Integrity:** 73 minutes **Insulation:** 73 minutes
Summary of Test Specimen	**Leaf Size:** 2040mm (h) x 925mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 630kg/m^3. **Lipping:** Oak, 8mm thick, density 720kg/m^3. Applied to all edges. **Door Frame:** MDF, density 750kg/m^3, 130 (d) x 30 (t) with an MDF planted stop 32 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Pyroplex Rigid Box seals FO8700, 15 (w) x 4 (t), 10mm apart and 8mm from the frame edge. **Hardware:** 3 No Royde & Tucker H102 Butt Hinges 100 (h) x 35 (w) blades. Dorma TS71 overhead surface mounted closer. Footprint size 68 (h) x 232 (w). **Hardware Protection:** **Hinges:** Dufaylite Interdens, 1mm thick under each hinge blade.

3.1.10 Test Report Chilt/RF13056 Doorset A

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design using Streframe® 60 - 32mm thick, Pyroplex perimeter intumescents and Interdens hardware protection.

Date of Test:	12th March 2013
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Single Leaf doorset. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987 Method 6
Performance:	**Integrity:** 65 minutes **Insulation:** 65 minutes
Summary of Test Specimen	**Leaf Size:** 2135mm (h) x 926mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 533 - 630kg/m^3. **Lipping:** Sapele, 6mm thick, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Streframe® 60, density 493 - 520kg/m^3, 70 (d) x 32 (t) with Streframe® 60 planted stop 15 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Pyroplex Rigid Box seals FO8700, 15 (w) x 4 (t), 10mm apart and 7mm from the frame edge. **Hardware:** 3 No Royde & Tucker Lift Off Hinges 100 (h) x 35 (w) blades. Rutland TS3204 overhead surface mounted closer. Footprint size 59 (h) x 220 (w). Eurospec tubular mortice latch 57 (h) x 26 (w) – disengaged for the duration of the test. Aluminium lever handles 100 (h) x 38 (w). **Hardware Protection:** **Hinges:** Interdens, 1mm thick under each hinge blade. **Latch:** Interdens, 1mm thick under the latch forend and keep.

3.1.11 Test Report Chilt/RF13056 Doorset B

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design using 45mm thick Streframe® 60, Pyroplex perimeter intumescents and Interdens hardware protection.

Date of Test:	12th March 2013
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Single Leaf doorset. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987
Performance:	**Integrity:** 68 minutes **Insulation:** 68 minutes
Summary of Test Specimen	**Leaf Size:** 2135mm (h) x 926mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 533 - 630kg/m^3. **Lipping:** Sapele, 6mm thick, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Streframe® 60, density 493 - 520kg/m^3, 70 (d) x 45 (t) with Streframe® 60 planted stop 15 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Pyroplex Rigid Box seals FO8700, 15 (w) x 4 (t), 10mm apart and 7mm from the frame edge. **Hardware:** 3 No Royde & Tucker Lift Off Hinges 100 (h) x 35 (w) blades. Rutland TS3204 overhead surface mounted closer. Footprint size59 (h) x 220 (w). Eurospec tubular mortice latch 57 (h) x 26 (w) – disengaged for the duration of the test. Aluminium lever handles 100(h) x 38(w). **Hardware Protection:** **Hinges:** Interdens, 1mm thick under each hinge blade. **Latch:** Interdens, 1mm thick under the latch forend and keep.

3.1.12 Test Report Chilt/RF13082

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design using hardwood frames, Pyroplex perimeter intumescents and ISL Therm-A-Line or Interdens hardware protection.

Date of Test:	1st May 2013
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf doorset. (ULSADD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987
Performance:	**Integrity:** 60 minutes **Insulation:** 60 minutes
Summary of Test Specimen	**Leaf Size:** 2130mm (h) x 935/935mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 600kg/m^3. **Lipping:** Sapele, 10mm thick, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Hardwood, 70 (d) x 32 (t) with an Okoume planted stop 15 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 1No. Pyroplex Rigid Box seals FO8700, 15 (w) x 4 (t), 7mm from the frame edge and 1No. Pyroplex Rigid Box seals TF8723, 15 (w) x 4 (t), 32mm from the frame edge. **Door Leaf:** Meeting Edge - 1No. Pyroplex Rigid Box seals FO8700, 15 (w) x 4 (t), 7mm from the frame edge and 1No. Pyroplex Rigid Box seals TF8723, 15 (w) x 4 (t), 32mm from the frame edge to one leaf only. **Hardware:** 3 No Royde & Tucker H101 Lift Off Hinges 101 (h) x 35 (w) blades. Rutland TS3204 overhead surface mounted closer. Footprint size 59 (h) x 220 (w). Zoo tubular mortice latch 57 (h) x 25 (w) – disengaged for the duration of the test. Aluminium lever handles 101(h) x 41(w). **Hardware Protection:** **Hinges:** Interdens, 2mm thick under each hinge blade. **Latch:** Intumescent Seals Ltd, 2mm thick Therm-A-Line under the latch forend and keep.

Note:
Test Chilt/FR13082 has been used as basis to support the use of Hardwood (min density 640kg/m^3) and MDF (min density 700kg/m^3) frames in latched and unlatched double doorset configurations when used with Pyroplex seals. The fire performance characteristics of hardwood and MDF have been demonstrated to be greater than that of lower density hardwoods.

3.1.13 Test Report Chilt/RF13111

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design for extended height incorporating Pyroplex perimeter intumescents.

Date of Test:	24th April 2013
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Single Leaf doorset. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987
Performance:	**Integrity:** 63 minutes **Insulation:** 63 minutes
Summary of Test Specimen	**Leaf Size:** 2454mm (h) x 1234mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 570 - 630kg/m^3. **Lipping:** Sapele, 6mm thick, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Sapele, Density 640kg/m^3, 90 (d) x 32 (t) with a Sapele planted stop 32 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Pyroplex Rigid Box seals FO8700, 15 (w) x 4 (t), 10mm apart and 7mm from the frame edge. **Glazing:** **Glass:** C3S Securiglass Pyrobelite 12mm thick **Aperture size:** 1804 x 409mm **Position:** 320mm from the leaf head and 406mm from the closing edge. **Glazing Beads:** Sapele, 37 (h) x24 (w) with a 5 (h) x 10 (w) bolection return and 27° chamfer. **Fixings:** 63mm long steel pins positioned 50mm from the corners and at 95mm centres. **Glazing System:** Alfas 20 (h) x 3 (t) closed cell foam tape fitted between the glass and glazing beads. **Glazing Liner:** Mann McGowan Pyroglaze 60 glazing liner 54 (w) x 2 (t). Ref. 100ECSA around the glazing cut out in the door leaf. **Hardware:** 4 No Royde & Tucker H101 Lift Off Hinges 101 (h) x 35 (w) x 3 (t) blades. Rutland TS3204 overhead surface mounted closer. Footprint size 59 (h) x 220 (w).

	Zoo tubular mortice latch 60 (h) x 26 (w) – disengaged for the duration of the test. Aluminium lever handles 103(h) x 41(w). **Hardware Protection:** **Hinges:** Interdens, 1mm thick under each hinge blade. **Latch:** Interdens, 1mm thick around the latch body and under the forend and keep.

3.1.14 Test Report Chilt/RF13242

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design for extended height incorporating Pyroplex perimeter seals.

Date of Test:	18th November 2013
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Latched, Single Acting, Double Leaf doorset. (LSADD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987
Performance:	**Integrity:** 71 minutes **Insulation:** 60 minutes
Summary of Test Specimen	**Leaf Size:** 2757mm (h) x 927mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 630kg/m^3. **Lipping:** Sapele, 6mm thick, density 640kg/m^3. Applied to all edges. **Door Frame:** Sapele, Density 640kg/m^3, 90 (d) x 32 (t) with a Sapele planted stop 32 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Pyroplex Rigid Box seals FO8700, 15 (w) x 4 (t), 10mm apart and 7mm from the frame edge. **Door Leaf:** **Meeting Edge:** 2No. Pyroplex Rigid Box seals FO8700, 15 (w) x 4 (t), 10mm apart and 7mm from the exposed face of one leaf only. **Leaf Head:** 1No. Pyroplex Rigid Box seals FO8700, 15 (w) x 4 (t), fitted centrally in the leaf thickness. **Glazing - Left Leaf** **Glass:** Pilkington Pyrostop EI60-101 23mm thick **Aperture size:** 1860 (h) x 500 (w) **Position:** 643mm from the leaf head and 208mm from the closing edge. **Glazing Beads:** Sapele, 30 (h) x 16.5 (w) with a 5 (h) x 5 (w) bolection return and 20° chamfer. **Fixings:** Ø1.8 x 63mm long steel pins positioned 50mm from the corners and at 150mm centres. **Glazing System:** Sealmaster Fireglaze Compound nominally 20 (w) x 4 (t) fitted between the glass and glazing beads. **Glazing Liner:** Norseal glazing liner 54 (w) x 2 (t) around the glazing cut out in the door leaf. **Glazing - Right Leaf**

	Glass: Pilkington Pyrostop EI30-10 15mm thick **Aperture size:** 1860 (h) x 500 (w) **Position:** 643mm from the leaf head and 208mm from the closing edge. **Glazing Beads:** Sapele, 30 (h) x 20.5 (w) with a 5 (h) x 5 (w) bolection return and 20° chamfer. **Fixings:** Ø1.8 x 63mm long steel pins positioned 50mm from the corners and at 150mm centres. **Glazing System:** Hodgsons 20 (w) x 2 (t) fitted between the glass and glazing beads. **Glazing Liner:** Norseal glazing liner 54 (w) x 2 (t) around the glazing cut out in the door leaf. **Hardware:** 4 No Royde & Tucker H101 Lift Off Hinges 100 (h) x 35 (w) blades. Rutland TS3204 overhead surface mounted closer. Footprint size 59 (h) x 220 (w). Arrone 3 lever mortice latch 157 (h) x 24 (w) – engaged for the duration of the test. Aluminium lever handles 100(h) x 38(w). **Hardware Protection:** **Hinges:** Interdens, 2mm thick under each hinge blade. **Latch:** Interdens, 2mm thick around the latch body and under the forend and keep.

3.1.15 Test Report WF413865

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design with Strelip® 60 incorporating Lorient Polyproducts perimeter seals and jamb mounted closer.

Date of Test:	13th May 2019
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Falcon Panel Products Limited
Tested Product:	Unlatched, Single Acting, Double Leaf doorset. (ULSADD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	Sampling of the doorsets was conducted by a representative of Warringtonfire between 08/05/2019 under sampling contract FM413703.
Test Standard:	BS 476-22:1987 Clause 6
Performance:	**Integrity:** 70 minutes **Insulation:** 70 minutes
Summary of Test Specimen	**Leaf Size:** 2135mm (h) x 935mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 526kg/m^3. **Lipping:** Strelip® 60, 8mm Engineered Hardwood, density 661kg/m^3. Applied to all four edges of master leaf and closing edge and head of the slave leaf. Strelip® 60, 8mm Engineered Hardwood, density 737kg/m^3. Applied to the hanging edge and threshold of the slave leaf. **Door Frame:** Sapele, Density 644kg/m^3, 100 (d) x 32 (t) with a Sapele planted stop 32 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 1No. Lorient Polyproducts LP1504, 15 (w) x 4 (t), 7mm from the frame edge and 1No. Lorient Polyproducts LP1504DS, 15 (w) x 4 (t), 32mm from the frame edge. **Door Leaf:** **Meeting Edge:** 1No. Lorient Polyproducts LP1504, 15 (w) x 4 (t), 7mm from the exposed face of the door leaf and 1No. Lorient Polyproducts LP1504DS, 15 (w) x 4 (t), 32mm from the exposed face of the door leaf. **Hardware:** 3 No Carlisle Brass / Eurospec HIN1433/13SSS/R Steel Butt Hinges 100 (h) x 30 (w) blades. Astra Door Controls 4000 series (Model: 4003) concealed jamb mounted closer, positioned 800mm from the bottom of the doorleaf to the closer centreline. Forend:106 (h) x 32 (w) x 3(t) Body: Ø28 x 216 (l)

	Eurospec Easi-Exit DLS7260ESC, Forend 235 (h) x 24 (w) x 5 (t) – engaged for the duration of the test. Zoo Hardware – Stanza ZPZ090SC Ø15 x 123 (l) lever on Ø50 x 8 (t) rose. ASSA Abloy / Union Cylinder (Ref. 259283) Zoo Hardware ZAS03RSS Flushbolt, 205 (l) x 20 (w) x 38 return x4 (t) **Hardware Protection:** **Hinges:** Intumescent Seals Ltd, Therm-A-Strip, 1mm thick under each hinge blade. **Latch:** Lorient Polyproducts - MAP, 1mm thick around the latch body cheeks only and under the forend and keep. **Closer:** Intumescent Seals Ltd, 2mm thick around the closer body and under the frame and door leaf forends.

3.1.16 Test Report WF414533

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design in both orientations, with Tectus hinges, GEZE Boxer concealed closer, electric strike and a head mounted electro-magnetic lock, incorporating Lorient Polyproducts perimeter seals.

Date of Test:	13th June 2019	
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762	
Sponsor:	Falcon Panel Products Ltd.	
Tested Product:	Latched, Single Acting, Single Leaf doorset. (LSASD)	
Tested Orientation:	**Doorset A:** Opening in towards the heating condition of the test **Doorset B:** Opening away from the heating condition of the test	
Sampling information:	No Sampling Information Available	
Test Standard:	BS 476-22:1987	
Performance:	**Doorset A:** **Integrity:** 67 minutes **Insulation:** 67 minutes	**Doorset B:** **Integrity:** 80 minutes **Insulation:** 80 minutes
Summary of Test Specimen	**Leaf Size:** 2510mm (h) x 1045mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 520 - 630kg/m^3. **Lipping:** American White Oak, 20mm thick, density 770kg/m^3. Applied to top edge of the door leaf. American White Oak, 10mm thick, density 770kg/m^3. Applied to bottom and vertical edges of the door leaf. **Facing:** 0.5mm thick American White Oak veneer **Door Frame:** American White Oak, Density 770kg/m^3, 102 (d) x 40 (t) with an American White Oak planted stop 45 (w) x 18 (t). **Intumescent and Environmental Seals:** **Frame:** 1No. Lorient Polyproducts LP1504, 15 (w) x 4 (t), 7mm from the frame edge and 1No. Lorient Polyproducts LP1504DS, 15 (w) x 4 (t), 32mm from the frame edge. Lorient Polyproducts LAS1007 fitted to the upstand of the stop in the frame reveal. Norseal NOR810 drop seal – 60 (h) x 22 (w) **Hardware:** 3 No Simonswerk Tectus TE527FR concealed hinges 155 (h) x 33 (w) x 26 (d) blades. GEZE Boxer Size 2-4 Concealed Overhead Closer C/w standard slide channel in the frame head. Body Dimensions 286(l) x 34 (w) x 53 (d).	

	AGB Mortice Latch engaged for the duration of the test – Forend 192 (l) x18 (w). 60mm Polaris Maglock 2XT – Keep: 82 (l) x 22 (w) Olivari Conca lever handle Ø53 x 121 (l) lever size. Securefast Slimline electromagnetic lock 250 (l) x 47 (w) x 26 (d) fitted to the head on the exposed face of Doorset A and on the unexposed face of Doorset B. The armature plate was bolted through the head of the door leaf. **Hardware Protection:** **Hinges:** Hinge manufacturer supplied kit (Ref. 8820) – 1mm thick graphite under the hinge blade on the door frame and leaf. **Latch:** Sealed Tight Solutions - Graphite, 1mm thick under the forend and keep. **Closer:** Manufacturers supplied intumescent kit fitted as per the manufacturer's instructions.

3.1.17 Test Report CFR2104282

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design, with Strelip® lippings, Frelan concealed security chain and alternative hardware incorporating Intumescent Seals Ltd perimeter seals.

Date of Test:	28th April 2021
Identification of Test Body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Dixon International Group Ltd.
Tested Product:	Latched, Single Acting, Single Leaf doorset. (LSASD)
Tested Orientation:	Opening in towards the heating condition of the test
Sampling information:	The doorsets was sampled by a representative of BM Trada on 16/04/2021 and 26/04/2021 under contract SC21035. The glazing tape was sampled by a representative of Warringtonfire on 15/03/2021 under job number FM 501187
Test Standard:	BS 476-22:1987
Performance:	**Integrity:** 65 minutes **Insulation:** 0 minutes
Summary of Test Specimen	**Leaf Size:** 2040mm (h) x 926mm (w) x 55mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 649kg/m^3. **Lipping:** Strelip® 10mm Engineered Hardwood, density 767kg/m^3. Applied to all edges of the door leaf. **Door Frame:** Utile, Density 578kg/m^3, 82 (d) x 33 (t) with a Utile planted stop 26 (w) x 15 (t). **Intumescent and Environmental Seals:** **Frame:** 1No. Intumescent Seals Ltd, Therm-A-Seal, 15 (w) x 4 (t), 7mm from the frame edge and 1No. Intumescent Seals Ltd, Therm-A-Blade, 15 (w) x 4 (t), 33mm from the frame edge. **Glazing** **Glass - Left Aperture:** Pyroguard – 7mm Pyrostem 2 (GWPP) **Glass- Right Aperture:** AGC Glass UK – Pyrobelite 7 **Glass size:** 1600 (h) x 250 (w) x 7 (t) **Glazing Beads:** Utile, density 578kg/m^3, 30 (h) x 26 (w) with a 5 (h) x 5 (w) bolection return and 20° chamfer. **Fixings:** Ø4 x 70mm long steel screws positioned 50mm from the corners and at 150mm centres. Angled perpendicular to the glazing bead chamfered face. **Glazing System:** Sealmaster Fireglaze Tape 25 (w) x 2.5 (t) fitted between the glass and glazing beads. **Glazing Liner:** Sealmaster Fireglaze Tape, 54 (w) x 2.5 (t) around the glazing cut out in the door leaf. **Hardware:**

	3 No Arrone 8180 Stainless Steel butt hinges 102 (h) x 31 (w) x 3 (d) blades. Rutland TS.4204 surface mounted, footprint 252(l) x 68 (w) x 45 (d). Rutland RDL-ESL-55-SSR mortice lock – Forend 235 (l) x 22 (w) x 2.5 (t). Smith & Locke Euro-cylinder with thumbturn with Hoppe Ag escutcheon Ø55 x 2(t) 3190031-406295. Hoppe Ag Paris E138Z/849 lever handles, Ø21 x 140 (l) handle on a Ø55 x 2 (t).rose. Frelan concealed security chain – Ref J3004, Forend; 56 (l) x 25 (w) x 2 (t) Keep: 41 (l) x 30 (w) x 50 (d) **Hardware Protection:** **Hinges:** Intumescent Seals Ltd, Therm-A-Strip, 2mm thick under each hinge blade. **Latch:** Intumescent Seals Ltd, 2mm thick Therm-A-Strip, around the latch body and under the latch forend and keep. **Security Chain:** Intumescent Seals Ltd, 2mm thick Therm-A-Strip, around the cylindrical lock body and to the rear of all faces of the keep with two layers at the bottom edge of the keep.

3.1.18 Test Report TA087-9&10 – Doorset B

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design with Mann McGowan Air Transfer grilles with Mann McGowan perimeter seals.

Date of Test:	16th January 2020
Identification of Test Body:	Thomas Bell-Wright International Consultants. UKAS No. 4439
Sponsor:	Mann McGowan Group
Tested Product:	Latched, Single Acting, Single Leaf doorset. (LSASD)
Tested Orientation:	Opening in towards the heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS EN 1634-1: 2014 + A1: 2018
Performance:	**Integrity:** 70 minutes **Insulation:** 70 minutes
Summary of Test Specimen	**Leaf Size:** 2400mm (h) x 926mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 540kg/m^3. **Lipping:** Sapele, 8mm thick, density 640kg/m^3. Applied to all edges of the door leaf. **Door Frame:** Sapele, density 640kg/m^3, 145 (d) x 32 (t) with a Sapele planted stop 30 (w) x 15 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Mann McGowan, Pyrostrip 15 x 4 mm 500PSA, 15 (w) x 4 (t), 7mm and 32mm from the frame edge. **Air Transfer Grilles** **Upper Aperture:** Pyrogrille 25 **Grille Dimensions:** 298 x 298 x 25mm **Aperture Cut Out:** 300 x 300mm **Grille Frame (to both faces):** 345 x 345 x7mm **Lower Aperture:** Pyrogrille 100 **Grille Dimensions:** 598 x 598 x 38mm **Aperture Cut Out:** 602 x 602mm **Grille Frame (to both faces):** 650 x 650 x7mm **Hardware:** 4 No Royde & Tucker H207 butt hinges Rutland ITS.11204 overhead concealed closer. Laidlaw tubular latch 51.01.65.NP. Euroart LRS202 + EES001(2)/SSS lever handle on rose. Keep: 41 (l) x 30 (w) x 50 (d) **Hardware Protection:** **Hinges:** Mann McGowan, Interdens® SA, 2mm thick under each hinge blade. **Latch:** Mann McGowan, Interdens® SA, 2mm thick, around the latch body and under the latch forend and keep. **Closer:** 2mm thick ironmongery protection kit (ref. IP.114 Graphite) installed around the rail of the door closer arm and above the door closer body on the leaf head.

3.1.19 Test Report CFR1810231 – Right Hand Doorset

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design, with Rutland PS190 Pivots, Rutland ITS.11204 concealed closer.

Date of Test:	23rd October 2018
Identification of Test Body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Dixon International Group Ltd.
Tested Product:	Double Acting, Single Leaf doorset. (DASD)
Tested Orientation:	The doorset tested and detailed below is double acting and therefore was able to open both towards and away from the heating conditions of the test.
Sampling information:	Various intumescent seals and strips were sampled by a representative of Warringtonfire on 19/09/2019 under job number 404796
Test Standard:	BS 476-22:1987
Performance:	**Integrity:** 58 minutes **Insulation:** 58 minutes
Summary of Test Specimen	**Leaf Size:** 2005mm (h) x 927mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 630kg/m^3. **Lipping:** Sapele, density 630kg/m^3. 18mm thick applied to top and bottom edges of the door leaf. 10mm to the hanging edge 14mm to the closing edge **Door Frame:** Sapele, density 640kg/m^3, 91 (d) x 33 (t) **Threshold:** Sapele, density 640kg/m^3, 970 (w) x 40 (t) x 91 (d) **Intumescent and Environmental Seals:** **Frame:** 1No. Sealmaster N60 seal, 21 (w) x 7.5 (t), fitted centrally in the frame depth. **Hardware:** Rutland Pivot Set PS190, comprising floor pivot, bottom strap, door top strap and frame top pivot. Rutland ITS.11204 concealed overhead closer and slide channel. Body dims: 210 (l) x 32 (w) x 53 (d) **Hardware Protection:** **Top Pivot:** Intumescent Seals Ltd, Therm-A-Flex – 2mm thick. Covering the top faces of the door pivot and each face and bottom of the rebate for the frame pivot. **Closer:** Intumescent Seals Ltd, Therm-A-Flex – 2mm thick fully covers the closer rebate. **Security Chain:** Intumescent Seals Ltd, 2mm thick Therm-A-Strip, around the cylindrical lock body and to the rear of all faces of the keep with two layers at the bottom edge of the keep.
Reason for Use	The failure observed at 58minutes was at the glazing location which is remote from the concealed closer and leaf perimeter being considered for inclusion within this assessment. The test evidence has therefore been deemed suitable to support the tested closer with Strebord 54 door design based on the evidence when the tested glass and glazing system is removed.

Failure Mode	Initial Failure: 58 minutes – sustained flaming at glazing bead mid height. (Glazing information has been omitted from the above summary for clarity) Further failure: 61 minutes – sustained flaming – mid height hanging edge.

3.1.20 Test Report WF435986 Doorset B

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design in Access Panels Ltd – Simplis Soleco Visible frame incorporating Lorient Polyproducts perimeter seals.

Date of Test:	7th December 2020
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf doorset. (ULSADD)
Tested Orientation:	Opening in towards the heating condition of the test
Sampling information:	Sampling of the doorsets was conducted by a representative of BM Trada on 01/12/2020 under sampling contract SC20101-2-54.
Test Standard:	BS 476-20 / 22:1987 Method 8
Performance:	**Integrity:** 64 minutes
Summary of Test Specimen	**Leaf Size:** 2150mm (h) x 926 / 310mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 630kg/m^3. **Lipping:** Sapele, 8mm thick, density 640kg/m^3. Applied to all edges of the door leaf. **Door Frame:** Access Panels Ltd – Simplis Soleco Visible frame – Two-part profiled steel, 180 (d) x 75 (t) with an integral stop 13 (t) complete with System Components Ltd, PVC buffer seal, 584-2146-092. **Intumescent and Environmental Seals:** 2No. Lorient Polyproducts Mono ammonium Phosphate, 20 (w) x 2 (t), seals 5mm apart and 4.5mm from the opening face, 2No. Lorient Polyproducts LP2004 617 seals, 20 (w) x 4 (t), placed on top of the 20 x 2mm mono-ammonium seals in the head & hanging edges of both leaves and to the closing edge of the primary leaf only. Lorient Polyproducts Ltd, MAP, 10 (w) x 2 (t) applied to the front corner of the inside frame profile. Lorient Polyproducts LAS8001si drop seal – 35 (h) x 14 (w) **Glazing:** **Glass:** Fireglass UK, Pyrobel 16. 16mm thick **Aperture size:** 1000x625mm **Position:** 145mm from the leaf head and meeting edge. **Glazing Beads:** Sapele, 32 (h) x 21.5 (w) with a 5 (h) x 7 (w) bolection return. **Fixings:** 16swg x 63mm long steel pins positioned 50mm from the corners and at 100mm centres and at 25° to the glass **Glazing System:** Lorient Polyproducts Ltd. RF1, 24 (h) x 6.5 (t) fitted between the glass and glazing beads.

	Glazing Liner: Lorient Polyproducts Ltd, RF1 (B25402), 54(w) x 2 (t) liner around the glazing cut out in the door leaf. **Hardware:** 4 No Hoppe AR 8180-SSS Bearing Butt hinges 102 (h) x 31 (w) x 3 (t) blades. Rutland TS.24 Ezykam surface mounted overhead closer. ASSA Abloy EL160_100180 mortice latch and EA322_110000 keep ATK attack series TS008 3* KM586153 cylinder Zoo ZAS03R flush bolt – 205 (l) x 19 (w) Beslag Design, 8600119 (60-0119) stainless steel lever handle **Hardware Protection:** **Hinges:** Mono-Ammonium Phosphate (MAP) – 1mm thick under the hinge blade. **Latch:** No intumescent **Flushbolt:** Mono-Ammonium Phosphate (MAP) – 1mm thick lining the mortice.

3.1.21 Test Report WF417777

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design with Rutland double action pivots and Pyrobelite 12 glazing, using Sealed Tight Solutions perimeter intumescent seals.

Date of Test:	14th August 2019
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Double Acting, Double Leaf doorset. (DADD)
Tested Orientation:	The doorset tested and detailed below is double acting and therefore opened both towards and away from the heating conditions of the test simultaneously
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-20 / 22:1987
Performance:	**Integrity:** 60 minutes
Summary of Test Specimen	**Leaf Size:** 2040mm (h) x 924 / 924mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 600kg/m^3. **Lipping:** Sapele, 8mm thick, density 640kg/m^3. Applied to head, meeting and bottom edges. Sapele, 18mm thick, including a 55mm radius profile, density 640kg/m^3. Applied to hanging edges. **Door Frame** **Head:** Falcon Panel Products Streframe® E, density 510kg/m^3, 105 (w) x 47 (t) **Jambs:** Falcon Panel Products Streframe® E, density 510kg/m^3, 105 (w) x 33 (t) with a 58mm radius, 8mm deep scallop. **Intumescent and Environmental Seals:** **Leaf:** 2No. Sealed Tight Solutions, Ref. ST1504, 15 (w) x 4 (t), seals, 11mm apart in the meeting edge of one leaf and the head and hanging edges of both leaves. **Glazing:** **Glass:** Fireglass UK, Pyrobelite 12. 12mm thick **Upper Glass size:** 890x190mm **Upper Aperture size:** 900x200mm **Lower Glass size:** 440x190mm **Lower Aperture size:** 450x200mm **Position:** 140mm apart, 145mm from the leaf head and 146mm from the meeting edge. **Glazing Beads:** Sapele, 31 (h) x 25 (w) with a 6 (h) x 6 (w) bolection return. 7 (w) x 2(h) rebate for the glazing liner and a 15° chamfer.

	Fixings: Ø1.6x50mm long steel pins positioned 30mm from the corners and at 130~160mm centres and at 25° to the glass **Glazing System:** Sealed Tight Solutions, ST105GT glazing tape 10 (h) x 5 (w) fitted between the glass and glazing bead. **Glazing Liner:** Sealed Tight Solutions, ST302 glazing liner 30(w) x 2 (t) liner around the glazing cut out in the door leaf. **Hardware:** Rutland PS. 190 top pivot 235 (l) x 24 (w) x 105 (d), fitted at the edge of the leaf / head of the frame reveal. Rutland PS. 190 bottom strap, 235 (l) x 24 (w) x 105 (d), fitted at the bottom of the leaf. Rutland TS7104 double acting floor spring 274 (l) x 81 (w) x 50 (d). Zoo Hardware ZDL7260RSS lock, 230 (l) x 22 (w) forend. Zoo Hardware cylinder Ref. V5EP80CTPBE Zoo Hardware lever handle, ZCS2030SS and cylinder escutcheon VS001S. **Hardware Protection:** **Top Pivot:** Pivot manufacturer supplied kit – 1mm thick under and to the sides of the top strap. **Floor Spring:** Manufacturers kit fitted under the floor spring cover plate – 1mm thick. **Latch:** Sealed Tight Solutions - Graphite, 1mm thick encasing the latch body, under the forend and keep.

3.1.22 Test Report WF386959 Revision A - Doorset B

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design with cableways and various hardware items, using Sealed Tight Solutions perimeter intumescent seals.

Date of Test:	18th August 2017
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Latched, Single Acting, Double Leaf doorset. (LSADD)
Tested Orientation:	Opening in towards the heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-20 / 22:1987
Performance:	**Integrity:** 61 minutes
Summary of Test Specimen	**Leaf Size:** 2438mm (h) x 1050 / 400mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 580kg/m^3. **Lipping:** Sapele, 8mm thick, density 640kg/m^3. Applied to all edges. **Cableway 1:** A Ø11mm hole drilled through the whole width of the leaf horizontally centrally within the thickness of the leaf 1150mm from the bottom of the leaf. **Cableway 2:** A 10mm wide x 42mm deep channel routed out centrally in the leaf edge around the bottom half perimeter (starting 1120mm from the bottom of the hanging edge and terminating at the lock position) only to accept a cable. A 10 wide x 30 deep sapele insert was installed into this cable channel (on top of the cable and flush with the leaf edge), glued with PU Adhesive along with a pre applied 10mm x 2mm Sealed Tight Solutions Raw graphite. **Door Frame:** Sapele, density 640kg/m^3, 104 (w) x 31 (t) with a Sapele planted stop 25 (w) x 12 (t). **Fire Stopping:** Sealed Tight Solutions fire foam ST99 capped with 15mm deep Sealed Tight Solutions mastic STS88 on both faces. **Intumescent and Environmental Seals:** **Frame:** 2No. STS Sealed Tight Solutions, Ref. ST154FO, 15 (w) x 4 (t), seals, 10mm apart and 7mm from the exposed face in the frame reveal. **Leaf:** 2No. STS Sealed Tight Solutions, Ref. ST154FO, 15 (w) x 4 (t), seals, 7mm apart in the meeting edge of one leaf and 8mm from the exposed face. **Hardware:** 4 No Royde & Tucker H101 Lift Off Hinges 100 (h) x 35 (w) blades.

	Rutland TS5024 DABC Overhead Type Closer. Winkhaus steel mortice latch ref. 4939364 STV mortice 55mm 20 FP – Forend 310 (h) x 20 (w). Gem GK700 Electric strike – 275 (h) x 45 (w) x 27 (d) ERA door security bolt 4383G Simons Voss electric handle, ref. 3062. Sealed Tight Solutions Ltd. STS4008 viewer Ø24mm Abloy EA280 Cable loop, 320 (l) x 25 (w) CQR Maximal Flush Contact FC620, 34 (l) x 12 (w) **Hardware Protection:** **Hinges:** Sealed Tight Solutions – STS 100X25 Graphite, 1mm thick under all hinge blades. Floor Spring: Manufacturers kit fitted under the floor spring cover plate – 1mm thick. **Latch Body:** Sealed Tight Solutions - Graphite, 1 mm thick fully covering the cheeks of the latch body. Sealed Tight Solutions - Graphite ST302 liner trimmed to suit, 2 mm thick fitted to the back of the latch body. **Latch Forend, Strike & Keep:** Sealed Tight Solutions STS 302 - Graphite, 2mm thick under the forend and Sealed Tight Solutions, graphite 1mm thick under keep. **Viewer:** Sealed Tight Solutions - Graphite, 30 x 1 mm thick around the viewer body. **Cable Loop:** Sealed Tight Solutions - Graphite ST302 liner trimmed to suit, 2 mm fitted under the forend and lining the cut out. **Era Security Bolt:** Sealed Tight Solutions - Graphite, 45 (w) 60 (h) x 1 (t) around the bolt body.

3.1.23 Test Report WF415618 Doorset B

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design with EZYJamb EZC concealed frame using Lorient Polyproducts perimeter intumescent seals.

Date of Test:	11th July 2019
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf doorset. (ULSADD) (Flush bolts engaged)
Tested Orientation:	Opening in towards the heating condition of the test
Sampling information:	Sampling of the doorsets was conducted by a representative of Warringtonfire on 05/07/2019 under sampling job number FM416105.
Test Standard:	BS 476-20 / 22:1987
Performance:	**Integrity:** 65 minutes **Insulation:** 45 minutes
Summary of Test Specimen	**Leaf Size:** 2200mm (h) x 927 / 300mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 523kg/m^3. **Lipping:** Sapele, 8mm thick, density 640kg/m^3. Applied to all edges. **Door Frame and Threshold:** EZYJamb EZC concealed frame – profiled 1mm thick Steel 47 (w) x 99(d) including a 12 (t) x 41 (w) integral stop and 15 (w) integral architrave. **Door Frame** Joint: Butted using the EZYJamb clip system. **Sub-Frame:** Whitewood, density 510kg/m^3, 101 (w) x 50 (t) **Intumescent and Environmental Seals:** **Leaf:** **All door leaf edges (Primary Leaf):** 2No.Lorient Polyproducts LP2004, 20x4mm. Fitted 2.5mm either side of the door leaf centreline (5mm apart) in the leaf edge or frame reveal. **Hanging, Top & Bottom Edges (Secondary Leaf):** 2No. Lorient Polyproducts LP2004, 20x4mm. Fitted 2.5mm either side of the door leaf centreline (5mm apart) in the leaf edge or frame reveal. Lorient Polyproducts LAS1010 Batwing seal 10 H0 x 10 (w) fitted to the upstand of the stop in the frame reveal. **Hardware:** 3 No Atomika Karakter steel concealed type hinges 160 (h) x 28 (w) x 30 (d) blades. Rutland TS5024 Overhead Type Closer. Zoo Hardware ZDL7260RSS lock, 235 (l) x 24 (w) forend. Eurocylinder Ref. V5EP80CTPBE Zoo Hardware eurocylinder escutcheon VS001 Ø52mm. Zoo Hardware ZCS030RSS RTD lever handle on Ø52mm rose. Zoo Hardware ZAS03RSS Flushbolt, 205 (l) x 20 (w) (engaged for test) **Hardware Protection:**

	Hinges: Lorient Polyproducts Ltd – Mono-Ammonium Phosphate (MAP) 1mm thick, fitted under the hinge blade on the leaf only. **Latch:** Lorient Polyproducts Ltd – Mono-Ammonium Phosphate (MAP), 1 mm thick fully encasing the latch body and under the latch forend and strike. **Flush Bolt:** Lorient Polyproducts Ltd – Mono-Ammonium Phosphate (MAP), 1 mm thick

3.1.24 Test Report CFR2109081 Revision 1

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design, with Rutland PS190 Pivots, Rutland ITS.11204 concealed closer and incorporating Intumescent Seals Ltd perimeter seals.

Date of Test:	14th September 2021
Identification of Test Body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Rutland UK / Falcon Panel Products Ltd / Dixon International Group Ltd.
Tested Product:	Double Acting, Single Leaf doorset. (DADD)
Tested Orientation:	The doorset tested and detailed below is double acting and therefore opened both towards and away from the heating conditions of the test simultaneously
Sampling information:	Sampling of the doorsets was conducted by a representative of BM Trada on 01/09/2021 under sampling contract SC21151
Test Standard:	BS 476-22:1987
Performance:	**Integrity:** 64 minutes **Insulation:** 64 minutes
Summary of Test Specimen	**Leaf Size:** Left Leaf: 2038mm (h) x 925mm (w) x 54mm (t) Right Leaf: 2040mm (h) x 925mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 630kg/m^3. **Lipping:** Utile, density 640kg/m^3. 18mm thick applied to top 17mm thick to the bottom edge. 10 - 17mm to the hanging edge 10mm to the closing edge **Door Frame:** Utile, Density 640kg/m^3, Head 90 (d) x 44 (t), Jambs 90x44with a 10 (d) x 58 (w) scallop. **Supporting Threshold:** Particleboard clad to the three visible faces with 11mm calcium silicate board. **Aluminium Threshold:** Norseal 620, 60 (w) x 5 (d) set between the frame jambs, positioned central to the door leaf centreline. **Intumescent and Environmental Seals:** **Frame:** **Head:** 2No. Intumescent Seals Ltd Therm-A-Blade, 20x4mm with central twin elastomeric blades, set 21mm in from the exposed and unexposed frame faces (spaced 8mm apart), partially interrupted at top pivots with 50% remaining and closer tracks with 40% remaining. **Jambs** 2No. Intumescent Seals Ltd Therm-A-Blade, 15x4mm with central twin elastomeric blades, set 25mm in from the exposed and unexposed faces (approx. 10mm apart).

	Leaf Head 1No. Intumescent Seals Ltd Therm-A-Seal, 20x4mm, set centrally to the leaf depth of head of both leaves, fully interrupted by closer and pivot rebates. The intumescent runs over the top of the Rutland Self Centring Magnets. **Meeting Edge (of one leaf)** 1No. Intumescent Seals Ltd Therm-A-Blade, 15x4mm, set 7 from the exposed face and 1No. Intumescent Seals Ltd Therm-A-Seal, 15x4mm, set 7 from the unexposed face. Sealmaster Typhoon 22, 10 (h) x 15 (d) x 0.4 (t), elastomeric smoke seal set to both sides of the closer, across the full width of the closer/closer arm rebate in the head of the leaf. Sealmaster Duxbak, 9 (h) x 14 (d) x 0.4 (t), twin blade elastomeric seal fitted into grooves in base of each leaf, set 6mm from each face, seal uninterrupted. **Glazing:** **Glass:** Fire Glass UK, Pyrobel 16 EI60/30 **Glass size:** 1500 (h) x 300 (w) x 17.3 (t) **Glazing Beads:** Sapele, 25 (h) x 20.5 (w) with a 5 (h) x 5 (w) bolection return and a 15° chamfer. **Fixings:** 16swg x 63mm long pneumatically fired steel pins, 80mm in from the outer edges and at 140mm centres. **Glazing System:** Sealmaster Intumescent Foam glazing tape 20 (w) x 5 (t) fitted between the glass and glazing beads. **Glazing Liner:** Sealmaster GL60, 54 (w) x 2 (t) fitted around the glazing aperture cut out. **Hardware:** Rutland Pivot Set PS.190 Heavy Duty Pivot Set, bottom strap, door top strap and frame top pivot. Rutland PS.260 bottom pivot Rutland ITS.11204 concealed overhead closer and slide channel. Body dims: 210 (l) x 32 (w) x 53 (d) Rutland Self Centring Magnet, permanent magnets set in rebates in the head of the frame and leaves, with stainless steel cover plates, set 18mm from the meeting edges to the edge of the cover plate. Body dims: 31 (l) x 32 (w) x 12 (d) **Hardware Protection:** **Top Pivot:** Rutland UK, PS.190 pre-cut kit. 1mm thick Mono Ammonium Phosphate set between the top pivot face plate and cover plate. **Top Strap:** Rutland UK, PS.190 pre-cut kit, 2mm thick graphite based intumescent covering the external face of the top strap **Bottom Strap:** Rutland UK, PS190 pre-cut kit, 6mm thick in total, comprising 3 layers of 2mm thick graphite based intumescent covering the external face of the bottom strap. **Bottom Pivot:** Rutland UK, IP.114, 2mm thick graphite based intumescent lines the base of the rebate for the bottom pivot plate. **Closer:** Rutland UK, IP.114, 2mm thick graphite based intumescent to the exposed face, unexposed face and ends of the closer track, to the top of the closer face plate, and lining the base of the closer arm rebate in the head of the leaf. **Magnets:** Rutland UK, IP.114, 2mm thick graphite based intumescent adhered to the external face of all magnet cover plates.

3.1.25 Test Report CFR2112211 – Left Leaf Only

The test evidence summarised below has primarily been used to support the Strebord® 54 blank doorset design, with Zoo Hardware, two locks in the leading edge, Mann McGowan Air Transfer Grille. Incorporating Mann McGowan perimeter and drop seals.

Date of Test:	21st December 2021
Identification of Test Body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Falcon Panel Products Ltd
Tested Product:	Unlatched Single Acting Double Leaf doorset. (ULSADD)
Tested Orientation:	Opening in towards the heating condition of the test
Sampling information:	Sampling of the doorsets was conducted by a representative of BM Trada on 19/12/2021 under sampling contract SC21163
Test Standard:	BS 476-22:1987
Performance:	**Integrity:** 68 minutes **Insulation:** 67 minutes
Summary of Test Specimen	**Leaf Size:** 2403mm (h) x 926/261mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 608kg/m^3. **Lipping:** Utile, density 640kg/m^3. 8mm thick applied to all edges. **Door Frame:** Utile, Density 615kg/m^3, 81 (d) x 33 (t), with a Utile planted stop 20 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Mann McGowan, Pyrostrip 500P intumescent seals set 7 and 32 from the exposed face. **Meeting Edge (of one leaf)** 1No. Mann McGowan Pyrostrip 500P, 15x4mm, set 7 from the exposed face and 1No. Mann McGowan Pyrostrip 500PSS, 15x4mm, with twin elastomeric blades set 32mm from the exposed face. **Drop Seal:** Mann McGowan DD-1703ACU, 28.5 (h) x 13 (w). **Glazing:** **Glass:** Fire Glass UK, Pyrobelite 12 **Glass size:** Top Pane: 994 (h) x 620 (w) x 12.3 (t) Bottom Pane: 230 (h) x 230 (w) x 12.3 (t) **Glazing Beads:** Utile, 30 (h) x 23 (w) with a 5 (h) x 5 (w) bolection return and a 15° chamfer. **Fixings:** Ø2.0 x 60mm long steel pins, 50mm in from the corners and at 100mm centres. **Glazing System:** Mann McGowan Pyroglaze 60, 25 (w) x 3 (t) fitted between the glass and glazing beads. **Glazing Liner:** Mann McGowan Pyrostrip 100 ECSA, 52 (w) x 2 (t) fitted around the glazing aperture cut out.

	Air Transfer Grilles: Mann McGowan, Pyrogrille 100, 298 (h) x 298 (w) x 38 (t), set in the aperture in the right-hand leaf, a polymer mesh consisting of Palusol 36 x 3.5 sodium silicate intumescent, affixed to the leaf using 4No. Ø3.8 x 49 steel countersunk screws through the outer vertical edges, 34mm from top and bottom of ATG. Louvred steel cover 345 (h) x 345 (w) x 5 (t) affixed to either face of leaf using 4No. Ø4.1 x 24 steel panhead screws set on vertical edges, 33mm from the corners and at 280mm centres. The ATG was sealed in position within the leaf with Mann McGowan Pyromas A on both sides of the unit. **Hardware:** 3 No Zoo Hardware Ltd ZHSS243S hinges, 101 (h) x 30 (w) x 2.8 (t) blades. Vier Precision Design VDC003 overhead surface mounted closer 180 (w) x 42 (h) x 62 (d). Vier Precision Design DC0024A1SE overhead surface mounted closer 252 (w) x 42 (h) x 51 (d). Zoo Hardware ZDL7260RSS lock, 234 (l) x 22 (w) forend. Zoo Hardware ZDL0060RSS dead lock, 234 (l) x 22 (w) forend. Hoppe UK Limited, Arrone AR-KD-5121-CC-PP brass euro cylinder with thumb turn on exposed face. UAP Corporation, Kinetica Helix, brass euro cylinder with thumb turn on exposed face Zoo Hardware lever handle, ZCS030SS and cylinder escutcheon ZCS001S. Hoppe UK Limited, Arrone AR961/67-SSS, steel escutcheon and stainless-steel push-fit cover affixed to both faces Zoo Hardware ZAS03SS Flushbolt, 203 (l) x 20 (w) x 38 return x 4 (t) **Hardware Protection:** **Hinges:** Mann McGowan, 1mm thick Pyrostrip Interdens under each hinge blade. **Latches:** Mann McGowan, 1mm thick Pyrostrip Interdens fully encasing the latch body and under the forend and keep. **Flush bolt:** Mann McGowan, 1mm thick Pyrostrip Interdens lines the rebate for the flush bolt and affixed to rear of keep plate. **Dropseal:** Mann McGowan, 1mm thick Pyrostrip Interdens to all edges of the rebate between the drop seal casing and the leaf **Air Transfer Grille:** Mann McGowan, Pyromas A, a bead of intumescent acrylic sealant applied around periphery of air transfer grille, adjacent to both faces of ATG unit. **Cylinder (UAP Kinetica):** Mann McGowan, Pyromas A, intumescent acrylic sealant applied around euro cylinder on both faces of the leaf.

3.1.26 Test Report CFR2201122

The test evidence summarised below has primarily been used to support the Strebord® 54 blank doorset design, including apertures glazed with Pyroguard UK Ltd, Pyroguard 2–FD60/7-1 using Sealmaster Fireglaze tape & liner system.

Date of Test:	12th January 2022
Identification of Test Body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Dixon International Group Ltd.
Tested Product:	Latched Single Acting Single Leaf doorset. (LSASD)
Tested Orientation:	Opening in towards the heating condition of the test
Sampling information:	Sampling of the doorsets was conducted by a representative of BM Trada on 20/12/2021 under sampling contract SC21189
Test Standard:	BS 476-22:1987
Performance:	**Integrity:** 74 minutes
Summary of Test Specimen	**Leaf Size:** 2038mm (h) x 925mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 630kg/m^3. **Lipping:** Falcon Strelip®, density 767kg/m^3. 10mm thick applied to all edges. **Door Frame:** Sapele, Density 706kg/m^3, 80 (d) x 32 (t), with a Sapele planted stop 20 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Intumescent Seals Ltd, Therm-A-Seal set 7 and 32 from the exposed face. **Glazing:** **Glass:** Pyroguard 2-FD60/7-1 **Glass size:** Left Pane: 1593 (h) x 359 (w) x 7 (t) Right Pane: 1593 (h) x 243 (w) x 7 (t) **Glazing Beads:** Sapele, 30 (h) x 26 (w) with a 5 (h) x 5 (w) bolection return and a 16° chamfer. **Fixings:** Left Pane: Ø5.0 x 50mm long steel screw, 50mm in from the corners and at 145mm centres. Right Pane: Ø1.3 x 50mm long steel pins, 50mm in from the corners and at 145mm centres. **Glazing System:** Sealmaster Fireglaze Tape 25 (w) x 2.5 (t) fitted between the glass and glazing beads. **Glazing Liner:** Sealmaster Fireglaze Liner, 54 (w) x 2.5 (t) around the glazing cut out in the door leaf.

	Hardware: **Hinges:** 3 No Hoppe (UK) Limited, Arrone 8180 (AR9292-PSS) hinges, 102 (h) x 30 (w) x 3 (t) blades. **Closer:** Rutland TS5204BC overhead surface mounted closer 247(w) x 60 (h) x 42 (d). **Lock:** Rutland RDL-ESL-55-SSR, 234 (l) x 22 (w) forend. **Handles:** Hoppe UK Limited, Paris E138Z/849 lever handle on a Ø53mm rose. **Cylinder:** ERA high security 3 star cylinder, with thumb turn to the exposed face KM5503031. **Escutcheon:** Hoppe UK Limited cylinder escutcheon ref. 3190031-405185. **Hardware Protection:** **Hinges:** Intumescent Seals Ltd. Therm-A-Strip – 2mm thick under each blade **Latch:** Intumescent Seals Ltd. Therm-A-Strip – 2mm thick under to the rear of forend and to all faces and edges of the latch box. Intumescent Seals Ltd. Therm-A-Strip – 2.5mm thick to the rear of strike including tongue and lining all edges of both rebates in frame for latch and lock bolts.

3.2 Supplementary Test Data

3.2.1 Test Report Indicative Chilt/RF09145 Doorsets B & D

The test evidence summarised below has primarily been used to support the Strebord® blank with grooved faces.

Date of Test:	8th September 2009	
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.)	
Sponsor:	Falcon Panel Products Ltd	
Tested Product:	Latched, Single Acting, Single Leaf doorset. (ULSASD)	
Tested Orientation:	Opening in towards heating condition of the test	
Sampling information:	No Sampling Information Available	
Test Standard:	Principles of BS 476: Pt 20: 1987	
Performance:	**Doorset B** **Integrity:** 64 minutes	**Doorset D** **Integrity:** 72 minutes
Summary of Test Specimen	**Leaf Size:** 1010mm (h) x 926mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 630 - 635kg/m^3. **Lipping:** Sapele, 6mm, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Sapele, Density 640kg/m^3, 70 (d) x 32 (t) with a Sapele planted stop 15 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Pyroplex Rigid Box seals FO8700, 15 (w) x 4 (t), fitted centrally in the frame rebate spaced 10mm apart. **Hardware:** 2 No Royde & Tucker H105 Lift Off Hinges No further hardware was fitted to the doorsets; however the doors were wired shut for the duration of the test. **Hardware Protection:** **Hinges:** Interdens, 1mm thick under each hinge blade. **Face Grooving:** **Doorset B:** The leaf had 8 No. vertical grooves to both faces nominally 10 (w) x 5 (d) and spaced at 100 mm centres. **Doorset D:** The leaf had 10 No. horizontal grooves to both faces nominally 10 (w) x 5 (d) and spaced at 80 mm centres.	

3.2.2 Test Report WF146521

The test evidence summarised below has primarily been used to support the Strebord® blank in that include Pyroplex Air Transfer "Fire Grilles".

Date of Test:	13th May 2005
Identification of Test Body:	Bodycote (now trading as Warringtonfire Testing and Certification Ltd.)
Sponsor:	Pyroplex Limited
Tested Product:	Fixed panel
Tested Orientation:	Fixed panel
Sampling information:	No Sampling Information Available
Test Standard:	Heating conditions of BS 476-20:1987, the full requirements of the standard were not, however, complied with.
Performance:	**Integrity:** 62 minutes **Insulation:** 0 minutes
Summary of Test Specimen	**Leaf Size:** 990mm (h) x 900mm(w) x 54mm (t) **Door leaf:** The door leaf consisted of a 54mm thick timber leaf. **Aperture Liner:** The aperture cut out for the grille is lined with 6mm hardwood. **Fire Grille A:** Pyroplex ATG2251 **Dimensions:** 225 (l) x 112 (w) x 40 (t) **Facing:** Steel louvered grille **Fire Grille B:** Pyroplex ATG1300 **Dimensions:** 300 (l) x 300 (w) x 40 (t) **Facing:** Steel louvered grille **Fire Grille C:** Pyroplex ATG2251 **Dimensions:** 225 (l) x 112 (w) x 40 (t) **Facing:** Steel louvered grille **Additional Intumescent Protection**: 2 No. 11 x 1mm lengths of Pyroplex intumescent were wrapped around the perimeter of the grille. **Fire Grille D:** Pyroplex ATG1300 **Dimensions:** 300 (l) x 300 (w) x 40 (t) **Facing:** Steel louvered grille **Additional Intumescent Protection**: 2 No. 11 x 1mm lengths of Pyroplex intumescent were wrapped around the perimeter of the grille.

3.2.3 Test Report WF155385

The test evidence summarised below has primarily been used to support the Strebord® blank in that include Pyroplex FG60 Glazing System.

Date of Test:	30th June 2006
Identification of Test Body:	Bodycote (now trading as Warringtonfire Testing and Certification Ltd.)
Sponsor:	Pyroplex Ltd
Tested Product:	Fixed panel
Tested Orientation:	Fixed panel
Sampling information:	No Sampling Information Available
Test Standard:	BS 476-22:1987
Performance:	**Integrity:** 64 minutes **Insulation:** 0 minutes
Summary of Test Specimen	**Leaf Size:** No overall dimensions given for the panel. **Door leaf:** The door leaf consisted of a Graduated Density Chipboard Core 54mm thick. **Aperture Cut Out:** 500 (h) x 500 (w) **Aperture Liner:** The aperture cut out was lined with 8mm hardwood. **Glazing** **Glass:** Pyroshield (wired) – 6.5mm thick. **Glazing Beads:** Hardwood, density 620kg/m^3. **Fixings:** Steel screws positioned at 150mm centres. **Glazing System:** Pyroplex 30095 Glazing seal between the face of the glass and glazing beads. **Glazing Liner:** Pyroplex 30096 glazing liner. The Pyroplex FG60 Glazing System comprises the Pyroplex 30095 glazing seal and Pyroplex 30096 glazing liner.

3.2.4 Test Report WF324426 Issue 3 Doorset B

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design to include the Synergy 1036 concealed overhead closer with Intumescent Seals Ltd perimeter seals.

Date of Test:	12th December 2012
Identification of Test Body:	Exova Warringtonfire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 0249
Sponsor:	Fortress Industrial Co. Ltd
Tested Product:	Unlatched, Single Acting, Single Leaf doorset. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS EN 1634-1: 2008
Performance:	**Integrity:** 60 minutes **Insulation:** 60 minutes
Summary of Test Specimen	**Leaf Size:** 2030mm (h) x 936mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a 54 (t) timber constructed door leaf. **Lipping:** Hardwood, 8mm thick to vertical edges only. **Door Frame:** Hardwood, Density 755kg/m^3, 94.5 (d) x 56.4 (t) with 56.1 (w) x 19.4 (d) rebate. **Intumescent and Environmental Seals:** **Frame:** 2No. Intumescent Seals Ltd, Therm-A-Seal, 15 (w) x 4 (t) **Hardware:** 3 No Royde & Tucker H102 Butt Hinges 100 (h) x 35 (w) x 3 (t) blades. Fortress Industrial Co., Ltd T96G EN2~4 concealed overhead closer. Body: 244 (l) x 45 (h) x 32.8 (d) Guide Rail: 23 (w) x 14.5 (d) x 440 (l) **Hardware Protection:** **Hinges:** Lorient Polyproducts Interdens, 2mm thick under each hinge blade. **Closer:** Lorient Polyproducts Interdens, 2mm thick lining the reveals within the head of the frame and leaf.

Note:
The sponsor of the test has stated that the names of the closers within the reports have been rebranded to the Synergy 1000 (WF324426). It is the manufacturers responsibility to demonstrate that the product has not changed from that tested (e.g. manufacturing process and components). On the basis the product is exactly the same as originally tested, changing the brand name of the product will not detract from its fire resistance performance.

3.2.5 Test Report WF375219 Doorset B

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design to include the Synergy 1036 concealed overhead closer with Intumescent Seals Ltd perimeter seals.

Date of Test:	12th November 2016
Identification of Test Body:	Exova Warringtonfire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 0249
Sponsor:	Fortress Industrial Co., Ltd
Tested Product:	Unlatched, Single Acting, Single Leaf doorset. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	The closer subject to testing was sampled by a representative of Warrington Certification between 29/09/2016 – 06/10/16 under contract reference FM372115
Test Standard:	BS EN 1634-1: 2014
Performance:	**Integrity:** 66 minutes **Insulation:** 66 minutes
Summary of Test Specimen	**Leaf Size:** 2040mm (h) x 937mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a 54 (t) timber constructed door leaf. **Lipping:** Hardwood, 10mm thick to vertical edges only. **Door Frame:** Sapele, density 620~660kg/m^3, 96.8 (d) x 56.4 (t) with 54 (w) x 19.4 (d) rebate. **Intumescent and Environmental Seals:** **Frame:** 2No. Pyroplex Ltd, Rigid Box, graphite based intumescent within a polyvinyl chloride carrier, 15 (w) x 4 (t) **Hardware:** 3 No Royde & Tucker H102 Butt Hinges 100 (h) x 35 (w) x 3 (t) blades. Fortress Industrial Co. Ltd. T96M concealed overhead closer. Body: 256 (l) x 54 (h) x 40 (d) Guide Rail: 31 (w) x 20 (d) x 440 (l) **Hardware Protection:** **Hinges:** Lorient Polyproducts Interdens, 1mm thick under each hinge blade. **Closer:** Lorient Polyproducts Interdens, 2mm thick lining the reveals within the head of the frame and leaf.

Note:

The sponsor of the test has stated that the names of the closers within the reports have been rebranded to the Synergy S1036 (WF375219). It is the manufacturers responsibility to demonstrate that the product has not changed from that tested (e.g. manufacturing process and components). On the basis the product is exactly the same as originally tested, changing the brand name of the product will not detract from its fire resistance performance.

3.2.6 Test Report WF379042 Doorset B

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design to include the Dormakaba ITS96 Size 3-6 concealed overhead closer c/w G96EMF guide rail and using Pyroplex perimeter seals.

Date of Test:	08th February 2017
Identification of Test Body:	Exova Warringtonfire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 0249
Sponsor:	DormaKaba
Tested Product:	Unlatched, Single Acting, Single Leaf doorset. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	Sampling of the ironmongery was undertaken on 16/01/2017 by a member of Warrington Certification under job no. FM378235.
Test Standard:	BS EN 1634-1: 2008
Performance:	**Integrity:** 63 minutes **Insulation:** 63 minutes
Summary of Test Specimen	**Leaf Size:** 2038mm (h) x 932mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a GDC core 54 (t). **Lipping:** Hardwood, 8mm thick to vertical edges only. **Door Frame:** Sapele, density 620~660kg/m^3, 93 (d) x 54 (t) with 55 (w) x 20 (d) rebate. **Intumescent and Environmental Seals:** **Frame:** 2No. Pyroplex Rigid Box Seals (CF355), 15 (w) x 4 (t) **Hardware:** 3 No Royde & Tucker H125 Butt Hinges 125 (h) x 34 (w) x 3 (t) blades. Dormakaba ITS96 Size 3-6, concealed overhead closer with G96EMF guide rail. Body: 475 (l) x 40 (h) x 39.5 (d) Guide Rail: 31 (w) x 30 (d) x 527 (l) **Latch:** Not included as part of this summary. Disengaged for the duration of the test. **Hardware Protection:** **Hinges:** Interdens, 1mm thick under each hinge blade. **Closer Body:** Interdens, 1mm wrapping the body. **Guide Rail:** Interdens, 2mm wrapping the rail.

3.2.7 Test Report WF380214 Doorset B

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design to include the Lorient LVV40 Air Transfer Grille and metal cover.

Date of Test:	24th February 2017
Identification of Test Body:	Exova Warringtonfire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd
Tested Product:	Unlatched, Single Acting, Single Leaf doorset. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS EN 1634-1: 2014
Performance:	**Integrity:** 66 minutes **Insulation:** 66 minutes
Summary of Test Specimen	**Leaf Size:** 2052mm (h) x 952mm (w) x 55mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 530kg/m^3. **Air Transfer Grille:** Lorient Polyproducts LVV40 – 600 (w) x 300 (h) x 40 (t) **Steel Grille:** 650 (w) x 345 (h) fitted over air transfer grille to both faces. **Aperture liner:** Sapele, density 640kg/m^3, 6mm thick. **Intumescent:** Bedded on 8mm thick Lorient sealant with a fillet of sealant applied to each face of the leaf at the junction between the liner and the Air Transfer Grille.

3.2.8 Test Report Chilt/RF12077 Doorsets A, B & C

The test evidence summarised below has primarily been used to support the Strebord® doorset design with Pilkington Pyroclear® 60-001 glass.

Date of Test:	5th July 2012		
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762		
Sponsor:	Pilkington UK Ltd		
Tested Product:	Unlatched, Single Acting, Single Leaf doorset. (ULSASD)		
Tested Orientation:	Opening in towards heating condition of the test		
Sampling information:	No Sampling Information Available		
Test Standard:	BS 476: Pt 20/22: 1987		
Performance:	**Doorset A** **Integrity:** 79 minutes **Insulation:** 0 minutes	**Doorset B** **Integrity:** 72 minutes **Insulation:** 0 minutes	**Doorset C** **Integrity:** 61 minutes **Insulation:** 0 minutes
Summary of Test Specimen	**Leaf Size:** **Doorset A:** 2050mm (h) x 700mm (w) x 54mm (t) **Doorset B:** 2050mm (h) x 700mm (w) x 54mm (t) **Doorset C:** 2050mm (h) x 927mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a particleboard core 54 (t) density 630~635kg/m^3. **Lipping:** Sapele, 6mm, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Sapele, density 640kg/m^3, 70 (d) x 32 (t) density 640kg/m^3 with a Sapele planted stop 16 (w) x12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Lorient Polyproducts Ltd. LP1504, 15 (w) x 4 (t) spaced 10mm apart with the firsts seal 7mm from the exposed face. **Hardware:** 3 No Royde & Tucker H101 Lift Off Hinges 100 (h) x 35 (w) mm blades. Rutland TS3204 overhead surface mounted closer. Zoo tubular latch 57 (h) x 26 (w) – disengaged for the duration of the test. Aluminium lever handles 103(h) x 40 (w). **Hardware Protection:** **Hinges:** Interdens, 1mm thick under each hinge blade. **Latch:** Interdens, 1mm thick around the latch body and under the forend and keep. **Glazing System (All Doors)** **Glazing System:** Kerafix Flexit seal. 20 (w) x 5 (t) compressed to 4mm fitted between the glass and bead on both faces. **Glazing Liner:** Mann McGowan, Palusol ELSA 1000 glazing liner. 54 (w) x 2 (t), fitted lining the glazing aperture.		

	Additional Liner: Interdens 10 (w) x 2 (t) fitted around the aperture on top of the glazing liner, positioned to fit between the glazing beads. **Setting Blocks:** 2No. Supalux, 25 (l) x8 (h) x 6 (w) **Glazing Beads:** Sapele, 25 (h) x 25 (w) with a 5 (h).x 5 (d) bolection return and 20 ° chamfer. **Fixings:** 50mm long steel screws positioned at 50 mm in from the corners and at 150mm centres, at 45° to the glass face. **Doorset A Glass** **Glass:** Pilkington Pyroclear® 60-001, 6mm thick **Glass Size:** 1000x200mm **Aperture size:** 1024x224mm **Position:** 145mm from the leaf head and 159mm from the closing edge. **Doorset B Glass** **Glass:** Pilkington Pyroclear® 60-001, 6mm thick **Glass Size:** 1200x300mm **Aperture size:** 1224x324mm **Position:** 146mm from the leaf head and 157mm from the closing edge. **Doorset C Glass** **Glass:** Pilkington Pyroclear® 60-001, 6mm thick **Glass Size:** 1200x300mm **Aperture size:** 1220x320mm **Position:** 146mm from the leaf head, 100mm apart and 100mm from the vertical edges.

3.2.9 Test Report Chilt/RF05035

The test evidence summarised below has primarily been used to support the Strebord® doorset design with Pilkington Pyrostop 60-101 glass.

Date of Test:	18th April 2005	
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762	
Sponsor:	Pilkington Glass Ltd	
Tested Product:	**Doorset A:** Unlatched, Single Acting, Single Leaf doorset. (ULSASD) **Doorset B:** Latched, Single Acting, Single Leaf doorset. (LSASD)	
Tested Orientation:	Opening in towards heating condition of the test	
Sampling information:	No Sampling Information Available	
Test Standard:	BS EN 1634-1: 2000	
Performance:	**Doorset A** **Integrity:** 66 minutes **Insulation:** 66 minutes	**Doorset B** **Integrity:** 55 minutes **Insulation:** 55 minutes
Summary of Test Specimen	**Leaf Size:** **Doorset A:** 2135mm (h) x 1040mm (w) x 54mm (t) **Doorset B:** 2135mm (h) x 1036mm (w) x 54mm (t) **Door leaf:** Sapele, density 640kg/m^3.Stile and rail construction. **Stiles & Top Rail:** 100 (w) x 54 (t) **Bottom Rail:** 200 (w) x 54 (t) **Mid Rail (Doorset B Only):** 180 (w) x 54 (t) **Door Frame:** Sapele, density 640kg/m^3, 90 (d) x 44 (t) density 640kg/m^3 with a Sapele planted stop 36 (w) x13 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Lorient Polyproducts Ltd. LP1504, 15 (w) x 4 (t) spaced 8mm apart fitted centrally in the frame reveal. **Doorset A** **Door:** 1No. Lorient Polyproducts Ltd. LP1504, 15 (w) x 4 (t) fitted centrally in the leaf head and both stiles. **Doorset B** **Door:** 1No. Lorient Polyproducts Ltd. LP1504, 15 (w) x 4 (t) fitted centrally in the leaf head. **Hardware:** 3 No Royde & Tucker Lift Off Hinges 100 (h) x 35 (w) mm blades. Dorma TS83 overhead surface mounted closer. **Doorset B Only:** E*S tubular mortice latch. 57 (h) x 26 (w) forend, engaged for the duration of the test.	

	Aluminium lever handles 100 (h) x 38(w). **Hardware Protection:** **Hinges:** Interdens, 1mm thick under each hinge blade. **Latch:** Interdens, 1mm thick around the latch body and under the forend and keep. **Glazing System (All Doors)** **Glazing System:** Hodgsons Sealants Firestrip 60, 20 (w) x 3 (t) fitted between the glass and bead on both faces. **Glazing Liner:** Norseal Flexible Liner, 50 (w) x 2 (t), fitted lining the glazing aperture. **Glazing Beads:** Sapele, 20 (h) x 12.5 (w) with a 5 (h).x 5 (d) bolection return. **Fixings:** 60mm long steel screws positioned at 50 mm in from the corners and at 150mm centres, at 30° to the glass face. **Doorset A Glass** **Glass:** Pilkington Pyrostop 60-101, 23mm thick **Sight Size:** 1791x796mm **Aperture size:** 1834x835mm **Doorset B Glass** **Glass:** Pilkington Pyrostop 60-101, 23mm thick **Top Glass Sight Size:** 900x792mm **Top Aperture size:** 944x835mm **Bottom Glass Sight Size:** 657x792mm **Bottom Aperture size:** 710x835mm
Reason for Use	The failure observed at 55minutes was at the top closing corner of the door leaf and was completely remote from the glass and glazing system being assessed. Furthermore, the leaf and leaf edge intumescent specification tested differs from that permitted within this field of application. The test evidence has therefore been deemed suitable to support the tested glass and glazing system with Strebord 54 door design based on this evidence.
Failure Mode	Initial Failure: 55 minutes – Doorsets B sustained flaming at the top closing corner. Further failure: 66 minutes – Doorsets A & B sustained flaming at the top hinge position.

3.2.10 Test Report Chilt/RF05126 Doorset B

The test evidence summarised below has primarily been used to support the Strebord® doorset design with AGC Flatglass Pyrobel EW60 glass.

Date of Test:	25th November 2005
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	AGC Flatglass (formerly Glaverbel (UK) Ltd)
Tested Product:	**Doorset B:** Unlatched, Single Acting, Single Leaf doorset. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS EN 1634-1: 2000
Performance:	**Doorset B** **Integrity:** 53 minutes **Insulation:** 28 minutes
Summary of Test Specimen	**Leaf Size Doorset B:** 2135mm (h) x 915mm (w) x 54mm (t) **Door leaf:** Sapele, density 640kg/m^3.Stile and rail construction. **Stiles & Top Rail:** 100 (w) x 54 (t) **Bottom Rail:** 200 (w) x 54 (t) **Door Frame:** Sapele, density 640kg/m^3, 70 (d) x 32 (t) density 640kg/m^3 with a Sapele planted stop 12 (t). **Intumescent and Environmental Seals:** **Frame Head:** 1No. Lorient Polyproducts Ltd. LP3804, 38 (w) x 4 (t) fitted centrally in the frame reveal. **Frame Jamb:** 2No. Lorient Polyproducts Ltd. LP1504, 15 (w) x 4 (t) spaced 10mm apart fitted centrally in the frame reveal. **Hardware:** 3 No Royde & Tucker H105 Lift Off Hinges 100 (h) x 35 (w) mm blades. Dorma TS83 overhead surface mounted closer. Tubular latch 57 (h) x 26 (w) – disengaged for the duration of the test. **Hardware Protection:** **Hinges:** Interdens, 1mm thick under each hinge blade. **Latch:** Interdens, 1mm thick around the latch body and under the forend and keep. **Glazing System** **Glazing System:** Superwool X607, 25 (w) x 2 (t) fitted between the glass and bead on both faces. **Glazing Liner:** Sealmaster Intumescent Liner GL60, 2 (t), fitted lining the glazing aperture.

	Glazing Beads: **Doorset B:** Sapele, 30 (h) x 24 (w) with a 5 (h).x 5 (d) bolection return and a 20° chamfer. **Fixings:** 60mm long steel screws positioned at 50 mm in from the corners and at 150mm centres, at 30° to the glass face. **Doorset B Glass** **Glass:** Glaverbel Pyrobelite EW60 / 12, 12mm thick **Sight Size:** 1800x680mm **Aperture size:** 1835x715mm
Reason for Use	Doorset A, the failure at 59 minutes was attributable to the leaf / frame junction prior to test termination at 66 minutes. No failure directly attributable to the glass was recorded. Furthermore, the insulation failure noted above is related directly to the failure of the integrity failure observed. The glass had not exceeded 180 degrees above ambient at 60 minutes. Doorset B, the failure at 53 minutes was attributable to the leaf / frame junction prior to test termination at 66 minutes. No failure directly attributable to the glass was recorded. The test evidence has therefore been deemed suitable to support the tested glass and glazing system with Strebord 54 door design based on this evidence.
Failure Mode	Initial Failure: 53 minutes – Doorset B sustained flaming at the top closing corner. Further failure: 59 minutes – Doorset A cotton pad test to the hanging corner of the leaf. Test Terminated at 66 minutes with no failure attributed to the glass or glazing system.

3.2.11 Test Report Chilt/RF11171 Rev A

The test evidence summarised below has primarily been used to support the Strebord® doorset design with Pyroguard UK Ltd, Pyroguard EI60 INT (23mm), glazed with Lorient Flexible Figure 1 and Lorient Polyproducts Type 617 perimeter intumescents.

Date of Test:	30th November 2011
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf doorset. (ULSADD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS EN 1634-1: 2008
Performance:	**Integrity:** 60 minutes **Insulation:** 60 minutes
Summary of Test Specimen	**Leaf Size:** 2135mm (h) x 915mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t) density 514kg/m^3. **Lipping:** Sapele, 8mm, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Sapele, density 670kg/m^3, 70 (d) x 32 (t) with a Sapele planted stop 15 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Lorient Polyproducts Ltd. LP1504 Type 617, 15 (w) x 4 (t), spaced 10mm apart and 7mm from the exposed face in the frame reveal. **Door Leaf:** Meeting Edge (Active Leaf) - 2No. Lorient Polyproducts Ltd. LP1504 Type 617, 15 (w) x 4 (t) spaced 10mm apart and 7mm from the exposed face. **Frame:** Lorient IS1212 Batwing seal 12 (w) x 12(h) fitted against the upstand of the stop in the right-hand frame reveal only. **Drop Seal:** Lorient Polyproducts IS8010, 60 (h) x 22 (w) (end cover plate size). **Glazing:** **Glass:** Pyroguard EI60 (23mm) **Left Leaf Sight size:** 615x442mm **Left Leaf Glass size:** 647x473mm **Position:** 95mm from the leaf head and 210mm meeting edge. **Right Leaf Sight size:** 440x250mm **Right Leaf Glass size:** 472x280mm **Position:** 95mm from the leaf head and 210/305mm meeting edge. **Glazing Beads:** Sapele, 25 (h) x18 (w) with a 5 (w) x 5 (h) bolection return and 16° chamfer.

	Fixings: 70mm long steel screws positioned 50mm from the corners and at 150mm centres and at 30 - 45° to the glass **Glazing System:** Lorient Polyproducts Ltd Flexible Figure 1 glazing gasket 13 (h) x 3.5 (w) fitted between the glass and glazing bead. **Glazing Liner:** Lorient Polyproducts Ltd, LX5402 54(w) x 2 (t) liner around the glazing cut out in the door leaf. **Hardware:** 3 No Royde & Tucker H101 Lift Off Hinges 101 (h) x 35 (w) blades. Dorma TS3204 overhead surface mounted closer. Simplex steel mortice lock / latch 235mm forend. Complete with euro cylinder. Disengaged for the duration of the test. Steel lever handles on rose. Flushbolts 195 (l) x 20 (w) – fitted to top and bottom of the leaf. Disengaged for the duration of the test. **Hardware Protection:** **Hinges:** Lorient Polyproducts Interdens, 2mm thick under each hinge blade. **Latch:** Lorient Polyproducts Interdens, 1mm thick fitted around the latch body. **Forend & keep:** Lorient Polyproducts Interdens, 2mm fitted under the forend and keep. **Drop Seal:** Lorient Polyproducts Interdens1mm thick fitted around the drop seal and under the end cover plates.

Note:
The manufacturer and glass product reference contained within the fire test report has been updated in the above summary to the current reference used by Pyroguard (formerly CGI International Ltd.) It has been confirmed by Pyroguard that the glass manufacturing method and specifications remain unchanged from that tested, in all but the product name.

3.2.12 Test Report Chilt/RF12068 Revision A

The test evidence summarised below has primarily been used to support the Strebord® doorset design with Pyroguard UK Ltd, Pyroguard EI60 INT (23mm), glazed with Mann McGowan Pyroglaze 60 and Pyroplex Rigid Box perimeter intumescents.

Date of Test:	18th June 2012
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Single Leaf doorset. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS EN 1634-1 & BS EN 1363-1
Performance:	**Integrity:** 66 minutes **Insulation:** 66 minutes
Summary of Test Specimen	**Leaf Size:** 2442mm (h) x 917mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t) density 610kg/m^3. **Lipping:** Sapele, 8mm, density 640kg/m^3. Applied to all edges. **Door Frame:** Sapele, density 732kg/m^3, 70 (d) x 32 (t) with a Sapele planted stop 16 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Pyroplex Rigid Box Seal FO8700, 15 (w) x 4 (t), spaced 10mm apart and 8mm from the exposed face in the frame reveal. **Frame:** Norsound NOR710 10 (w) x 11(h) fitted against the upstand of the stop. **Glazing:** **Glass:** Pyroguard EI60 INT (23mm) **Sight size:** 751x625mm **Glass size:** 790x665mm **Aperture size:** 801x675mm **Position:** 97mm from the leaf head and 115mm from the closing edge. **Glazing Beads:** Sapele, 30 (h) x16.5 (w) with a 5 (w) x 5 (h) bolection return and 20° chamfer. **Fixings:** 60mm long x M4 steel screws positioned 50mm from the corners and at 200mm centres and at 30 - 45° to the glass **Glazing System:** Mann McGowan Pyroglaze 500PSA 25 (h) x 4 (w) fitted between the glass and glazing bead. **Glazing Liner:** Mann McGowan Pyroglaze 300 glazing liner 54(w) x 2 (t) liner around the glazing cut out in the door leaf. **Hardware:** 4 No Royde & Tucker H101 Lift Off Hinges 100 (h) x 35 (w) blades. Rutland TS3204 overhead surface mounted closer. Arrone 3-Lever mortice sashlock, 155 (h) x 22 (w) forend. Disengaged for the duration of the test. Aluminium lever type handle on rose.

	Hardware Protection: **Hinges:** Interdens, 1mm thick under each hinge blade. **Latch:** Interdens, 1mm thick fitted around the latch body and fitted under the forend and keep.

Note:

The manufacturer and glass product reference in fire test report has been updated in the above summary to the current reference used by Pyroguard (formerly CGI International Ltd.) It has been confirmed by Pyroguard that the glass manufacturing method and specifications remain unchanged from that tested, in all but the product name.

3.2.13 Test Report Chilt/PF14168 Rev A

The test evidence summarised below has primarily been used to support the Strebord® doorset design with the Tuscan Hardware flush pull handle.

Date of Test:	20th November 2014
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Latched, Single Acting, Single Leaf doorset. (LSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS EN 1634-1 & BS EN 1363-1
Performance:	**Integrity:** 48 minutes **Insulation:** 48 minutes
Summary of Test Specimen	**Leaf Size:** 2040mm (h) x 926mm (w) x 46mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 44 (t) density 580kg/m^3. **Lipping:** Sapele, 8mm Hardwood, density 640kg/m^3. Applied to all edges. **Door Frame:** Sapele, density 732kg/m^3, 70 (d) x 32 (t) with a Sapele planted stop 16 (w) x 12 (t). **Hardware:** Tuscan Hardware flush pull handle, 150 (w) x 150 (h), face recessing dimensions 154 (w) x 154 (h) x 22 (d). Fitted on the exposed face 610mm from the leaf head and 130mm from the closing edge. **Hardware Protection:** **Under the Pull Handle:** Intumescent Seals Ltd, Therm-A-Line, 120 (w) x 100 (h) x 1 (t) Fitted to the back of the pull handle. Intumescent Seals Ltd, Therm-A-Flex, 120 (w) x 20 (h) x 1 (t) Fitted to all sides of the pull handle. **Inside the Pull Handle:** Intumescent Seals Ltd, Therm-A-Flex, 115 (w) x 20 (h) x 8 (t) Fitted inside the body of the pull handle.
Reason for Use	None of the failures witnessed prior to 60 minutes were attributable to the flush pull handle. The test report is being used to support the use of the flush pull handle only. The mode of failure has been addressed and is not relevant to the door designs contained in this report
Failure Mode	Initial Failure: 48 minutes – continuous flaming at latch position. Further failures: 49 minutes – continuous flaming 150mm from the bottom closing corner. 54 minutes – continuous flaming across the leaf head. 57 minutes – continuous flaming across the leaf head. 59 minutes – continuous flaming at the bottom hinge position. Test Terminated at 60 minutes with no failure attributed to the flush pull.

3.2.14 Test Report Chilt/PF14029 Doorset A

The test evidence summarised below has primarily been used to support the Strebord® doorset design with Pyroguard UK Ltd, Pyroguard EW30 (7mm), glazed with ISL Therm-A-Glaze 60 using Streframe® glazing beads.

Date of Test:	12th March 2014
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Single Leaf doorset. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476: Part 20/22: 1987
Performance:	**Integrity:** 53 minutes **Insulation:** 53 minutes
Summary of Test Specimen	**Leaf Size:** 2040mm (h) x 926mm (w) x 56mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 44 (t), faced with 6mm thick MDF and complete with a stile and rail configuration. **Glazing** **Glass:** Pyroguard EW30 (7mm) **Sight size:** 735x140mm **Aperture size:** 759x164mm **Position:** 95mm from the leaf head and 195mm from the closing edge. **Glazing Beads:** Streframe®, 37 (h) x 26 (w) with a 7 x 13 bolection return and 25° chamfer. **Fixings:** Ø1.6 x 60mm long steel screws positioned 25 - 50mm from the corners and at 120mm centres. **Glazing System:** Intumescent Seals Ltd, Therm-A-Bead 25 (h) x 4 (w) fitted between the glass and glazing beads. **Glazing Liner:** Intumescent Seals Ltd, Therm-A-Line glazing liner 54(w) x 2 (t) liner around the glazing cut out in the door leaf.
Reason for Use	None of the failures witnessed prior to 60 minutes were attributable to the glass or glazing system. The test report is being used to support the use of the glass or glazing system only. The mode of failure has been addressed and is not relevant to the door designs contained in this report.
Failure Mode	Initial Failure: 53 minutes – cotton pad 50mm above the latch position. Further failures: 55 minutes – continuous flaming local to the latch position. 56 minutes – continuous flaming at the bottom hanging corner. No further failure was observed until 60 minutes.

Note:

The manufacturer and glass product reference in fire test report has been updated in the above summary to the current reference used by Pyroguard (formerly CGI International Ltd.) It has been confirmed by Pyroguard that the glass manufacturing method and specifications remain unchanged from that tested, in all but the product name.

3.2.15 Test Report Chilt/PF14029 Doorset B

The test evidence summarised below has primarily been used to support the Strebord® doorset design with Pyroguard UK Ltd, Pyroguard EW60 (11mm), glazed with ISL Therm-A-Glaze 60 using Sapele glazing beads.

Date of Test:	12th March 2014
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Single Leaf doorset. (ULSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476: Part 20/22: 1987
Performance:	**Integrity:** 59 minutes **Insulation:** 59 minutes
Summary of Test Specimen	**Leaf Size:** 2040mm (h) x 926mm (w) x 56mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 44 (t), faced with 6mm thick MDF and complete with a stile and rail configuration. **Glazing** **Glass:** Pyroguard EW60 (11mm) **Sight size:** 735x140mm **Aperture size:** 759x164mm **Position:** 95mm from the leaf head and 195mm from the closing edge. **Glazing Beads:** Streframe®, 37 (h) x 26 (w) with a 9 x 13 bolection return and 25° chamfer. **Fixings:** Ø1.6 x 60mm long steel screws positioned 25 - 50mm from the corners and at 120mm centres. **Glazing System:** Intumescent Seals Ltd, Therm-A-Bead 25 (h) x 4 (w) fitted between the glass and glazing beads. **Glazing Liner:** Intumescent Seals Ltd, Therm-A-Line glazing liner 54(w) x 2 (t) liner around the glazing cut out in the door leaf.
Reason for Use	None of the failures witnessed prior to 60 minutes were attributable to the glass or glazing system. The test report is being used to support the use of the glass or glazing system only. The mode of failure has been addressed and is not relevant to the door designs contained in this report.
Failure Mode	Initial Failure: 59 minutes – continuous flaming at the bottom hanging corner of the leaf. No further failure was observed until 60 minutes.

Note:
The manufacturer and glass product reference in fire test report has been updated in the above summary to the current reference used by Pyroguard (formerly CGI International Ltd.) It has been confirmed by Pyroguard that the glass manufacturing method and specifications remain unchanged from that tested, in all but the product name.

3.2.16 Test Report Chilt/PF15035

The test evidence summarised below has primarily been used to support the Strebord® doorset design with Promat Securiglass Pyrobelite 12, glazed with Sealed Tight Solutions glazing system.

Date of Test:	10th February 2015
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Sealed Tight Solutions Ltd
Tested Product:	Unlatched, Single Acting, Double Leaf doorset. (ULSADD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476: Part 20/22: 1987
Performance:	**Integrity:** 50 minutes **Insulation:** 0 minutes
Summary of Test Specimen	**Leaf Size:** 2900mm (h) x 1000mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t) density 570~630 kg/m^3 **Glazing** **Glass:** Promat Securiglass Pyrobelite, 12mm thick **Sight size:** 1095x550mm **Glass size:** 1141x591mm **Aperture size:** 1150x600mm **Position:** 875mm from the leaf head and 300mm from the hanging edge. **Left Leaf Glazing Beads:** Sapele, density 640kg/m^3, 25 (h) x 17 (w) with a 3 (w) x 3 (h) quirk and an 8 (w) x 2 (d) rebate to locate the glazing liner. **Right Leaf Glazing Beads:** Sapele, density 640kg/m^3, 32 (h) x 24 (w) with a 7 (w) x 7 (h) bolection return and 32° chamfer. **Fixings: Pneumatically fired** 1.6 gauge x 50mm long steel screws positioned 35mm from the corners and at 150mm centres angled 35° to the face of the glass. **Glazing System:** Sealed Tight Solutions, ST105GT glazing tape 10 (h) x 5 (w) fitted between the glass and glazing bead. **Glazing Liner:** Sealed Tight Solutions, ST302 glazing liner 30(w) x 2 (t) liner around the glazing cut out in the door leaf.
Reason for Use	None of the failures witnessed prior to 60 minutes were attributable to the glass within the leave. The test report is being used to support the use of the glazing system only. The mode of failure has been addressed and is not relevant to the door designs contained in this report.

Failure Mode	Initial Failure: 50 minutes – continuous flaming at the top meeting edge Further failures: 51 minutes – cotton pad at the top hanging edge of the left leaf. 54 minutes – continuous flaming to both leaves at the top hanging corner. 57 minutes – continuous flaming at the top third of the meeting edge. 63 minutes – there is continuous flaming at the perimeter of the glazing.

3.2.17 Test Report BMT/FEB/F16012

The test evidence summarised below has primarily been used to support the Strebord® doorset design with the Hoppe AR7383 concealed closer and Pyroplex Perimeter seals.

Date of Test:	11th July 2016
Identification of Test Body:	Exova Warringtonfire (now trading as Warringtonfire Testing and Certification Ltd.) UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Latched, Single Acting, Single Leaf doorset. (LSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS 476: Part 22: 1987
Performance:	**Integrity:** 66 minutes **Insulation:** 66 minutes
Summary of Test Specimen	**Leaf Size:** 2042mm (h) x 925mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon particleboard core 54 (t) density 590kg/m^3. **Lipping:** Sapele, 8mm, density 640kg/m^3. Applied to all edges. **Door Frame:** Sapele, density 640kg/m^3, 100 (d) x 44 (t) with a Sapele planted stop 32 (w) x 12 (t). **Frame:** 1No. Pyroplex Rigid Box Seal FO8700, 15 (w) x 4 (t) and 1 No. Pyroplex Rigid Box Seal PO8712, 15 (w) x 4 (t) spaced 10mm apart and 9mm from the exposed face in the frame reveal. **Hardware:** Hoppe AR7383 concealed overhead closer, Body 340 (l) x 34 (w). 505(l) x 43 (w) rebate in the leaf head to accept the closer arm. **Hardware Protection:** **Closer:** Interdens, 2mm thick encasing the closer body and slide channel.

3.2.18 Test Report Chilt/IF13037

The test evidence summarised below has primarily been used to support the Strebord® doorset design with Vistamatic VS1 vision panels using steel or timber glazing beads.

Date of Test:	04th April 2013
Identification of Test Body:	Chiltern Fire (now trading as Warringtonfire Testing and Certification Ltd.)
Sponsor:	Vistamatic Ltd
Tested Product:	Simulated Latched, Single Acting, Single Leaf doorset. (LSASD)
Tested Orientation:	Opening in towards heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	Indicative fire resistance test to the temperature and pressure conditions of BS 476: Part 20/22: 1987
Performance:	**Integrity:** 65 minutes **Insulation:** approximately 32 minutes
Summary of Test Specimen	**Leaf Size:** 1250mm (h) x 1230mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of Graduated Density chipboard particleboard core 54 (t) density 630 kg/m^3. **Lipping:** Sapele, 6mm, density 640kg/m^3. Applied to vertical edges only. **Door Frame:** Sapele, density 640kg/m^3, 70 (d) x 32 (t) with a Sapele planted stop 15 (w) x 12 (t). The leaf was wired shut for the duration of the test. **Intumescent and Environmental Seals:** **Frame:** 2No. Pyroplex Rigid Box Seal FO8500, 15 (w) x 4 (t), spaced 10mm apart and 7mm from the exposed face in the frame reveal. **Vistamatic Glazing Unit** **Glass:** Pyro-EX toughened glass – Express Toughening, 19mm thick – oriented to the exposed face. Annealed glass – Express Toughening, 4mm thick Pyro-EX toughened glass – Express Toughening, 6mm thick– oriented to the unexposed face. **Stainless steel spacer bar:** DGS (Product ref: SS/BT05.5) fitted between the outer glass layers. **Sight size:** 370x770mm **Unit size:** 800x400mm **Aperture size:** 810x410mm **Around centre glass actuator spindle – both panels:** 2No. Norseal Graphite Intumescent (Product ref: 2.5-390 x 10/SA) Norseal graphite type intumescent 5mm thick overall, fitted around the spindle lining the aperture in the outer glass layers. **Left Panel – Steel Glazing Beads:**

	Profiled stainless steel, 54 (h)x 22 (d) x 2 (t), fitted on the unexposed face. Stainless steel, 54 (h) x 2 (t), fitted around the glazing aperture on the exposed face. **Fixings:** Female threaded M5 x 12 long studs welded to unexposed face bead. Machine security screws – fixed from the exposed face, M6 x 40 long screws, fitted 30mm from corners at 200mm centres. **Glazing System:** Autostic adhesive 1mm thick fitted between the glass and glazing bead. **Glazing Liner:** Norsound Vision 60 glazing liner 54(w) x 2 (t) liner around the glazing cut out in the door leaf. **Right Panel – Timber Glazing Beads:** **Glazing Beads:** Sapele, density 640kg/m^3, 25 (h) x 13 (w) with a 8 (h) x 5 (w) bolection return and 45° chamfer. **Assembly Brackets:** 6No. steel assembly brackets, 1.2 (t) x 52 (w) x 11.2 (h), fitted around glazing aperture and fixed with 2No. M8 x 40 long screws per bracket. **Fixings:** Ø2.0x 50mm long steel pins positioned 50mm from the corners and at 100mm centres. Angles 45° to the face of the glass. **Glazing System:** Sealmaster Fireglaze Compound, 4mm thick fitted between the glass and glazing bead. **Glazing Liner:** Norsound Vision 60 glazing liner 54(w) x 2 (t) liner around the glazing cut out in the door leaf. **Hardware:** 2 No Royde & Tucker H101 Lift Off Hinges 100 (h) x 35 (w) blades. **Hardware Protection:** **Hinges:** Norseal Graphite Intumescent, 1mm thick under each hinge blade.

3.2.19 Test Report CFR2109152

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design, with cableways and electronic hardware and incorporating Intumescent Seals Ltd perimeter seals.

Date of Test:	15th September 2021
Identification of Test Body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Dixon International Group Ltd.
Tested Product:	Latched, Single Acting, Single Leaf doorset. (LSASD)
Tested Orientation:	Opening in towards the heating condition of the test
Sampling information:	The doorset was sampled by a representative of BM Trada on 13/09/21 under contract SC21152.
Test Standard:	BS 476-22:1987
Performance:	**Integrity:** 62 minutes **Insulation:** 0 minutes
Summary of Test Specimen	**Leaf Size:** 2184mm (h) x 1040mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 630kg/m^3. **Lipping:** Utile, 8mm thick, density 663kg/m^3. Applied to all edges. **Cableway 1:** A Ø10mm hole drilled through the whole width of the leaf horizontally centrally within the thickness of the leaf 900mm from the bottom of the leaf. Intumescent Seals Ltd, 1mm thick Therm-A-Strip applied to the circumference of the wireway. **Cableway 2:** A 12 deep x 72 high recess in the base of the leaf and 12 deep x 52 wide recess in both vertical edges of the leaf from the base to a height of 900mm, all central to the leaf thickness. Sapele inserts adhered using PU to form a 12 x 12 hole for the cable. Intumescent Seals Ltd, 2mm thick Therm-A-Strip applied to the Sapele inserts. **Door Frame:** Utile, density 663kg/m^3, 91 (w) x 33 (t) with a Utile planted stop 25 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 1No. Intumescent Seals Ltd, Therm-A-Seal, 15 (w) x 4 (t), 7mm from the frame edge and 1No. Intumescent Seals Ltd, Therm-A-Blade, 15 (w) x 4 (t), 33mm from the frame edge. **Glazing:** **Glass:** Fire Glass UK – Pyrobelite 12 EW60 **Glass size (top):** 767 (h) x 653 (w) x 12.3 (t) **Glass size (bottom):** 624 (h) x 767 (w) x 12.3 (t)

	Glazing Beads: Utile, 24 (h) x 24 (w) with a 3 (h) x 6 (w) bolection return and 20° chamfer. **Fixings:** Ø1.5 x 48mm long steel pins positioned 60mm from the corners and with 3 No. fixings equispaced at horizontal beads and 5 No. fixings equispaced to the top glazing panel. The bottom panel glazing beads were fixed with 5 No. fixings equispaced at horizontal beads and 3 No. fixings equispaced to the vertical beads. **Glazing System:** Sealmaster Intumescent Foam Glazing Tape 20 (w) x 5. (t) fitted between the glass and glazing beads. **Glazing Liner:** Sealmaster GL60 Glazing Liner, 54 (w) x 2 (t) around the glazing cut out in the door leaf. **Hardware:** 3 No Zoo Hardware ZHSS243RS Stainless Steel butt hinges 102 (h) x 31 (w) x 3 (d) blades. Union Assa Abloy Retro V – J Retro v-SIL, body size: 44 (h) x 246 (w) x 53 (d) Assa Abloy EL560 latch, forend 235 (h) x 24 (w) x 3.2 (t), with EA322 strike. Assa Abloy CY326 Novel Single Euro Cylinder, half cylinder to unexposed face. Assa Abloy INOXI 3-19SS / DH072 lever handle. Body: 214 (h) x 56 (w) x 11 (d), handle Ø19 x 140 (w). Assa Abloy EA280 Cable loop, 323 (l) x 18 (w) 25 (d) Sealmaster 2712 drop seal 27 (h) x 12 (w) **Hardware Protection:** **Hinges:** Intumescent Seals Ltd, Therm-A-Strip, 1mm thick under each hinge blade. **Latch:** Intumescent Seals Ltd, 1mm thick Therm-A-Strip, around the latch body and under the latch forend and keep. **Drop Seal:** Intumescent Seals Ltd, 2mm thick Therm-A-Strip, fitted to the top, unexposed and exposed edges of the drop seal case. **Cable Loop:** Intumescent Seals Ltd, 2mm thick Therm-A-Strip, fitted to all faces of the body and to the rear of the forend.

3.2.20 Test Report BMT/FEP/F14233 AR1 Doorset B

The referenced test report, the essential details of which are summarised below, is the primary data for additional hardware to be installed into the doorset, including Zoo Butt hinge and Winkhaus AV2 Lock, being considered in this assessment.

Date of test	20th January 2015
Identification of test body:	BMTRADA Ltd now trading as Warringtonfire Testing and Certification Ltd, UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd
Tested Product:	Latched, single leaf, single acting, timber doorset
Tested Orientation:	Opening in towards the heating condition of the test
Sampling information:	No Sampling Information Available
Test Standard:	BS EN 1634-1: 2014
Performance	Integrity: 67 minutes Insulation: 25 minutes
Summary of test specimen:	**Leaf Size:** 2052mm (h) x 915mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 620kg/m^3. **Lipping:** American White, 15mm thick, density 700kg/m^3. Applied to vertical edges and head of the door leaf. **Door Frame:** Sapele, density 640kg/m^3, 94 (w) x 55 (t) with a 58 (w) x 15 (d) rebate. **Intumescent and Environmental Seals:** **Frame Head & Jambs:** 1No. Lorient Polyproducts MAP 10x2mm, 6mm from the opening face, 10mm deep into the frame. 1No. Pyroplex rigid box seal Ref. F08700 fitted 41mm from the hinge face in frame reveal. **Leaf Edge - Head & Jambs:** 2No. Lorient Polyproducts MAP 8x2mm fitted 7mm from each leaf face, 8mm deep into the lipping. **Glazing:** **Glass:** Pilkington Pyrodur 10 (t) fitted 138 from the head and 247 from the hanging edge. Sight size: 350 (h) x 350 (w) **Glazing bead:** Sapele beading 35 (h) x 25 (w) including a 10 x 10 bolection return and a 15° chamfer. **Fixings:** Ø1.6 x 60mm long steel pins positioned 40mm from the corners and at 140mm centres angle 35° to the glass face.

	Glazing system: Mann McGowan Pyroglaze 60, 25 x 3mm, applied between the bead and the glass on both faces. **Glazing liner:** Mann McGowan Pyroglaze Intumescent liner, 50 x 2mm, applied lining the glazed aperture. **Hinges:** 3No Zoo 2HSS 243 RS hinges 101 (h) x 30 (w) x 3 (t) blade size. **Closer:** Dorma TS73V overhead type closer 230 (w) x 65 (h) footprint size. **Latch:** Winkhaus AV2 1765 (h) x 20 (w) forend size, with the centre keep measuring 235 (h) x 24 (w), and the top and bottom keeps measuring 175 (h) x 24 (w). **Lever:** Zoo Aluminium lever type handle Ref: Z2L Ø52 (rose size) **Hardware protection:** 1mm thick Lorient Polyproducts MAP fitted underneath both hinge blades 1mm thick Lorient Polyproducts MAP fitted lining the sides of all latch bodies. 1mm thick Lorient Polyproducts MAP fitted under all latch keeps.

3.2.21 Test Report WF523041 Doorset B

The test evidence summarised below has primarily been used to support the Strebord® blank doorset design with Intastop PVC edge protectors, using Intumescent Seals Ltd perimeter intumescent seals.

Date of Test:	4th October 2022
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf doorset. (ULSADD)
Tested Orientation:	Opening in towards the heating condition of the test
Sampling information:	Sampling of the doorsets was conducted by a representative of BM Trada on14/09/2022 and 26/09/2022 under sampling contract SC22181.
Test Standard:	BS 476-20 / 22:1987 Clause 7
Performance:	**Integrity:** 64 minutes **Insulation:** 64 minutes
Summary of Test Specimen	**Leaf Size:** 2100mm (h) x 926 / 540mm (w) x 54mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 636kg/m^3. **Lipping:** Sapele, 10 mm thick, density 600kg/m^3. Applied to all edges. **Edge Protectors, applied to all vertical edges:** Intastop DEG-PVC-54-2_1, 2mm PVC bonded onto an 18mm thick MDF core. Internal dimension of 54mm thick to suit door leaf thickness. 60mm PVC leg overlaps onto lipped door blank by 40mm **Door Frame:** Sapele hardwood (density 620kg/m^3), 94 (w) x 31 (t) with planted stop 32 (d) x 12 (t). **Intumescent and Environmental Seals:** Perimeter intumescent seals were cut into 200mm long sections and tightly butt jointed in all cases. It was ensured that none of the breaks in the seal coincided with breaks in other seals. **Frame Perimeter Intumescents:** 2 No. Intumescent Seals Ltd. Therm-A-Seal – 15 x4mm fitted central to the door leaf core and spaced 10mm apart. **Leaf Hanging Edges (fitted into the edge protector):** 1 No. Intumescent Seals Ltd. Therm-A-Blade – 15 x4mm **Leaf Meeting Edges:** Primary Leaf: 1 No. Intumescent Seals Ltd. Therm-A-Blade – 15 x4mm Secondary Leaf: 2 No. Intumescent Seals Ltd. Therm-A-Seal – 15 x4mm **Intumescents fitted to the rear of the edge protectors:** 2 No. Intumescent Seals Ltd. Therm-A-Flex, 10x2mm

	Glazing: The doorset design included glazed apertures however, these have not been considered herein. **Hardware:** 3 No Zoo Hardware ZHSS243S Stainless Steel butt hinges 102 (h) x 31 (w) x 3 (d) blades. Rutland Door TS.3204 Closer Zoo Hardware ZDL7260RSS lock, 235 (l) x 22 (w) forend. Brisant ULTION 3* PLUS cylinder Zoo Hardware lever handle, ZCS030SS and cylinder escutcheon. **Hardware Protection:** **Hinges:** 2mm thick interdens under all hinge blades. **Latch:** 2mm thick interdens encasing latch body, under lock strike and keeps.

3.2.22 Test Report BMT/FEP/PF15288 Revision A

The referenced test report, the essential details of which are summarised below, is supporting data for - ST105GT(3) 9mm x 3mm/ST302 60 minute glazing system.

Date of Test	9th November 2015
Identification of Test Body	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor	Sealed Tight Solutions
Tested Product	A: 1No.Unlatched, Single Acting, Single Leaf, Timber Doorset with Glazing & B: 1No ½ Leaf Unlatched, Single Acting, Timber Doorset (not relevant to this report).
Tested Orientation	Opening in towards heating condition
Summary of Assessed Element	GLAZING (Doorset A): Glass: Promat Securiglass Pyrobelite, 12mm (t). Aperture Size: 1600 (h)x480(w) mm Glass Size: 1591 (h) x 471 9w) mm Sight Size: 1550 (h) x 430 (w) mm Expansion allowance: 2-3mm all round. Beading: Sapele (640kg/m^3), 32mm (h) x 26mm (d), chamfered & bolected. Bead Fixing: 1.5mm x 50mm (l) steel wood pins, at 150mm centres & 50mm from corners. GLAZING SYSTEM: Glazing Perimeter: Sealed Tight Solutions ST105GT(3) glazing gasket 9mm x 3mm, between glass & bead. Glazing Aperture Liner: Sealed Tight Solutions ST302 glazing liner 30mm x 2.5mm.
Test Standard	BS 476: Part 22:1987
Performance	**Integrity A:** 44 minutes **Insulation A:** 0 minutes
Failure Mode	Initial integrity failure was recorded at 44 minutes between the back of frame and structural opening, a further leaf edge failure was recorded at 77 minutes. No failures in the area of the glazed aperture were recorded prior to the door being boarded over at 80 minutes into the test.
Reason for use	The integrity failure due to the installation of the door frame (sealing to the structure) is remote from any of the STS systems considered within this report.

3.2.23 Test Report CFR2211162

The test evidence summarised below has primarily been used to support the Strebord® 54 blank doorset design, including apertures glazed with Pyroguard Advance 2–EW60/11-2 using Intumescent Seals Ltd Therm-A-Glaze 60 (Therm-A-Bead & Therm-A-Line) glazing system.

Date of Test:	16th November 2022
Identification of Test Body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Dixon International Group Ltd & Falcon Panel Products.
Tested Product:	Latched Single Acting Single Leaf doorset. (LSASD)
Tested Orientation:	Opening in towards the heating condition of the test
Sampling information:	Sampling of the doorsets was not undertaken. The intumescent materials were sampled by Warrington fire under Job No. FM523909.
Test Standard:	BS 476-22:1987
Performance:	**Integrity:** 74 minutes
Summary of Test Specimen	**Leaf Size:** 2068mm (h) x 1042mm (w) x 54.5mm (t) **Door leaf:** The door leaf consisted of a Falcon Strebord® particleboard core 54 (t), density 630kg/m^3. **Lipping:** , density 767kg/m^3. 10mm thick applied to all edges. **Door Frame:** Sapele, Density 706kg/m^3, 80 (d) x 32 (t), with a Sapele planted stop 20 (w) x 12 (t). **Intumescent and Environmental Seals:** **Frame:** 2No. Intumescent Seals Ltd, Therm-A-Seal set 7 and 32 from the exposed face. **Glazing:** **Glass** **Left Aperture:** AGC Flatglass - Pyrobelite 12 **Right Aperture:** Pyroguard Advance 2–EW60/11-2 **Glass size:** Left Pane: 1500 (h) x 400 (w) x 12.3 (t) Right Pane: 1500 (h) x 293 (w) x 11 (t) **Glazing Beads:** Sapele, 30 (h) x 22 (w) with a 5 (h) x 5 (w) bolection return and a 15° chamfer. **Fixings:** Ø4.0 x 49mm long steel screw, 51mm in from the corners and at 149mm centres. **Glazing System:** Intumescent Seals Ltd. Therm-A-Bead, 25 (w) x 4 (t) fitted between the glass and glazing beads. **Glazing Liner:** Intumescent Seals Ltd. Therm-A-Line, 54 (w) x 2 (t) around the glazing cut out in the door leaf. **Hardware:** **Hinges:** 3 No Union /Assa Abloy JH603BU butt hinges, 199 (h) x 37 (w) x 3 (t) blades.

	Closer: Assa Abloy DC135 overhead surface mounted closer 234(w) x 60 (h) x 43 (d). **Lock:** Yale Auto Engage Multipoint YAS1-4502-27 **Handles:** Yale Sparta 0757-2003-CH-CH **Cylinder:** Yale Platinum YS3-4040N **Knocker:** Yale Traditional 0704-2003-CH **Security Chain:** Yale B-WS6-20-SC **Signage:** Yale chrome – 0703-2001-A-CH **Hardware Protection:** **Hinges:** Intumescent Seals Ltd. Therm-A-Strip – 2mm thick under each blade **Latch:** Intumescent Seals Ltd. Therm-A-Strip – 2mm thick to all faces of the latch and hook boxes. Also to the base of the rebates for the forend. Intumescent Seals Ltd. Therm-A-Strip – 2mm thick to the rear of strike including tongue and lining all edges of both rebates in frame for latch and lock bolts.

3.2.24 Test Report CFR1812191_1

The referenced test report, the essential details of which are summarised below, is the primary data for the STS 104SG glazing system.

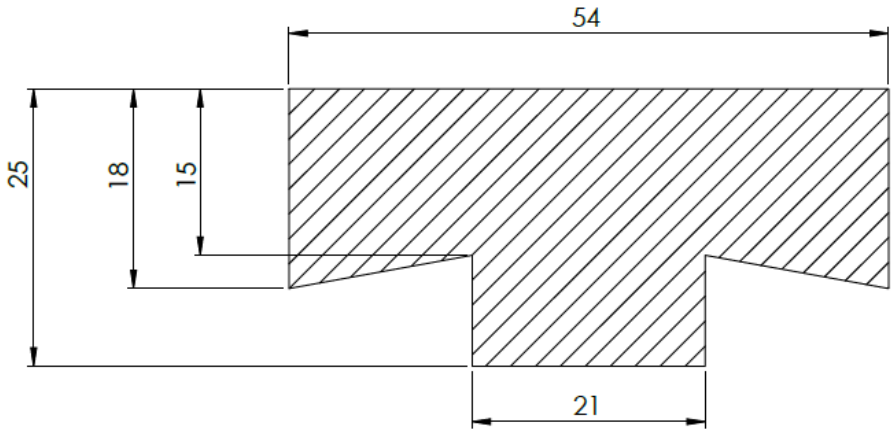
Date of Test	19th December 2018
Identification of Test Body	Cambridge Fire Research UKAS 4319
Sponsor	Falcon Panel Products Ltd
Tested Product	Latched, Single Acting, Single Leaf, Timber Doorset with Glazing
Tested Orientation	Opening in towards heating condition
Summary of Test Specimen	LEAF: Core: Falcon Panel Products Stredor (550kg/m^3), 54mm (t). FRAME: Not considered as part of this report. INTUMESCENT: Not considered as part of this report. HARDWARE: Not considered as part of this report. GLAZING: Glass: Promat Pyrobelite EI30/EW60, 12mm (t). Glass Size: 1209mm (h) x 517mm (w). Expansion allowance: 5mm all round. Beading: Sapele (640kg/m^3), 30mm (h) x 26mm (d), chamfered & bolected. Bead Fixing: 1.6 x 50mm (l) Pneumatically fired steel pins, 150mm centres & 100mm from corners. GLAZING SYSTEM: Glazing Perimeter: Sealed Tight Solutions STS104SG, 10mm x 2mm (intumescent element), between glass & bead. Glazing Aperture Liner: Sealed Tight Solutions STS302GL 30mm x 2mm.
Test Standard	BS 476 Part 22: 1987.
Performance	**Integrity:** 71 minutes **Insulation:** 35 minutes

3.2.25 Test Report WF525485 Doorset A

Date of Test:	24th November 2022
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd
Tested Product:	2 No. Single acting single leaf doorsets – ULSASD.
Tested Orientation:	Doorsets opened towards the test conditions.
Test Standard:	BS EN 1634-1:2014+A1:2018
Performance:	**Doorset A (Strebord 54)** **Integrity:** Integrity: 72 minutes **Insulation:** 72 minutes

Reason for Use	For use as primary evidence for:
	• Hardware
	  ○ Arrone AR515-PK Digilock
	  ○ Arrone AR200S/10-SP Lever Handle
	  ○ Arrone AR8805 External Locking Attachment
	  ○ Arrone AR882 Panic Latch
	  ○ Arrone AR885 Outside Access Device
	  ○ Arrone AR5500-SD Overhead Surface Mounted Closer

3.2.26 Test Report WF430460/Rev A

Date of Test:	9th July 2020
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd
Tested Product:	Single acting single leaf doorsets – ULSASD.
Tested Orientation:	Doorset opened towards the test conditions.
Sampling information:	Sampling of the doorsets was conducted by a representative of BM Trada between 25/02/2020 & 26/02/2020, sampling contract SC20065/1
Test Standard:	BS 476 Part 22: 1987.
Performance:	**Doorset B (Strebord 54)** **Integrity:** Integrity: 70 minutes **Insulation:** 70 minutes
Reason for Use	For use as primary evidence for: • Lippings – Sapele (Density 640kg/m^3) ○ 25mm overall thickness including a 10(d) x 21(w)mm tongue – profiled as illustrated below. ○ Adhesive Kleiberit PVAC – Supracolle 303.8/3006 

4 Technical Specification

4.1 General

The technical specification for the proposed door assembly 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

The Strebord® 54 door design can include various design features:

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

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

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

4.4 Door Frames

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

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

4.4.1 Frame 1 – Hardwood

The construction of Frame 1 door frames are based on hardwood with minimum frame dimensions.

For further information on the specification and construction of the door frames see section 7.

4.4.2 Frame 2 – MDF

The construction of Frame 3 door frames are based on MDF with minimum frame dimensions.

For further information on the specification and construction of the door frames see section 7.

4.4.3 Frame 3 – two piece Simplis Soleco Visible frame steel frame

The construction of Frame 4 door frames are based on 1mm thick two part profiled steel with minimum frame dimensions fitted extending over the wall thickness as projecting architraves.

For further information on the specification and construction of the door frames see section 7.

4.4.4 Frame 4 – Ezy Jamb EZC Concealed Two Part Frame

The construction of Frame 4 door frames are based on 1mm thick two part profiled steel with minimum frame dimensions.

For further information on the specification and construction of the door frames see section 7.

4.5 Doorset Configurations & Maximum Leaf Sizes

4.5.1 General

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

1. The margin of over performance above 60 minutes integrity for the design
2. The characteristics exhibited during test and
3. The doorset configuration tested

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

1. A test on a double doorset is more onerous than a test on a single doorset.
2. A test on a doorset with a flush overpanel is more onerous than a test on a doorset without an overpanel. A flush overpanel has the same thickness as the door leaf and is flush with the leaf/leaves.
3. A test on an unlatched doorset is more onerous than a test on a latched doorset as the leading edge is unrestrained and will deflect more in fire test conditions.
4. A test on an unlatched single acting doorset is considered to be equivalent to a double acting doorset, due to the known deflection of an unlatched single acting doorset towards the furnace conditions i.e. away from the door stop. However, this does not cover doorsets with flush overpanels.
5. A doorset with transomed overpanel is considered to perform comparably to a similar doorset without an overpanel. This is because the transom structurally separates the overpanel from the doorset.

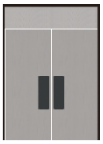
The leaf size for each door leaf option and configuration is linked to the perimeter intumescent specification and frame option. The following section details the maximum leaf size for each door leaf option and configuration based on the intumescent specification and frame details tested.

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

4.5.2 Configuration

The table below shows the permitted configurations for the Strebord® 54 doorset design, with the abbreviation and full description of each configuration.

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

Doorset Configurations			
Ref	Depiction	Abbreviation	Description
A		LSASD	Latched Single Acting Single Doorset
B		ULSASD	Unlatched Single Acting Single Doorset
C		DASD	Double Acting Single Doorset
D		LSASD+OP	Latched Single Acting Single Doorset + Flush Overpanel
E		ULSASD+OP	Unlatched Single Acting Single Doorset + Flush Overpanel
G		LSADD	Latched Single Acting Double Doorset
H		ULSADD	Unlatched Single Acting Double Doorset
I		DADD	Double Acting Double Doorset
J		LSADD+OP	Latched Single Acting Double Doorset + Flush Overpanel
K		ULSADD+OP	Unlatched Single Acting Double Doorset + Flush Overpanel

4.5.3 Orientation

The majority of 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. Based on this testing, assessment is made that the doorsets to this design may be hung either away from or towards the fire risk side of the doorset. The rationale behind the direction of fire testing timber based doorsets opening towards the fire test conditions is further explained in Annex C of BS EN 1634-1:2014 +A1:2018.

Test reference WF414533 was undertaken with similar doorsets tested both opening in towards the furnace heating conditions and out away from the heating conditions. The doorset opening in achieved 67 minutes integrity and the doorset opening out achieved 80 minutes integrity performance, therefore validating the point made above.

4.5.4 Envelopes for each Configuration

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

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

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

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

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

4.5.4.1 General Note on Intumescent Seals

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

4.5.4.2 Explanation for following sections

The performance of a doorset in terms of configuration and size is dependent on the leaf type, perimeter intumescent used and frame type. These elements are not automatically interchangeable. The following sections present the envelopes for the Strebord® 54 and 4 frame types. Each envelope is linked to a specific perimeter intumescent which is given a unique reference and is based directly on test evidence.

The envelopes are presented as follows:-

- for LSASD increasing in configuration complexity up to ULSADD+OP/DADD+OP
- for each configuration, each leaf type is considered separately.
- for each configuration and leaf type, each frame type is considered separately.

For each configuration the leaf type, frame type and intumescent specification is considered separately, and a unique envelope of permitted leaf sizes is presented based on the configuration, leaf type, frame type and intumescent and the envelope is directly linked to a unique test.

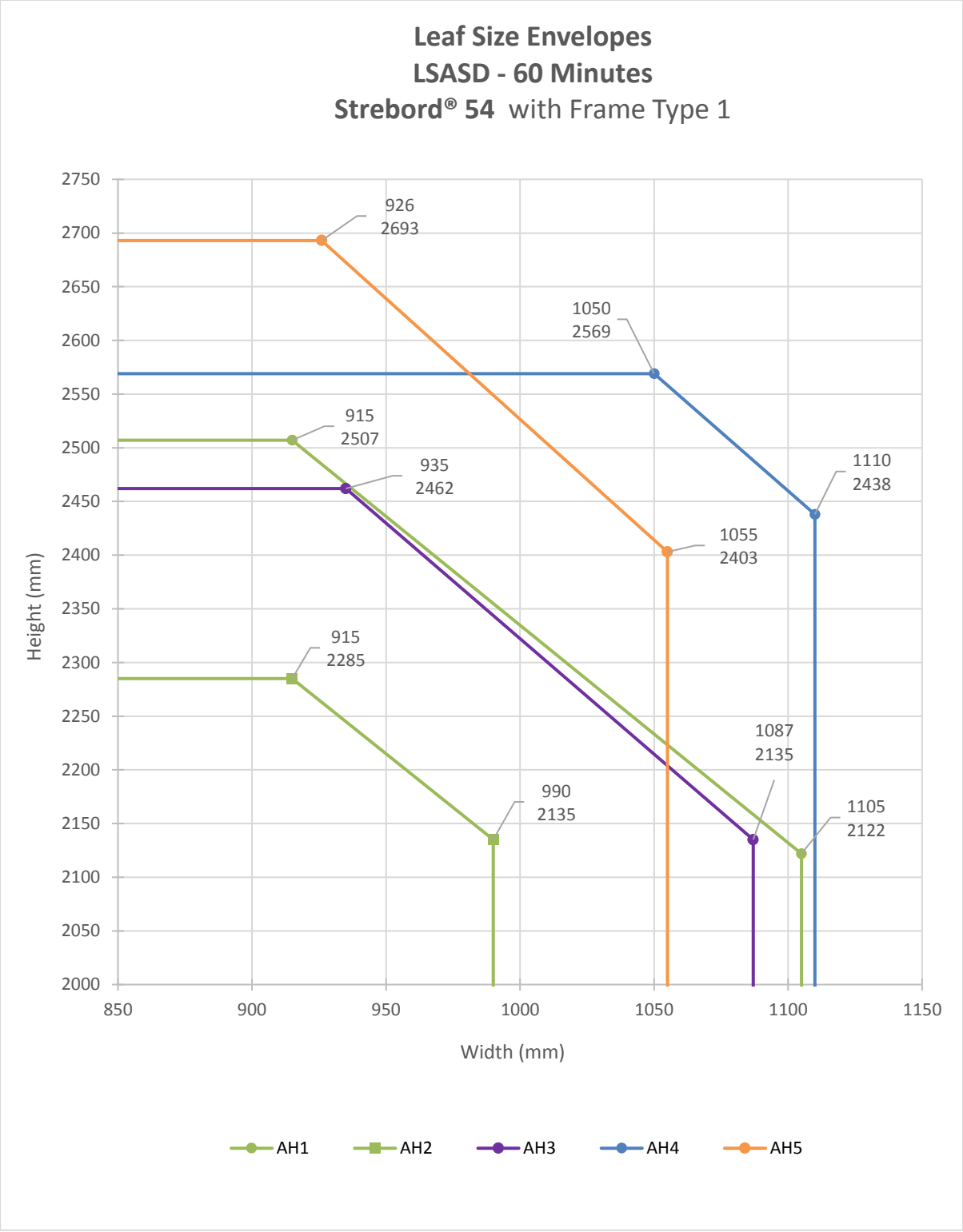
4.5.4.3 Summary of Permitted Configurations for the Strebord 54 leaf & Frame Options

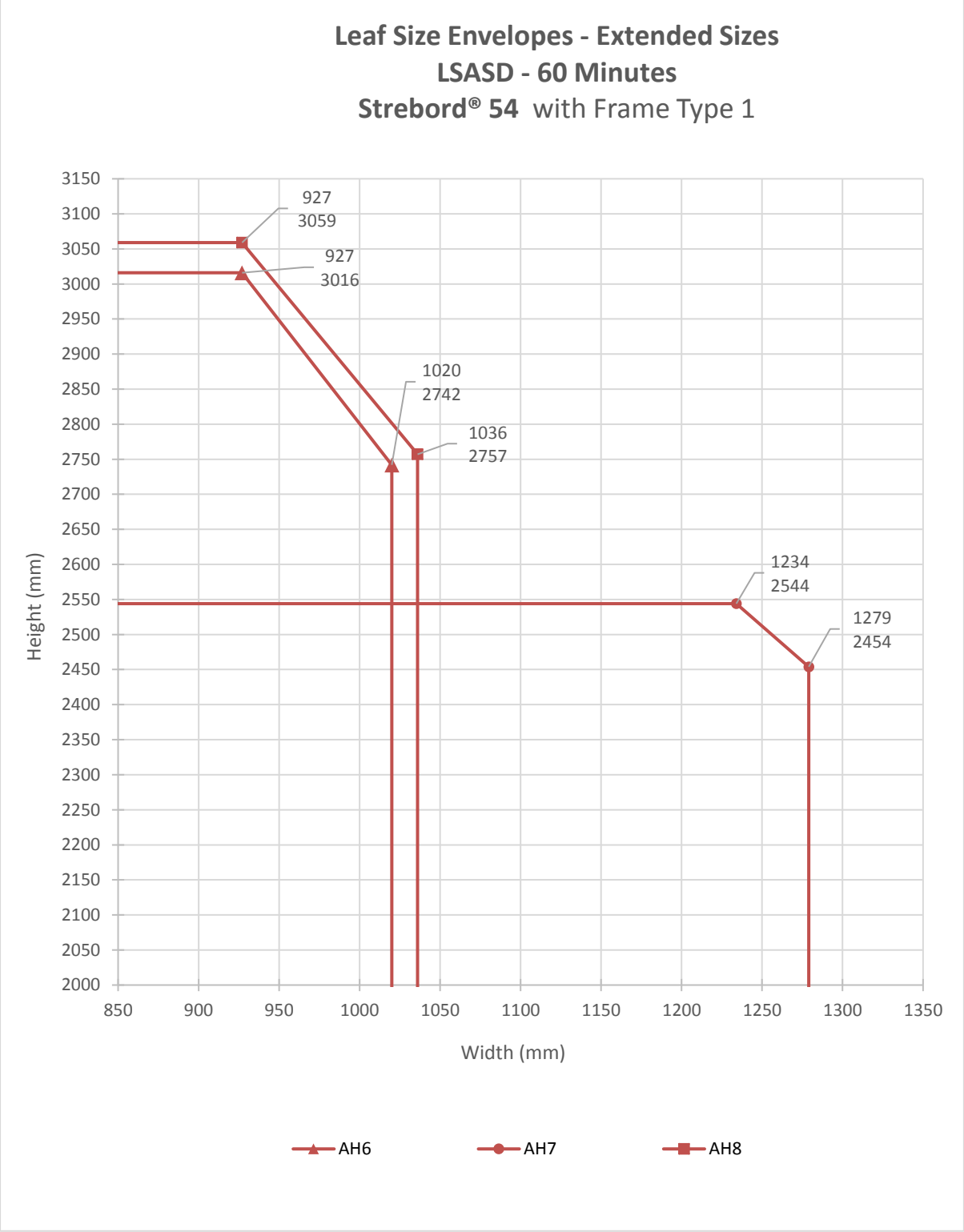
Permitted Configurations with frame types 1 - 5 with Strebord® 54 Door Leaf											
Frame		Configuration									
		LSASD	ULSASD	DASD	LSASD OP	ULSASD OP	LSADD	ULSADD	DADD	LSADD OP	ULSADD OP
1	Hardwood	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	MDF	Yes	Yes	No	No	No	Yes	Yes	No	No	No
3	Simplis Soleco Visible frame steel frame (Steel Frame)	Yes	Yes	No	No	No	Yes	Yes	No	No	No
4	EzyJamb (Steel Frame)	Yes	Yes	No	No	No	Yes	Yes	No	No	No

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

4.5.5 LSASD Configuration: Leaf Sizes & Intumescent Specification

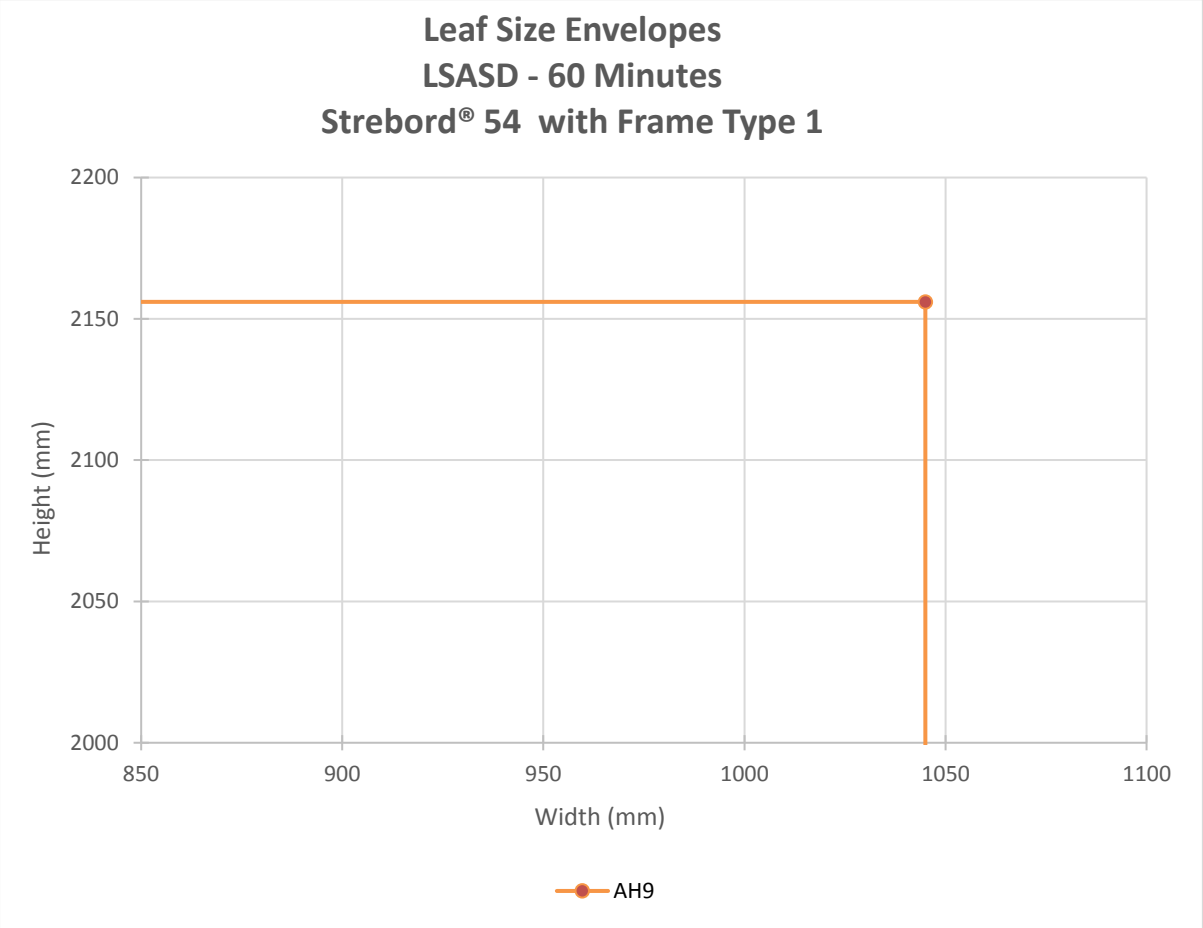
4.5.5.1 Strebord® 54 + Frame 1 with Single Point Locks




Leaf Size Envelopes - Extended Sizes
LSASD - 60 Minutes
Strebord® 54 with Frame Type 1
Height (mm)
Width (mm)
927
3059
927
3016
1020
2742
1036
2757
1234
2544
1279
2454
AH6
AH7
AH8

Intumescent Specification for LSASD Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH1 (Chilt/RF02020)	LP1504 Palusol	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
AH2 (Chilt/RF11171)	LP1504 Type 617	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
AH3 (WF413865)	Therm-A-Seal	Intumescent Seals Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
AH4 (WF386959)	STS154	Sealed Tight Solutions	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
AH5 (CFR2112211)	Pyrostrip 500PSA	Mann McGowan Fabrication Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
AH6 (Chilt/RF09140) AH7 (Chilt/RF13111)	Rigid Box FO8700	Pyroplex Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
AH8 (Chilt/RF13242)	Rigid Box FO8700	Pyroplex Ltd	**Frame Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Leaf Head** 1No. 15x4mm Fitted centrally in the leaf thickness.

4.5.5.2 Strebord® 54 + Frame 1 with Multipoint Locks

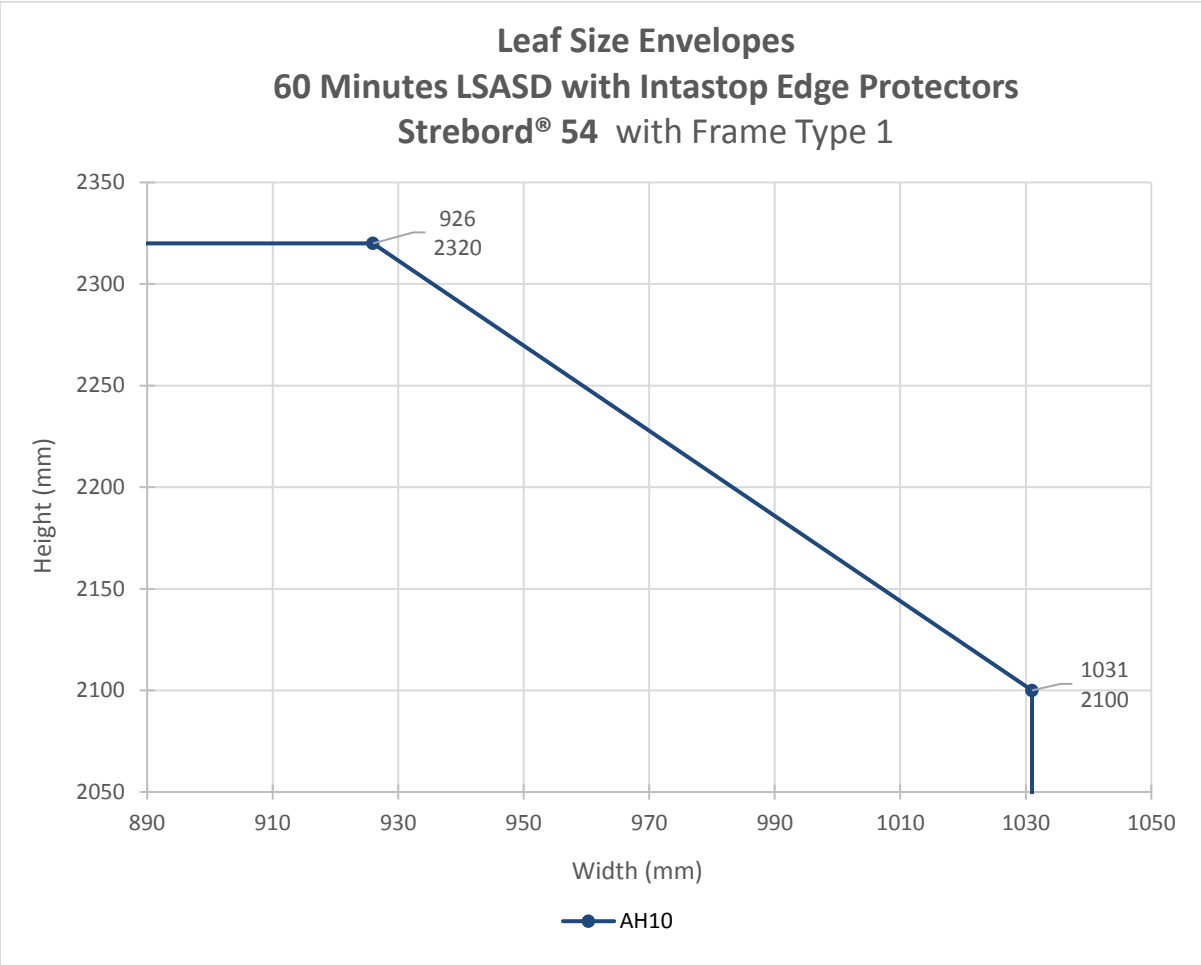


Intumescent Specification for LSASD with Multipoint Locks Strebord® 54 with Frame 1			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH9 (Chilt/PF14233 AR1 & WF518622 – Doorset A)	500P	Mann McGowan Ltd	**Frame Head & Jambs:** 2No. fitted 7 and 32mm from the hinge face in frame reveal.

Note:

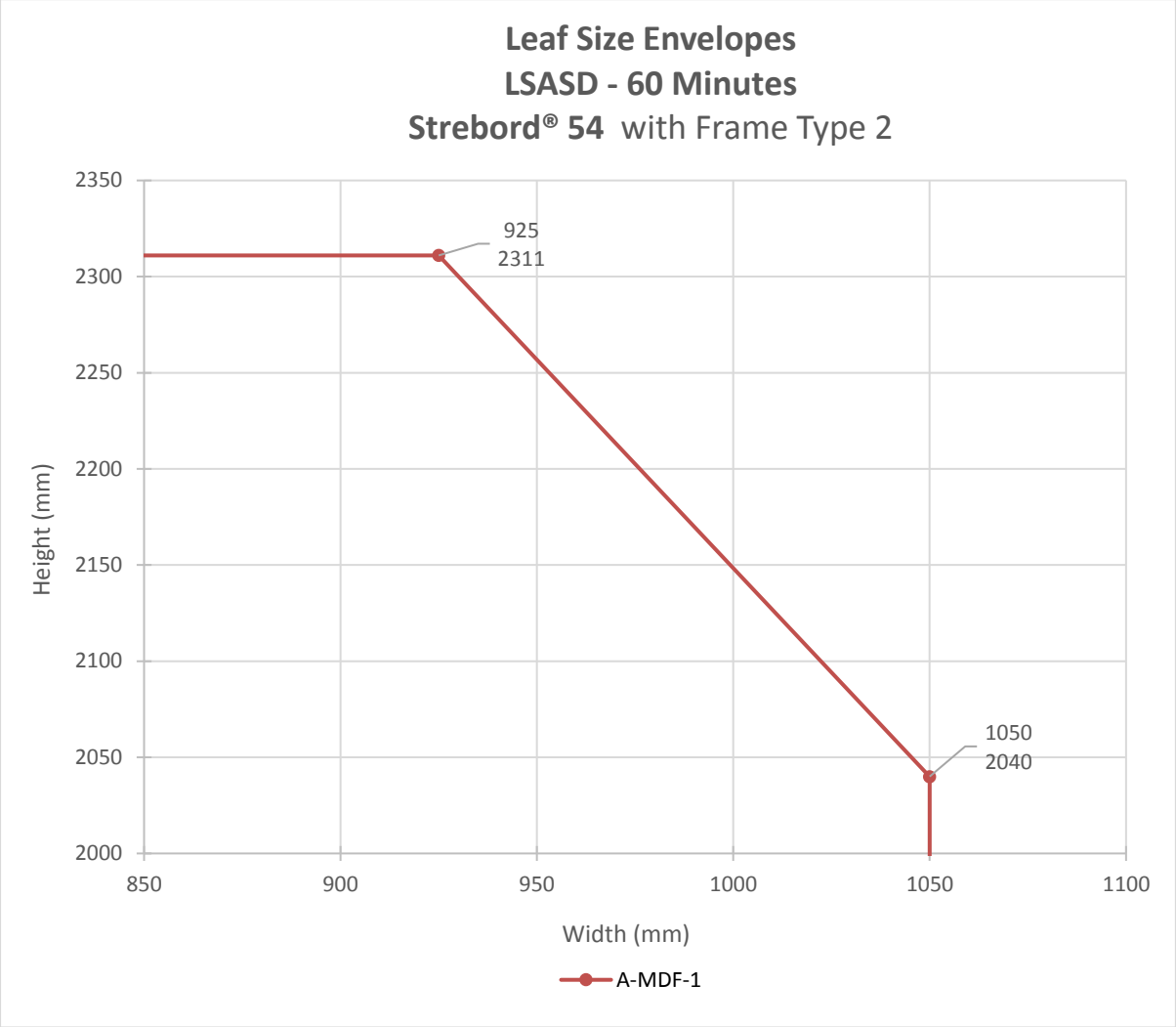
Based on fire test WF518622, which included 2No. unlatched locks / latches with the upper lock positioned 1.6m above floor. The tested lock bodies are larger than the AV2 top and bottom lock case. Doorsets that incorporate the AV2 will be a latched configuration with three points of restraint against the frame, which will restrain the closing edge limiting deflection.

4.5.5.3 Strebord® 54 + Frame 1 with Intastop Edge Protectors



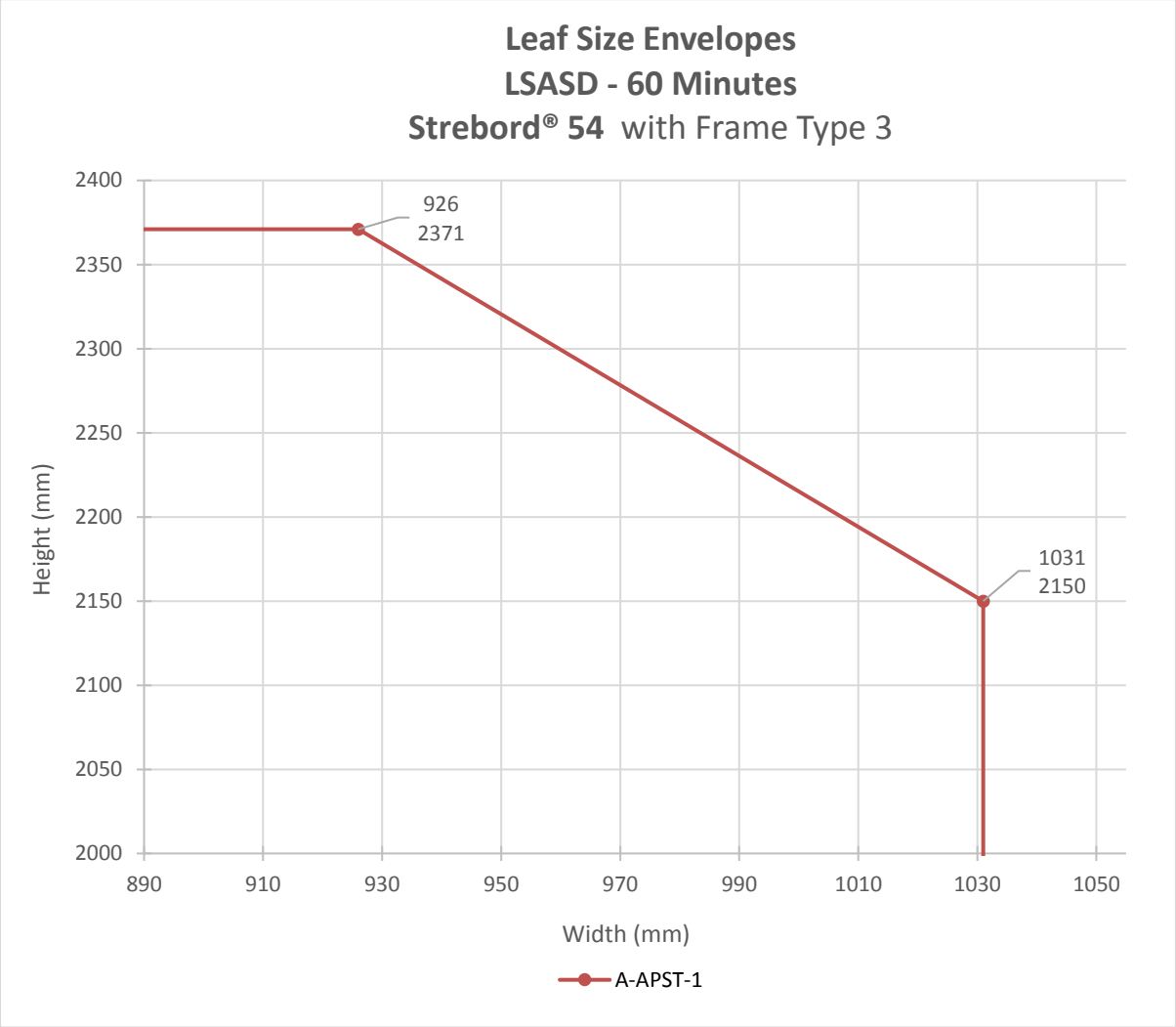
Intumescent Specification for LSASD with Intastop Edge Protectors Strebord® 54 with Frame 1			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH10 (WF523041 Doorset B)	Therm-A-Seal / Therm-A-Blade	Intumescent Seals Ltd	**Frame Perimeter Intumescents:** 2 No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the frame reveal. **Leaf Hanging & Lock Edges:** 1 No.15 x4mm Fitted centrally in the Intastop Edge Protector.
	Graphite	Intumescent Seals Ltd	**Rear of MDF Insert – Integral to the Intastop Edge Protector:** 2No. 10x2mm, fitted centrally and spaced 19mm apart

4.5.5.4 Strebord® 54 + Frame 2



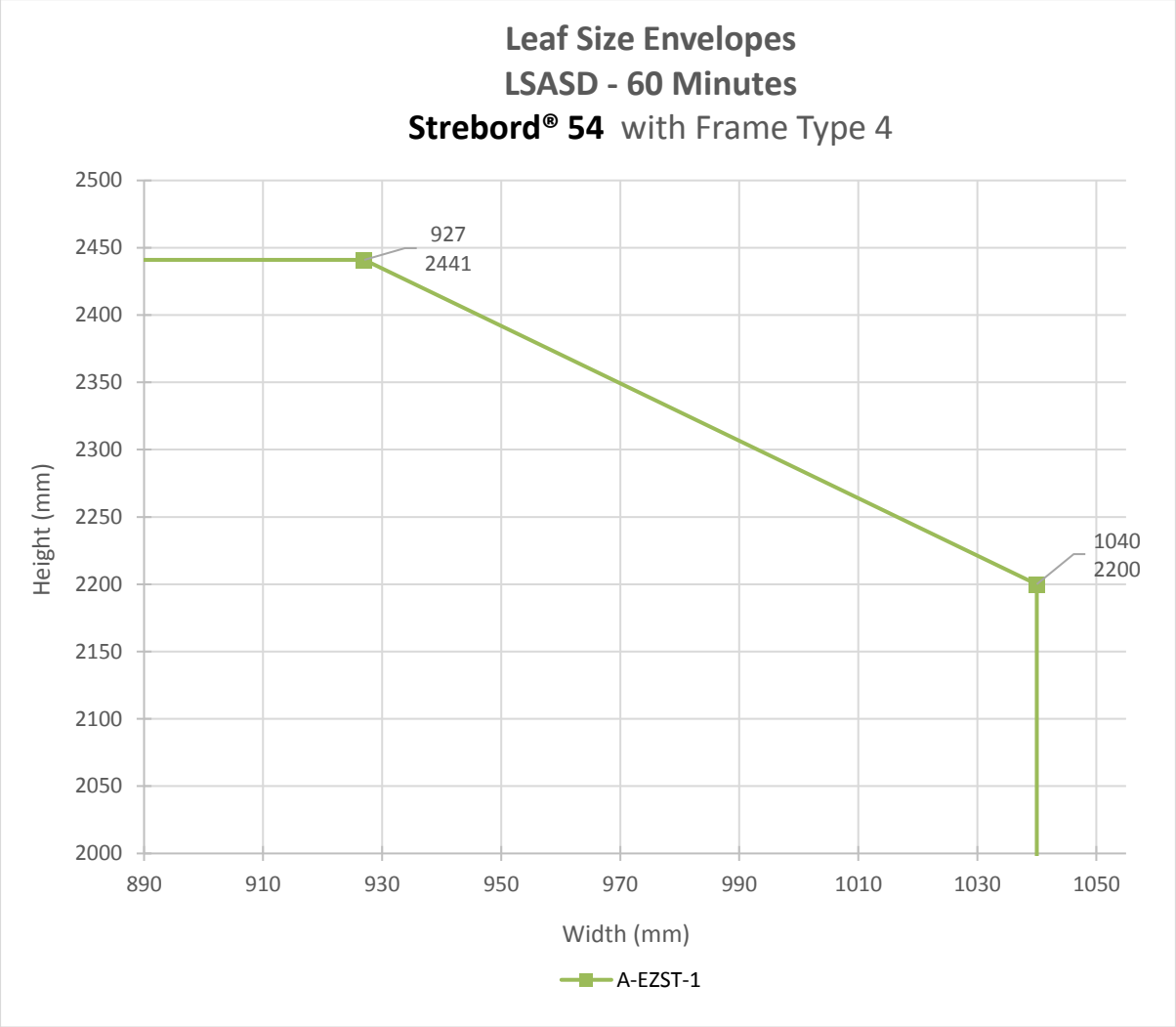
Intumescent Specification for LSASD Strebord® 54 with Frame 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
A-MDF-1 (Chilt/RF10011)	Rigid Box FO8700	Pyroplex Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.

4.5.5.5 Strebord® 54 + Frame 3



Intumescent Specification for LSASD Strebord® 54 with Frame 3			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
A-APST-1 (WF435986)	LP2002 Mono-Ammonium Phosphate (MAP)	Lorient Polyproducts Ltd.	**Door Leaf, Head & Jambs:** 2No. 20 (w) x 2 (t), seals 5mm apart and 4.5mm from the opening face.
	LP2004 Type 617	Lorient Polyproducts Ltd.	**Door Leaf, Head & Jambs:** 2No. Lorient Polyproducts LP2004 617 seals, 20 (w) x 4 (t), placed on top of the 20 x 2mm mono-ammonium seals in the head & jambs

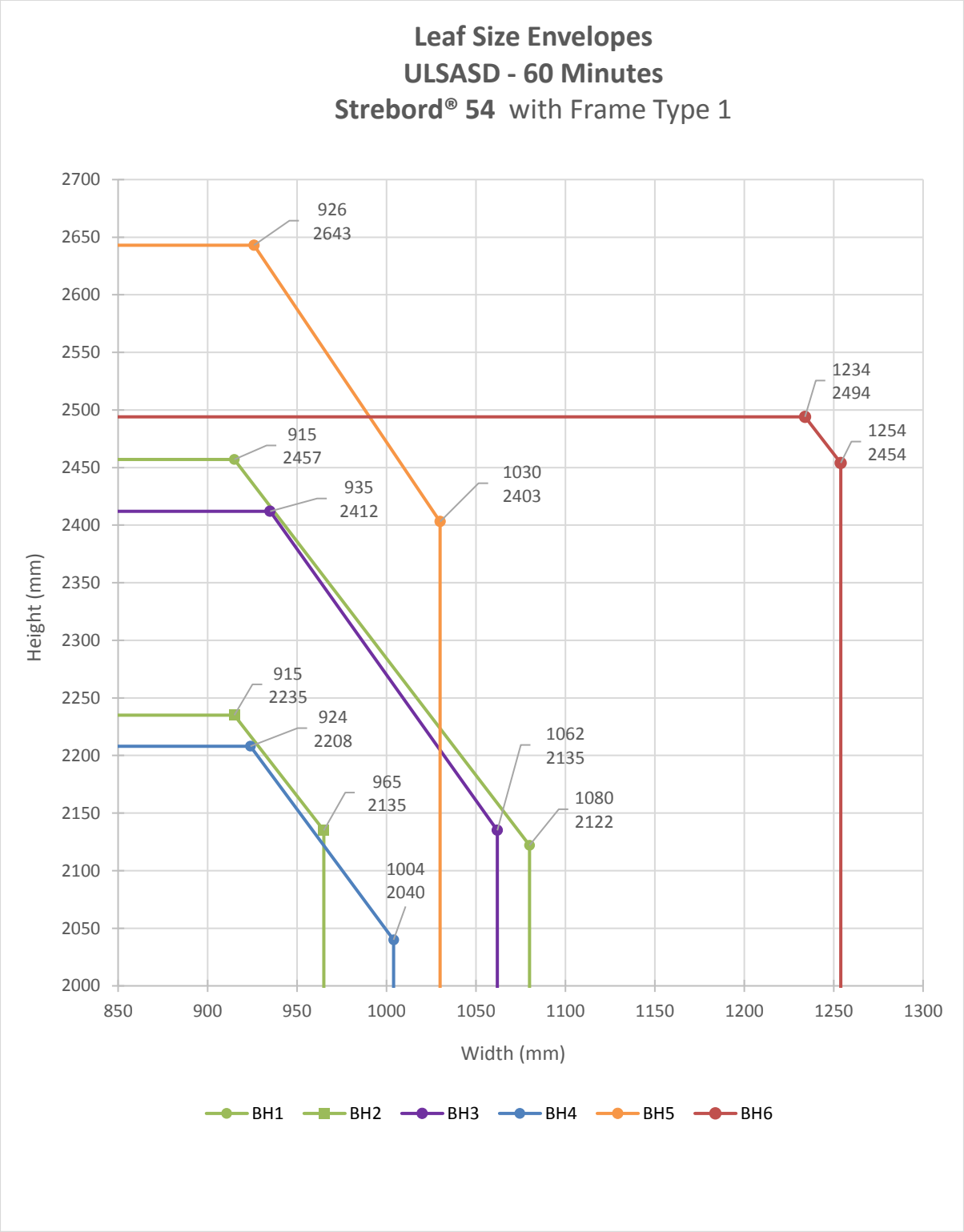
4.5.5.6 Strebord® 54 + Frame 4



Intumescent Specification for LSASD Strebord® 54 with Frame 4			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
A-EZST-1 (WF415618 - B)	LP2004 Type 617	Lorient Polyproducts Ltd.	**All door leaf edges:** 2No. 20x4mm. Fitted 2.5mm either side of the door leaf centreline (5mm apart) in the leaf edge.

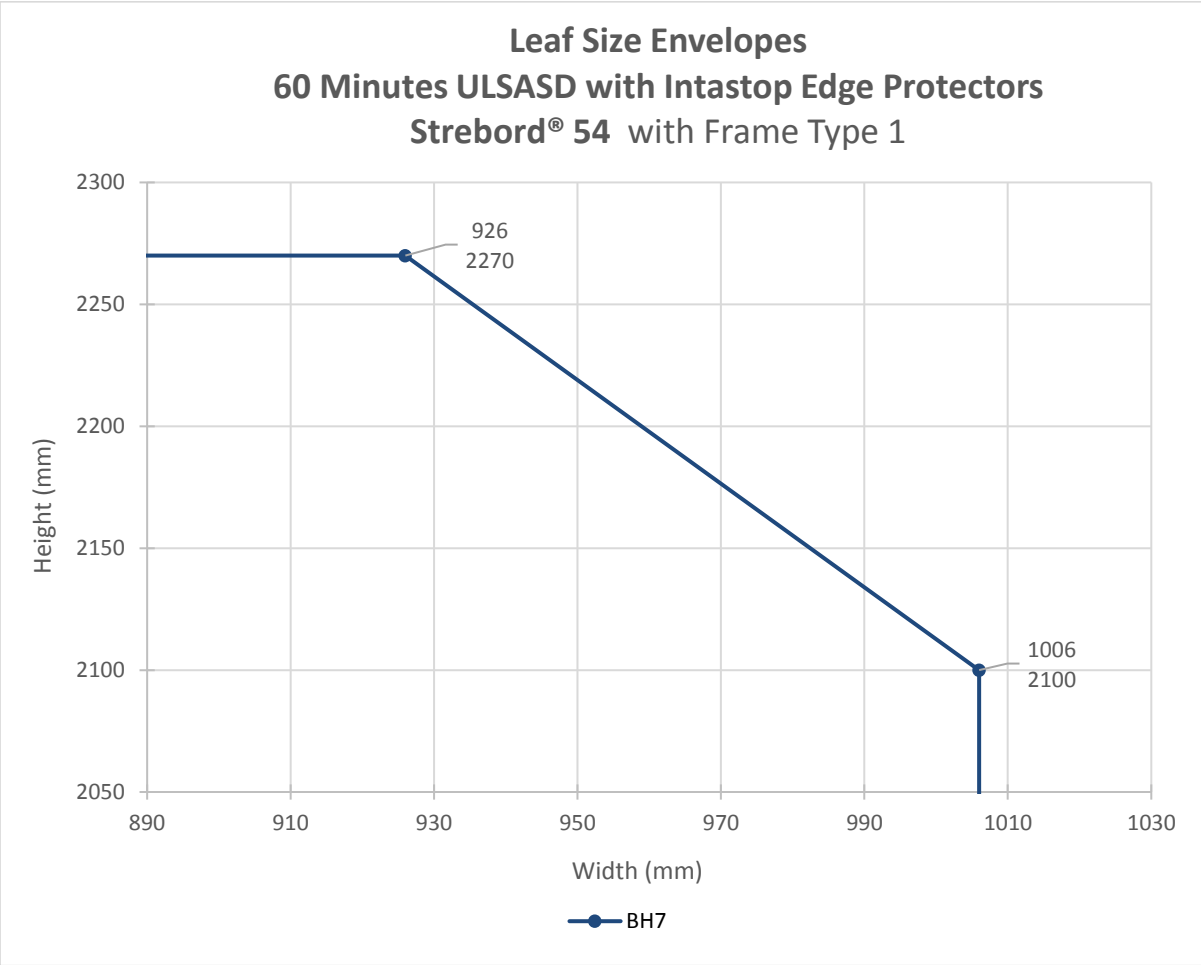
4.5.6 ULSASD Configuration: Leaf Sizes & Intumescent Specification

4.5.6.1 Strebord® 54 + Frame 1



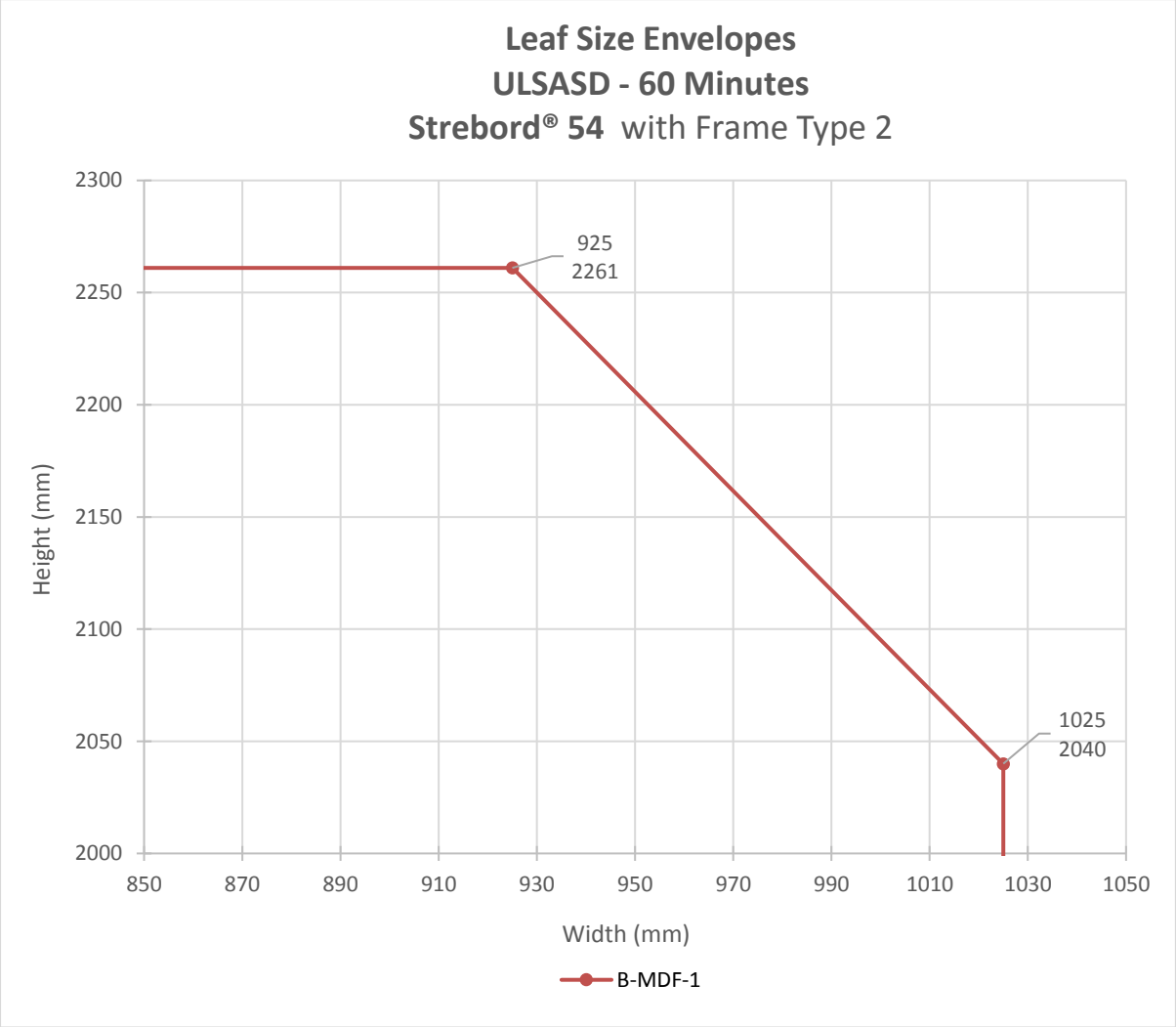
Intumescent Specification for ULSASD Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BH1 (Chilt/RF02020)	LP1504 Palusol	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
BH2 (Chilt/RF11171)	LP1504 Type 617	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
BH3 (WF413865)	Therm-A-Seal	Intumescent Seals Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
BH4 (WF417777)	STS154	Sealed Tight Solutions	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
BH5 (CFR2112211)	Pyrostrip 500PSA	Mann McGowan Fabrication Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
BH6 (Chilt/RF13111)	Rigid Box FO8700	Pyroplex Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.

4.5.6.2 Strebord® 54 + Frame 1 with Intastop Edge Protectors



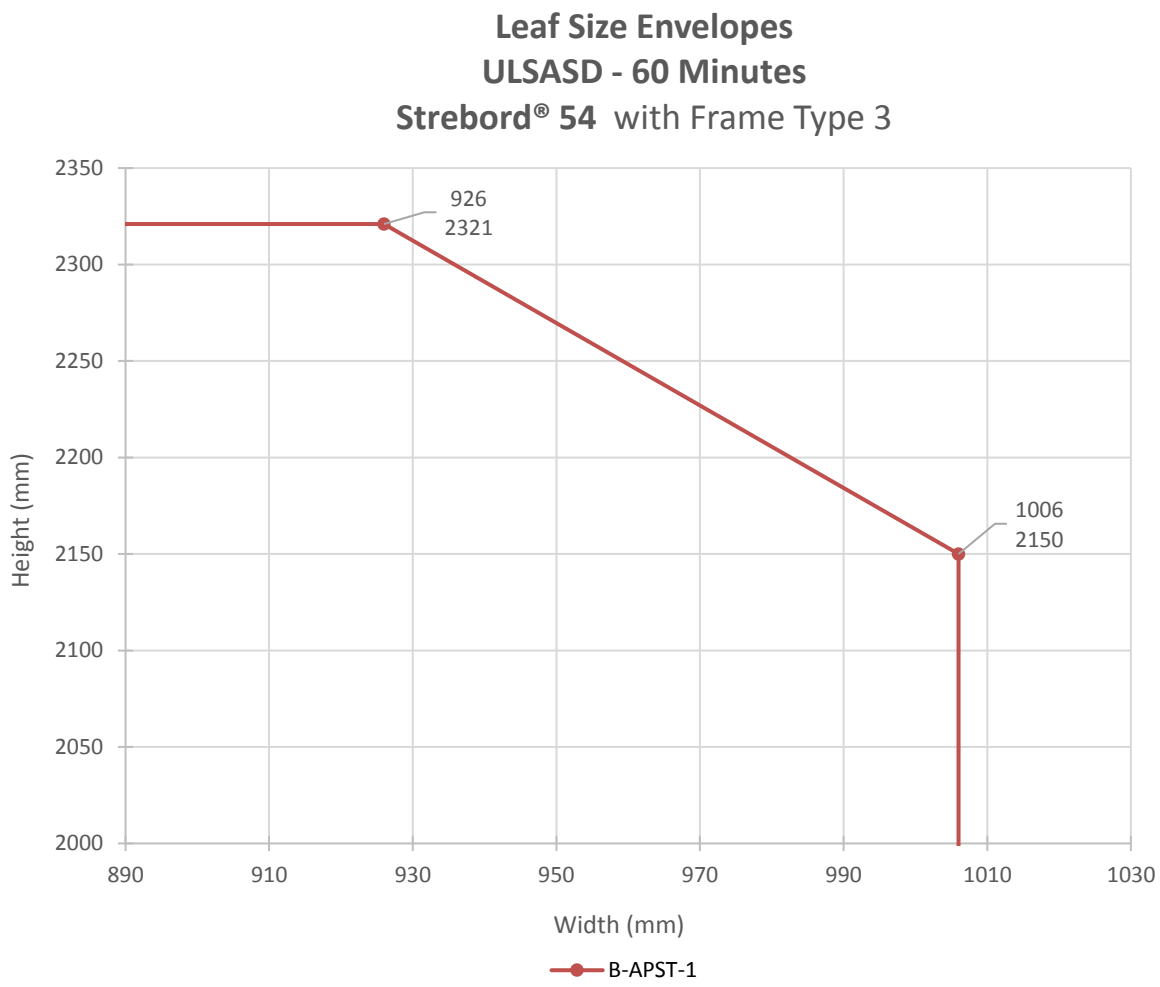
Intumescent Specification for LSASD with Intastop Edge Protectors Strebord® 54 with Frame 1			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BH7 (WF523041 Doorsets B)	Therm-A-Seal / Therm-A-Blade	Intumescent Seals Ltd	**Frame Perimeter Intumescents:** 2 No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the frame reveal. **Leaf Hanging & Lock Edges:** 1 No.15x4mm Fitted centrally in the Intastop Edge Protector.
	Graphite	Intumescent Seals Ltd	**Rear of MDF Insert – Integral to the Intastop Edge Protector:** 2No. 10x2mm, fitted centrally and spaced 19mm apart

4.5.6.3 Strebord® 54 + Frame 2



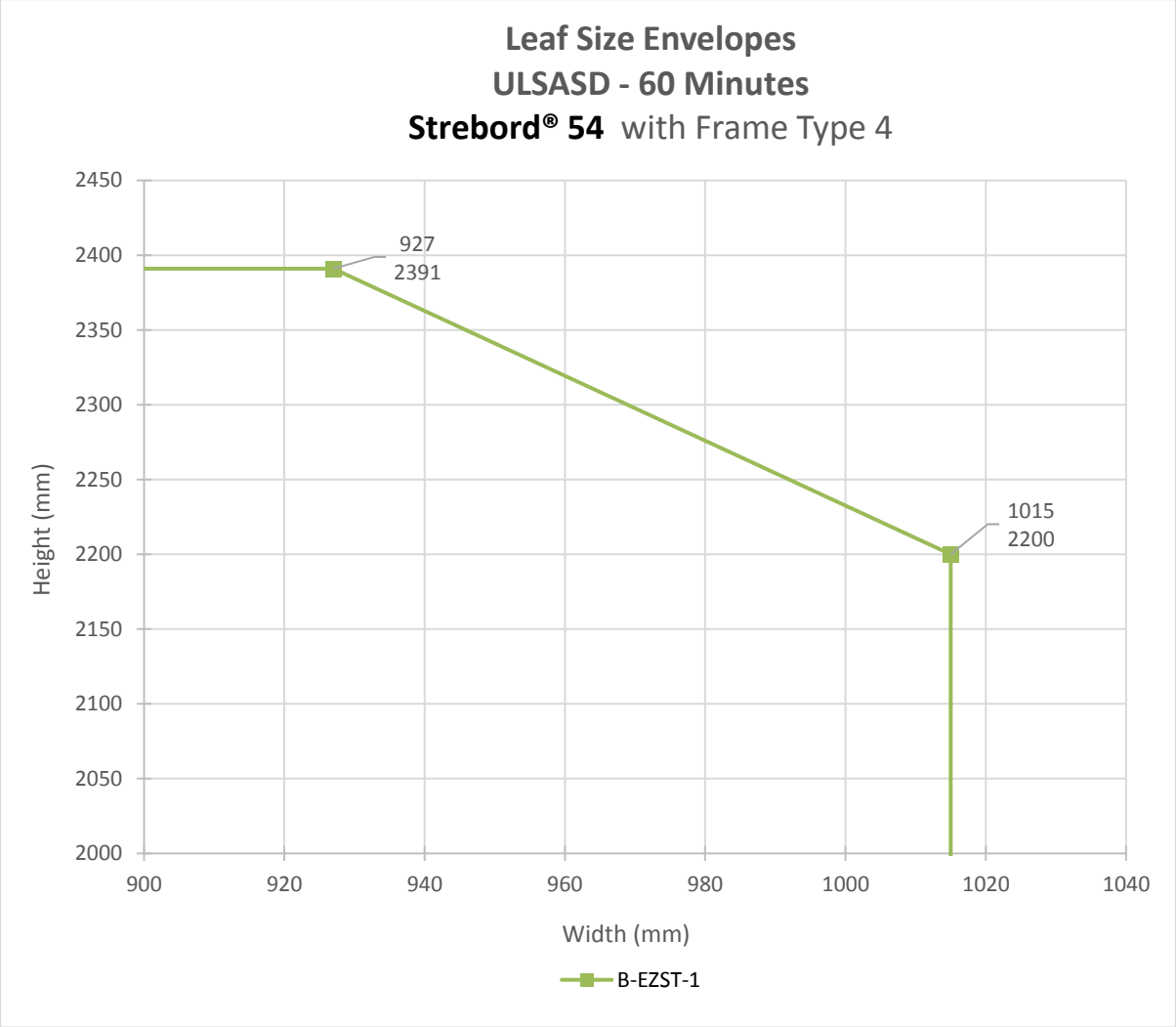
Intumescent Specification for ULSASD Strebord® 54 with Frame 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
B-MDF-1 (Chilt/RF10011)	Rigid Box FO8700	Pyroplex Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.

4.5.6.4 Strebord® 54 + Frame 3



Intumescent Specification for ULSASD Strebord® 54 with Frame 3			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
B-APST-1 (WF435986)	LP2002 Mono-Ammonium Phosphate (MAP)	Lorient Polyproducts Ltd.	**Door Leaf, Head & Jambs:** 2No. 20 (w) x 2 (t), seals 5mm apart and 4.5mm from the opening face.
	LP2004 Type 617	Lorient Polyproducts Ltd.	**Door Leaf, Head & Jambs:** 2No. Lorient Polyproducts LP2004 617 seals, 20 (w) x 4 (t), placed on top of the 20 x 2mm mono-ammonium seals in the head & jambs

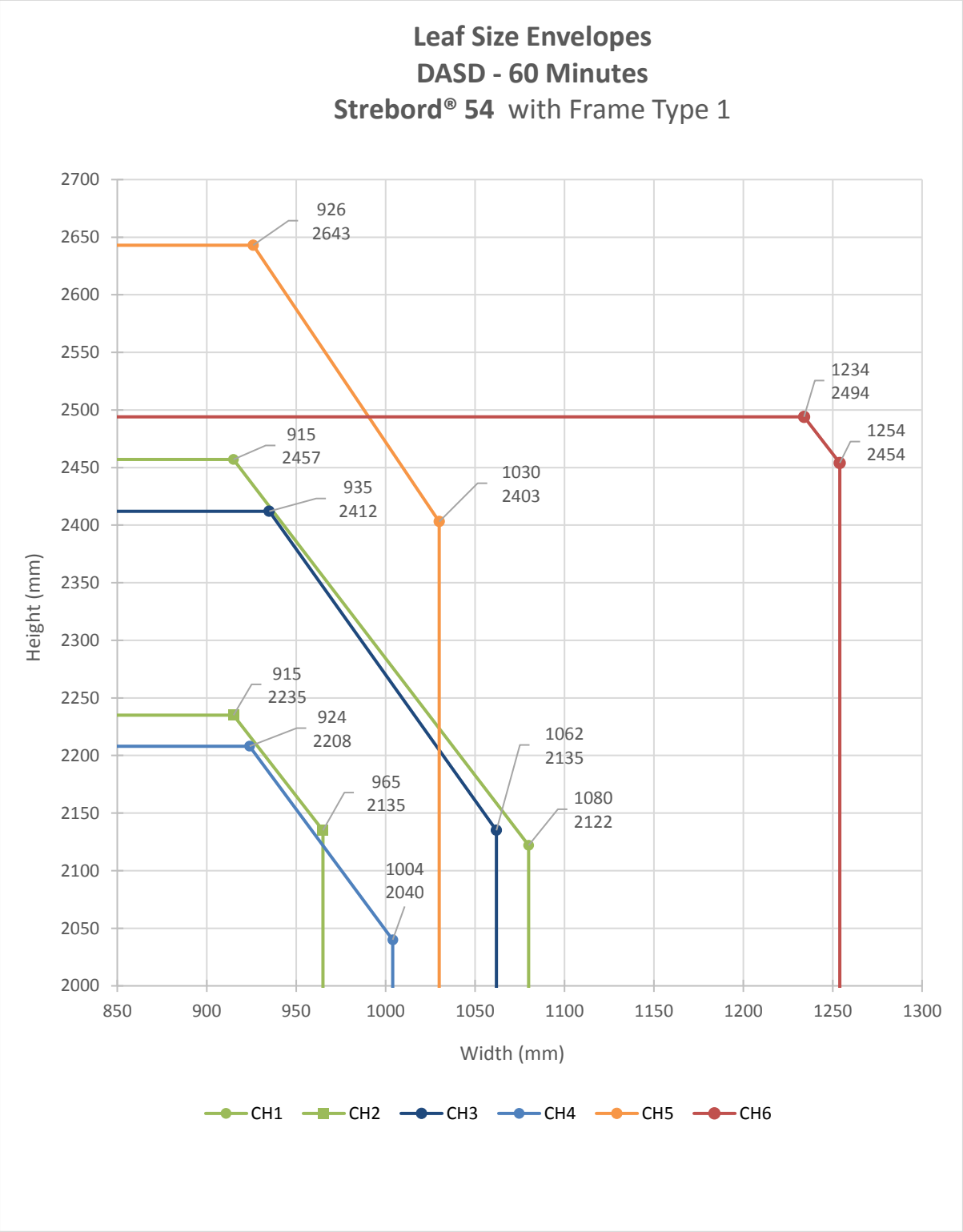
4.5.6.5 Strebord® 54 + Frame 4

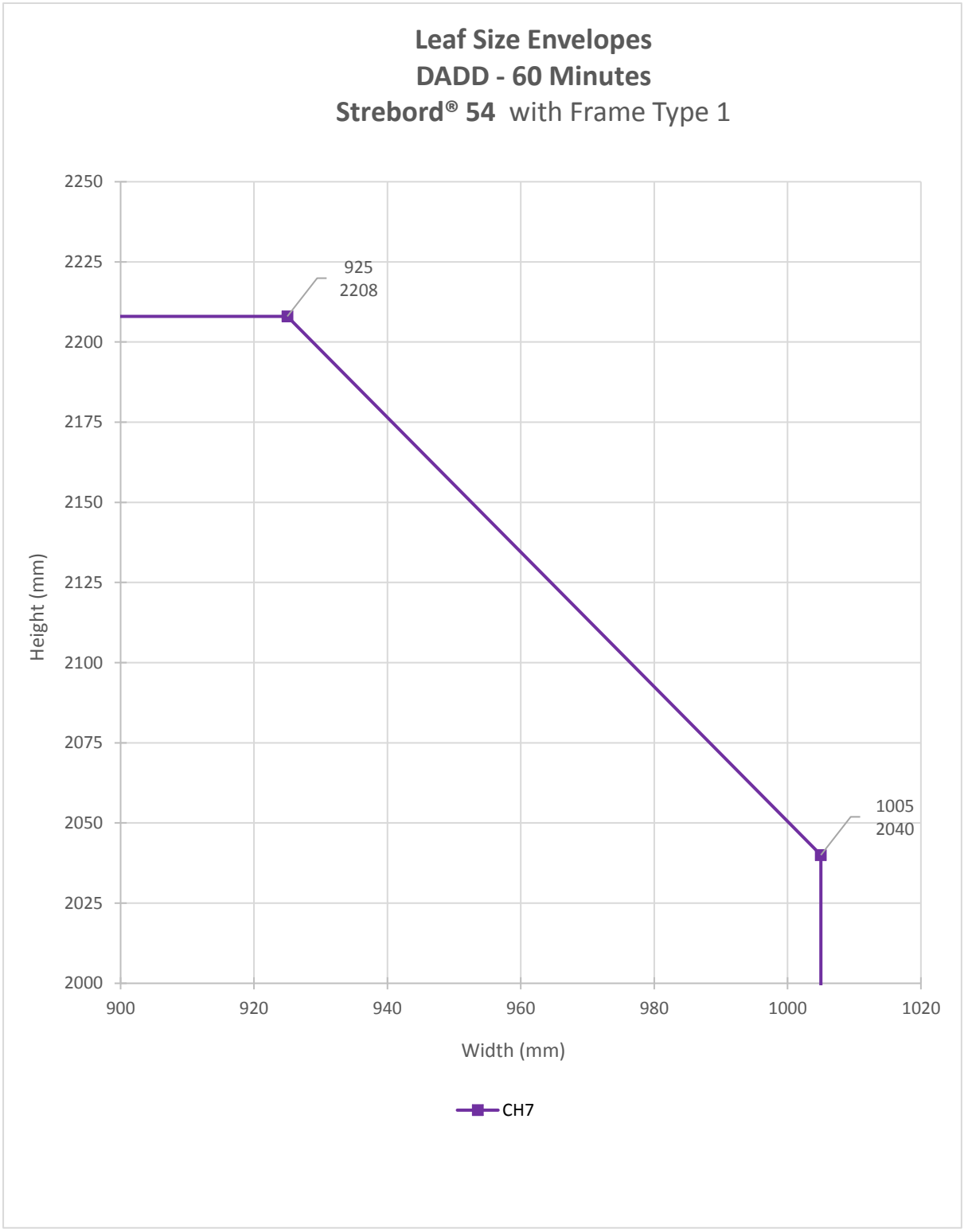


Intumescent Specification for ULSASD Strebord® 54 with Frame 4			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
B-EZST-1 (WF415618 - B)	LP2004 Type 617	Lorient Polyproducts Ltd.	**All door leaf edges:** 2No. 20x4mm. Fitted 2.5mm either side of the door leaf centreline (5mm apart) in the leaf edge or frame reveal.

4.5.7 DASD Configuration: Leaf Sizes & Intumescent Specification

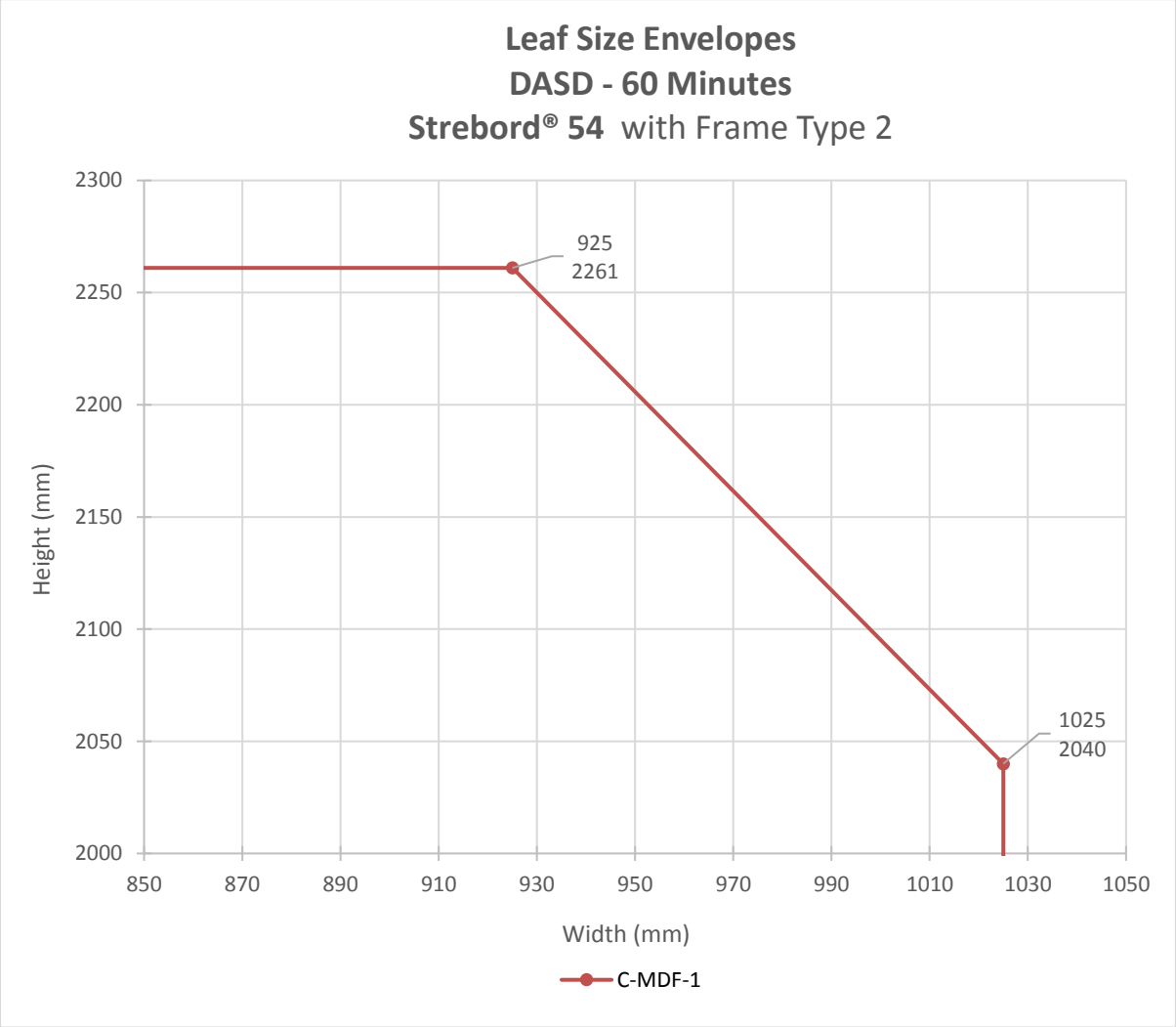
4.5.7.1 Strebord® 54 + Frame 1




Leaf Size Envelopes
DADD - 60 Minutes
Strebord® 54 with Frame Type 1
Height (mm)
Width (mm)
925
2208
1005
2040
2250
2225
2200
2175
2150
2125
2100
2075
2050
2025
2000
900
920
940
960
980
1000
1020
CH7

Intumescent Specification for DASD Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
CH1 (Chilt/RF02020)	LP1504 Palusol	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
CH2 (Chilt/RF11171)	LP1504 Type 617	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
CH3 (WF413865)	Therm-A-Seal	Intumescent Seals Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
CH4 (WF417777)	STS154	Sealed Tight Solutions	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
CH5 (WF 367904B)	Pyrostrip 500PSA	Mann McGowan Fabrication Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
CH6 (Chilt/RF13111)	Rigid Box FO8700	Pyroplex Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.
CH7 (CFR2109081 Revision 1)	Therm-A-Seal or Therm-A-Blade	Intumescent Seals Ltd	**Head:** 2No. 20x4mm. Fitted 5mm either side of the door leaf centreline (8mm apart) in the leaf edge or frame reveal. **Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Leaf Head** 1No. 20x4mm Fitted centrally in the leaf thickness.

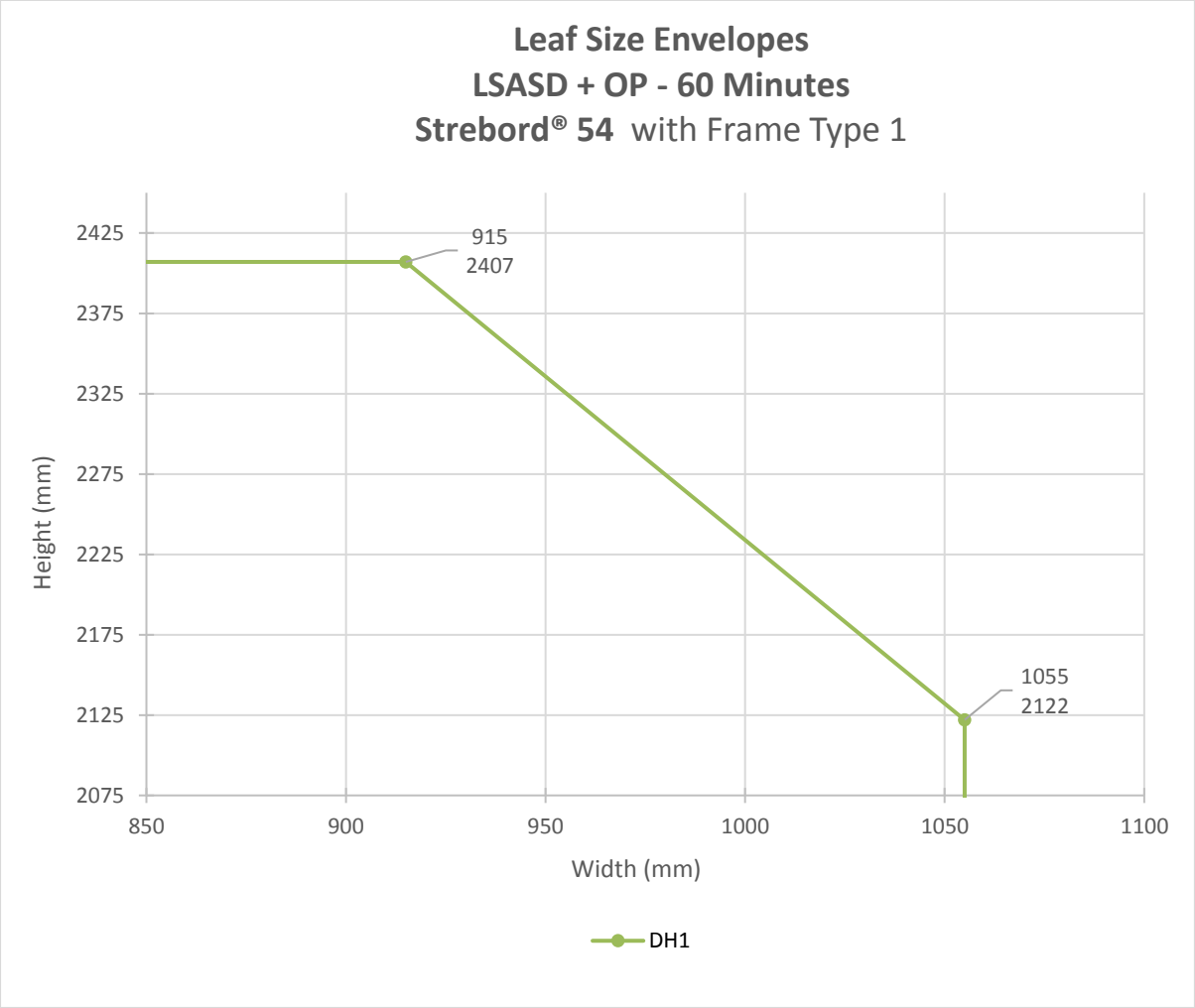
4.5.7.2 Strebord® 54 + Frame 2



Intumescent Specification for DASD Strebord® 54 with Frame 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
C-MDF-1 (Chilt/RF10011)	Rigid Box FO8700	Pyroplex Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal.

4.5.8 LSASD + OP Configuration: Leaf Sizes & Intumescent Specification

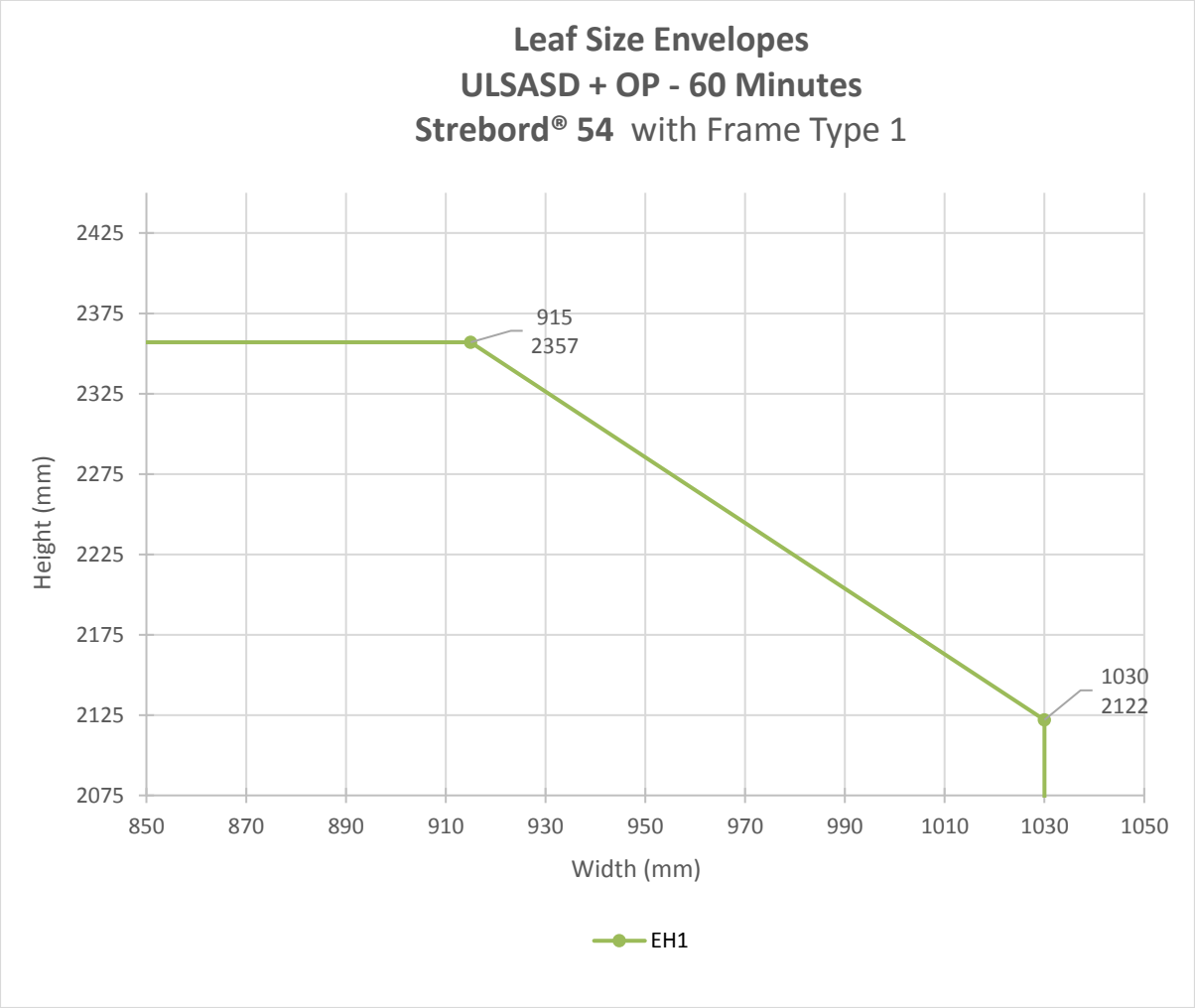
4.5.8.1 Strebord® 54 + Frame 1



Intumescent Specification for LSASD + OP Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
DH1 (Chilt/RF02020)	LP1504 Palusol LP2504 Palusol LP4004 Palusol	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Rebated Leaf Head / Over panel** 1 No. 25x4mm exposed and fitted centrally in the leaf rebate with 1 No. 15x4mm exposed and fitted centrally in the overpanel rebate. **Square Lead Head / Overpanel** 40x4mm fitted centrally in the bottom edge of the overpanel.

4.5.9 ULSASD + OP Configuration: Leaf Sizes & Intumescent Specification

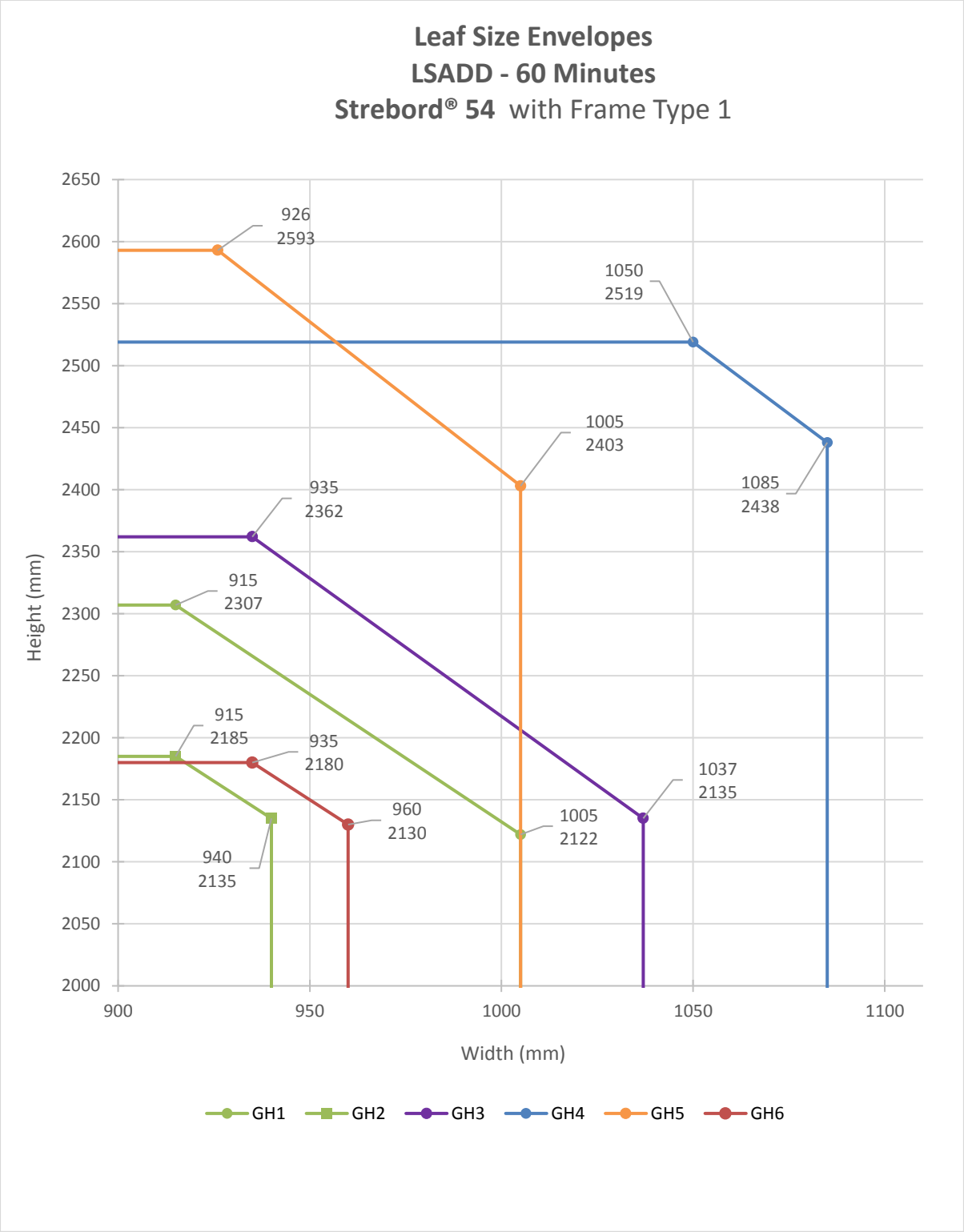
4.5.9.1 Strebord® 54 + Frame 1

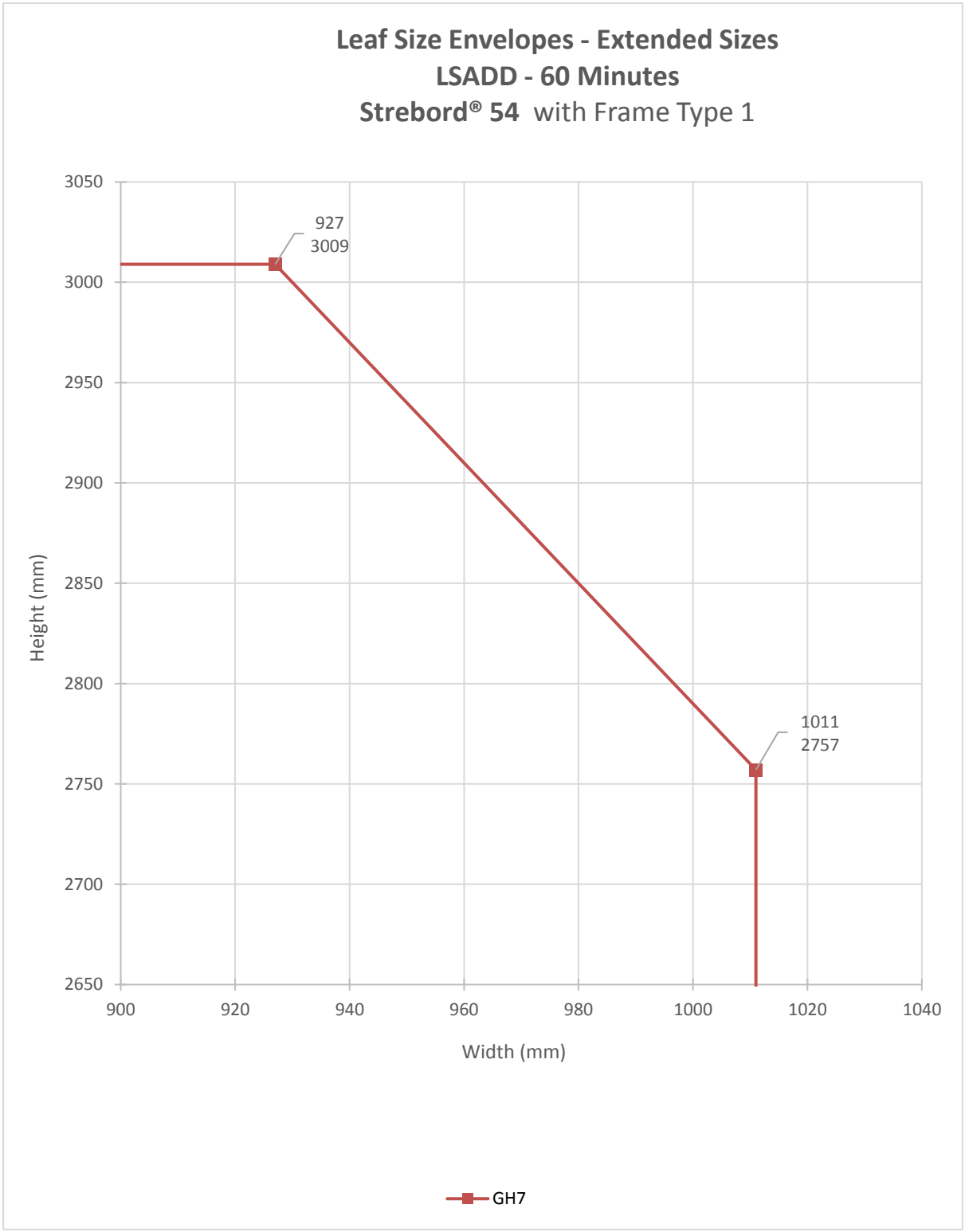


Intumescent Specification for ULSASD + OP Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
EH1 (Chilt/RF02020)	LP1504 Palusol LP2504 Palusol LP4004 Palusol	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Rebated Leaf Head / Over panel** 1 No. 25x4mm exposed and fitted centrally in the leaf rebate with 1 No. 15x4mm exposed and fitted centrally in the overpanel rebate. **Square Lead Head / Overpanel** 40x4mm fitted centrally in the bottom edge of the overpanel.

4.5.10 LSADD Configuration: Leaf Sizes & Intumescent Specification

4.5.10.1 Strebord® 54 + Frame 1

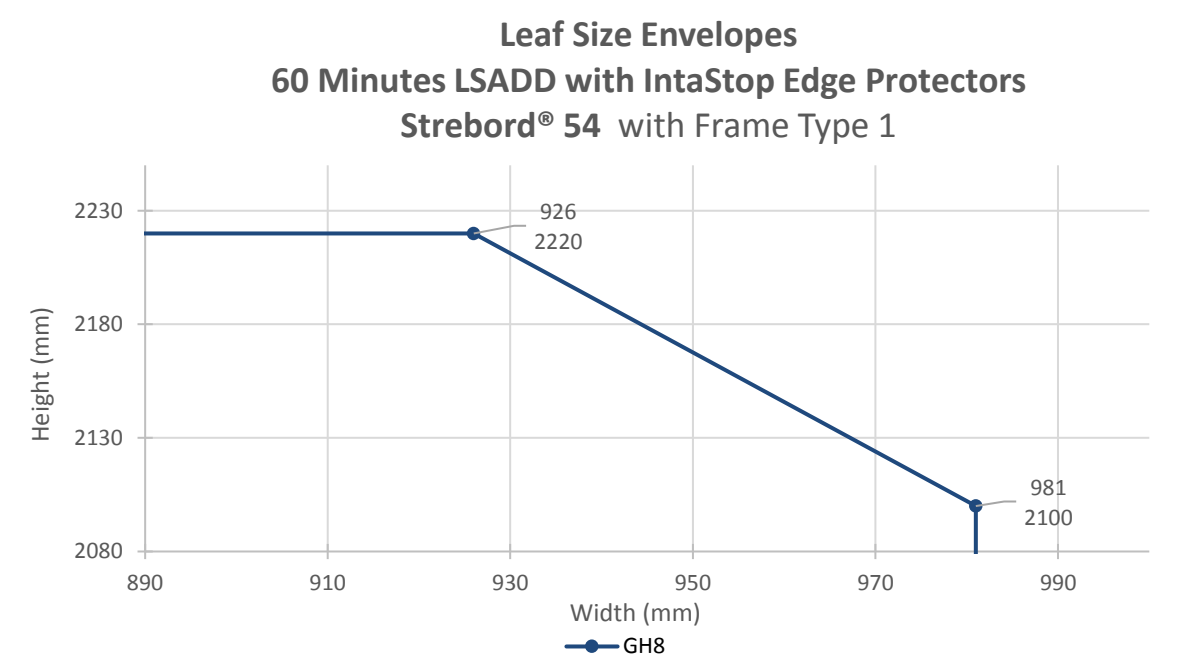



Leaf Size Envelopes - Extended Sizes
LSADD - 60 Minutes
Strebord® 54 with Frame Type 1
Height (mm)
Width (mm)
3050
3000
2950
2900
2850
2800
2750
2700
2650
900
920
940
960
980
1000
1020
1040
927
3009
1011
2757
GH7

Intumescent Specification for LSADD Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
GH1 (Chilt/RF02020)	LP1504 Palusol	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
GH2 (Chilt/RF11171)	LP1504 Type 617	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
GH3 (WF413865)	Therm-A-Seal	Intumescent Seals Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
GH4 (WF386959)	STS154	Sealed Tight Solutions	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
GH5 (CFR2112211)	Pyrostrip 500PSA	Mann McGowan Fabrication Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.

Intumescent Specification for LSADD Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
GH6 (Chilt/RF13082)	Rigid Box FO8700	Pyroplex Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
GH7 (Chilt/RF13242)	Rigid Box FO8700	Pyroplex Ltd	**Frame Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Leaf Head** 1No. 15x4mm Fitted centrally in the leaf thickness. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.

4.5.10.2 Strebord® 54 + Frame 1 with Intastop Edge Protectors

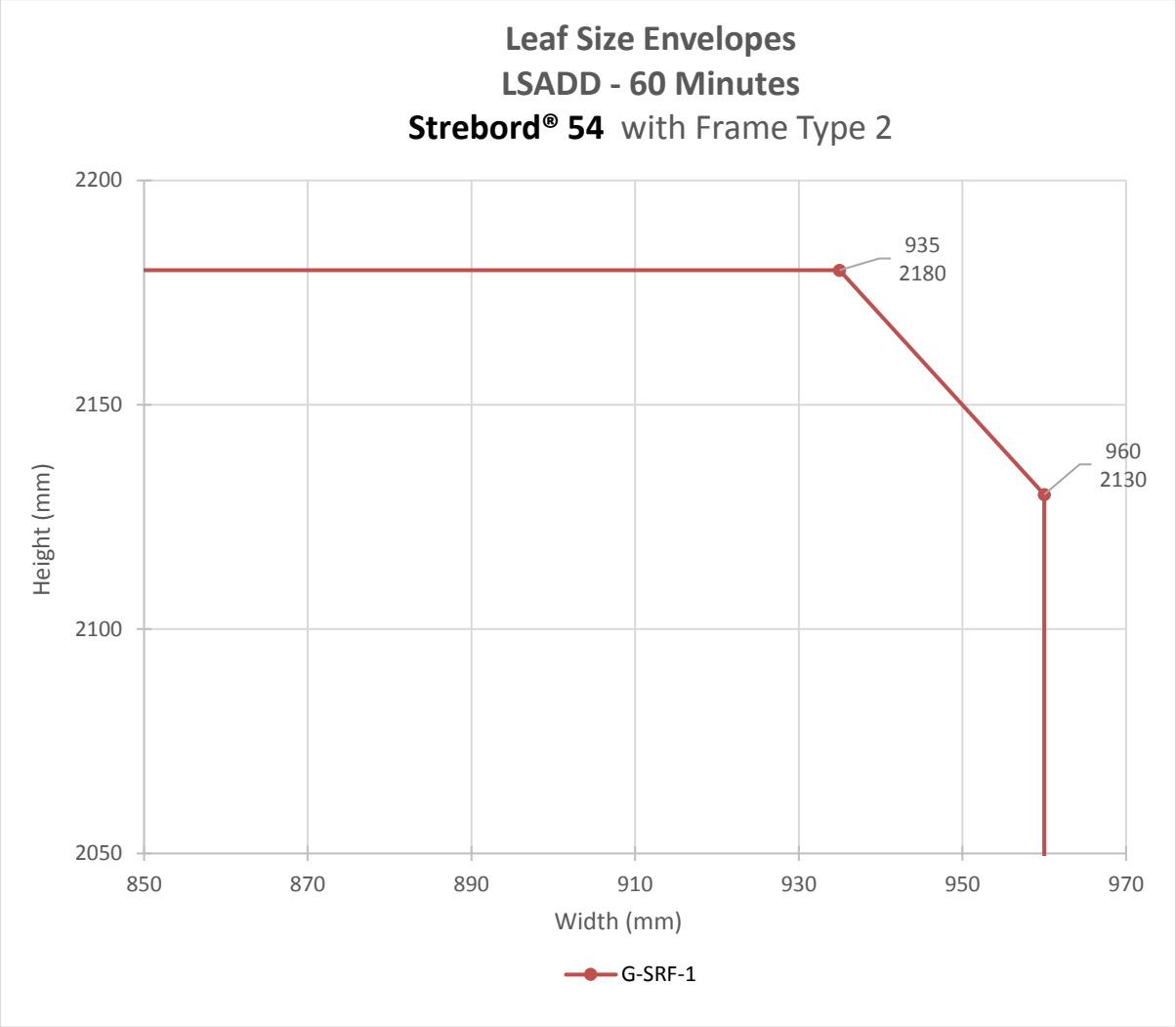


Intumescent Specification for LSASD with Intastop Edge Protectors Strebord® 54 with Frame 1			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
GH8 (WF523041 Doorset B)	Therm-A-Seal / Therm-A-Blade	Intumescent Seals Ltd	**Frame Perimeter Intumescents:** 2 No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the frame reveal. **Leaf Hanging Edge:** 1 No.15 x4mm Fitted centrally in the Intastop Edge Protector. **Meeting Edges:** **Primary Leaf**: 1 No.15x4mm Fitted centrally in the Intastop Edge Protector. **Secondary Leaf:** 2 No. 15x4mm Fitted 5mm either side of the door leaf centreline (10mm apart) in the Intastop Edge Protector.
	Graphite	Intumescent Seals Ltd	**Rear of MDF Insert – Integral to the Intastop Edge Protector** 2No. 10x2mm, fitted centrally and spaced 19mm apart

Note:

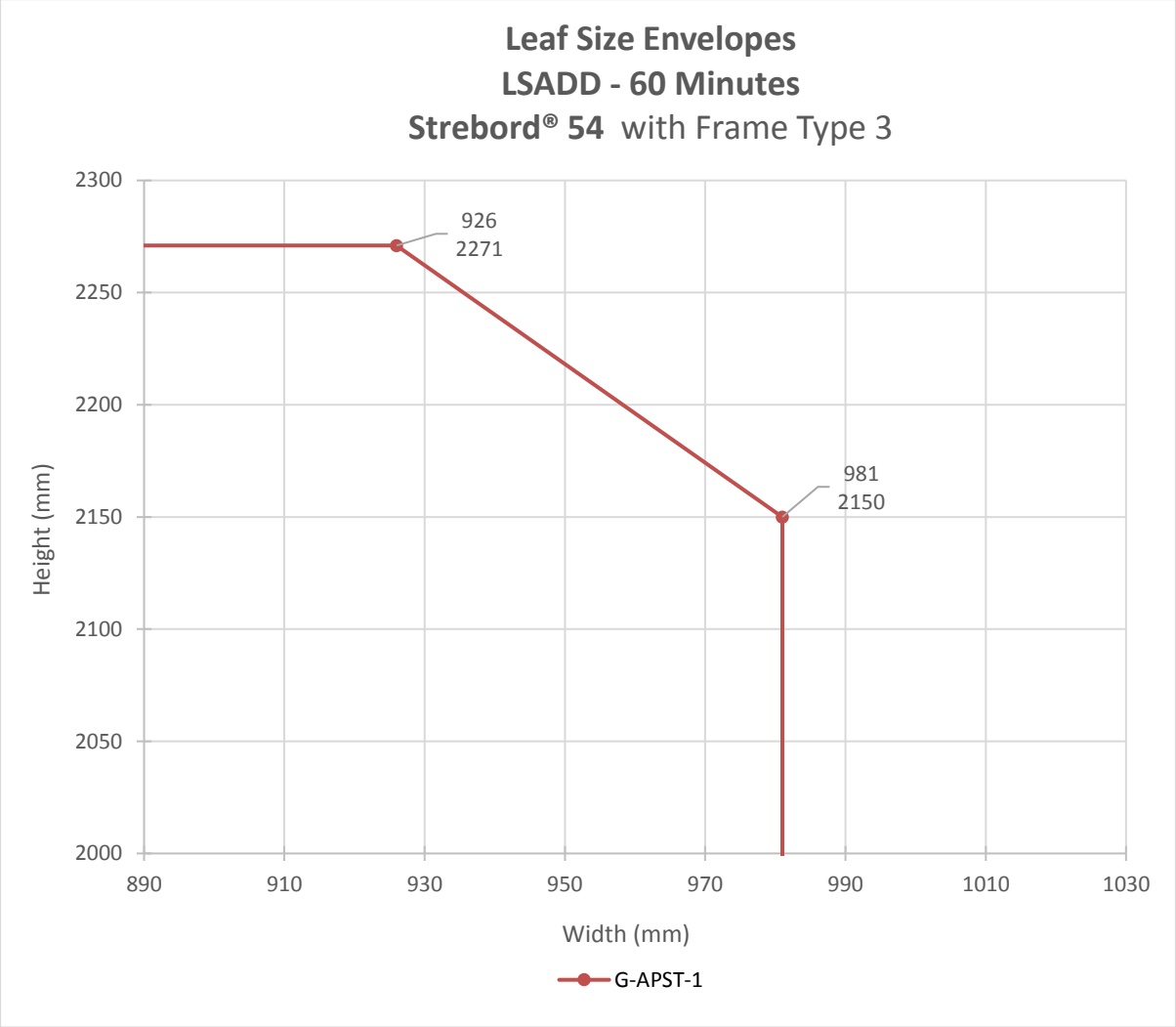
Edge protectors are not permitted for use in conjunction with flushbolts.

4.5.10.3 Strebord® 54 + Frame 2



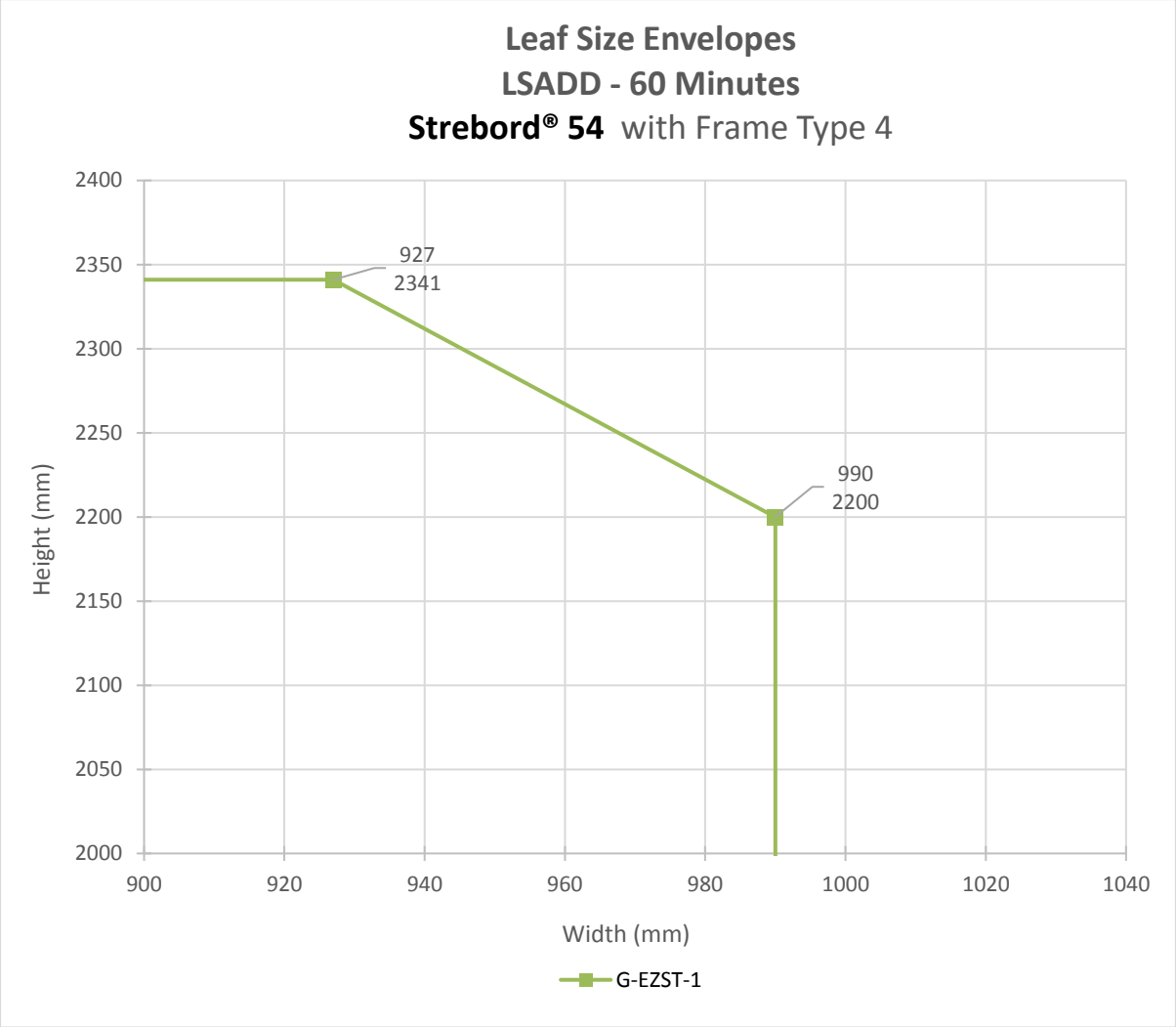
Intumescent Specification for LSADD Strebord® 54 with Frame 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
G-MDF-1 (Chilt/RF13082)	Rigid Box FO8700	Pyroplex Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.

4.5.10.4 Strebord® 54 + Frame 3



Intumescent Specification for LSADD Strebord® 54 with Frame 3			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
G-APST-1 (WF435986)	LP2002 Mono-Ammonium Phosphate (MAP)	Lorient Polyproducts Ltd.	**Door Leaf, Head, Hanging Jambs & Meeting Edge of One Leaf:** 2No. 20 (w) x 2 (t), seals 5mm apart and 4.5mm from the opening face.
	LP2004 Type 617	Lorient Polyproducts Ltd.	**Door Leaf, Head, Hanging Jambs & Meeting Edge of One Leaf:** 2No. Lorient Polyproducts LP2004 617 seals, 20 (w) x 4 (t), placed on top of the 20 x 2mm mono-ammonium seals in the head & jambs

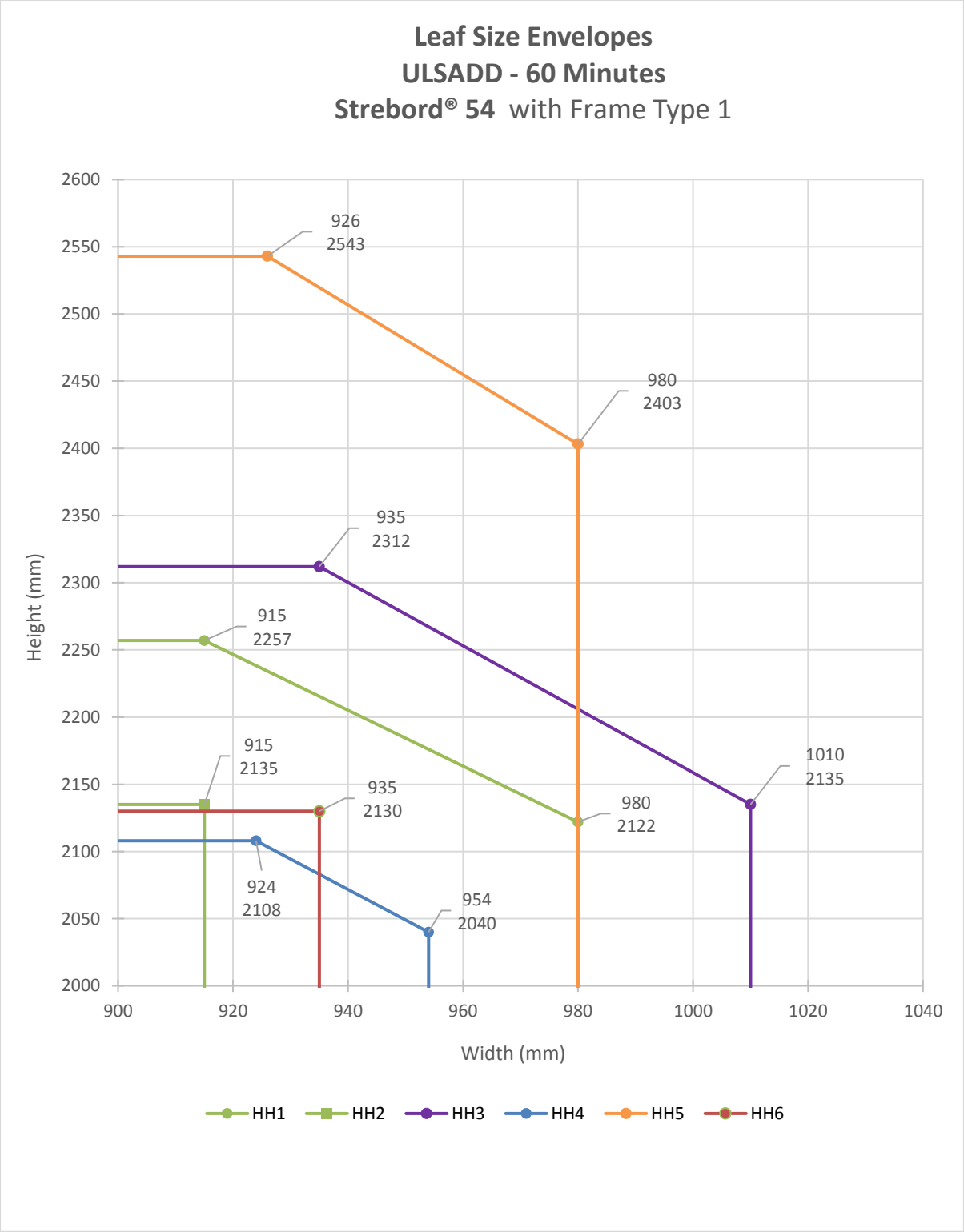
4.5.10.5 Strebord® 54 + Frame 4



Intumescent Specification for LSADD Strebord® 54 with Frame 4			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
G-EZST-1 (WF415618 - B)	LP2004 Type 617	Lorient Polyproducts Ltd.	**All door leaf edges (Primary Leaf):** 2No. 20x4mm. Fitted 2.5mm either side of the door leaf centreline (5mm apart) in the leaf edge or frame reveal. **Hanging, Top & Bottom Edges (Secondary Leaf):** 2No. 20x4mm. Fitted 2.5mm either side of the door leaf centreline (5mm apart) in the leaf edge or frame reveal.

4.5.11 ULSADD Configuration: Leaf Sizes & Intumescent Specification

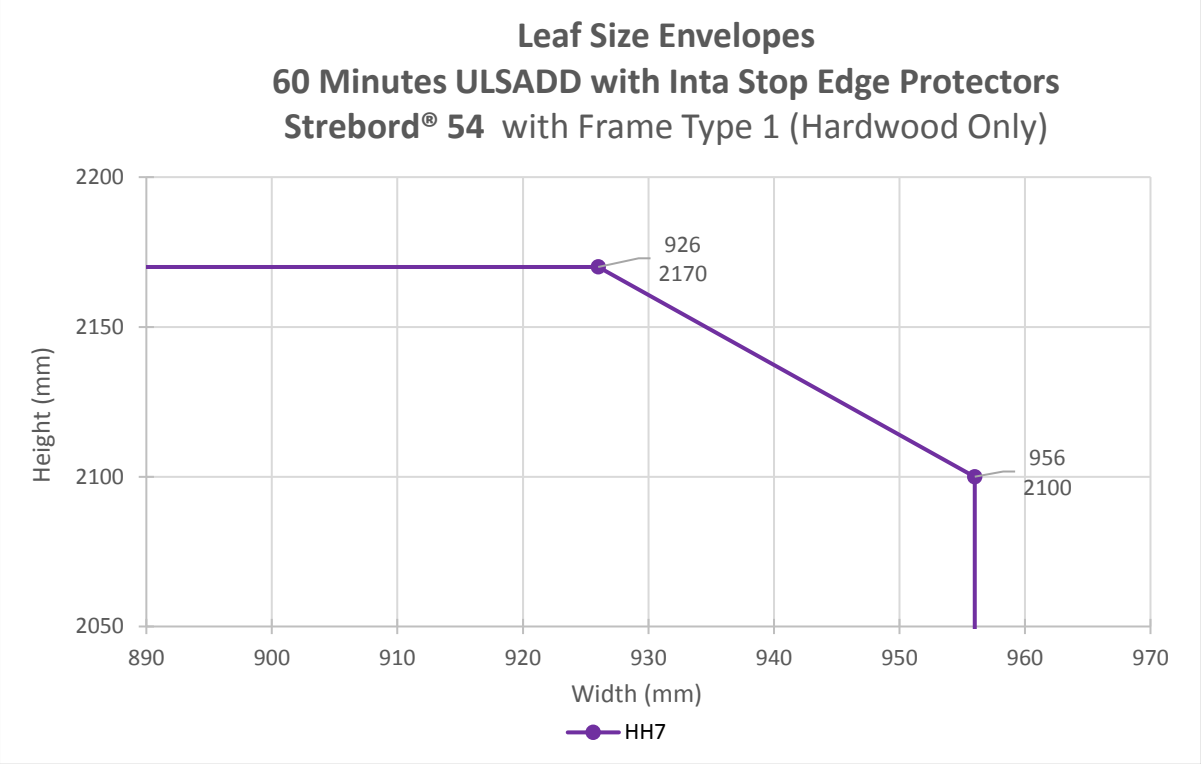
4.5.11.1 Strebord® 54 + Frame 1



Intumescent Specification for ULSADD Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
HH1 (Chilt/RF02020)	LP1504 Palusol	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
HH2 (Chilt/RF11171)	LP1504 Type 617	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
HH3 (WF413865)	Therm-A-Seal	Intumescent Seals Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
HH4 (WF417777)	STS154	Sealed Tight Solutions	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
HH5 (CFR2112211)	Pyrostrip 500PSA	Mann McGowan Fabrication Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.

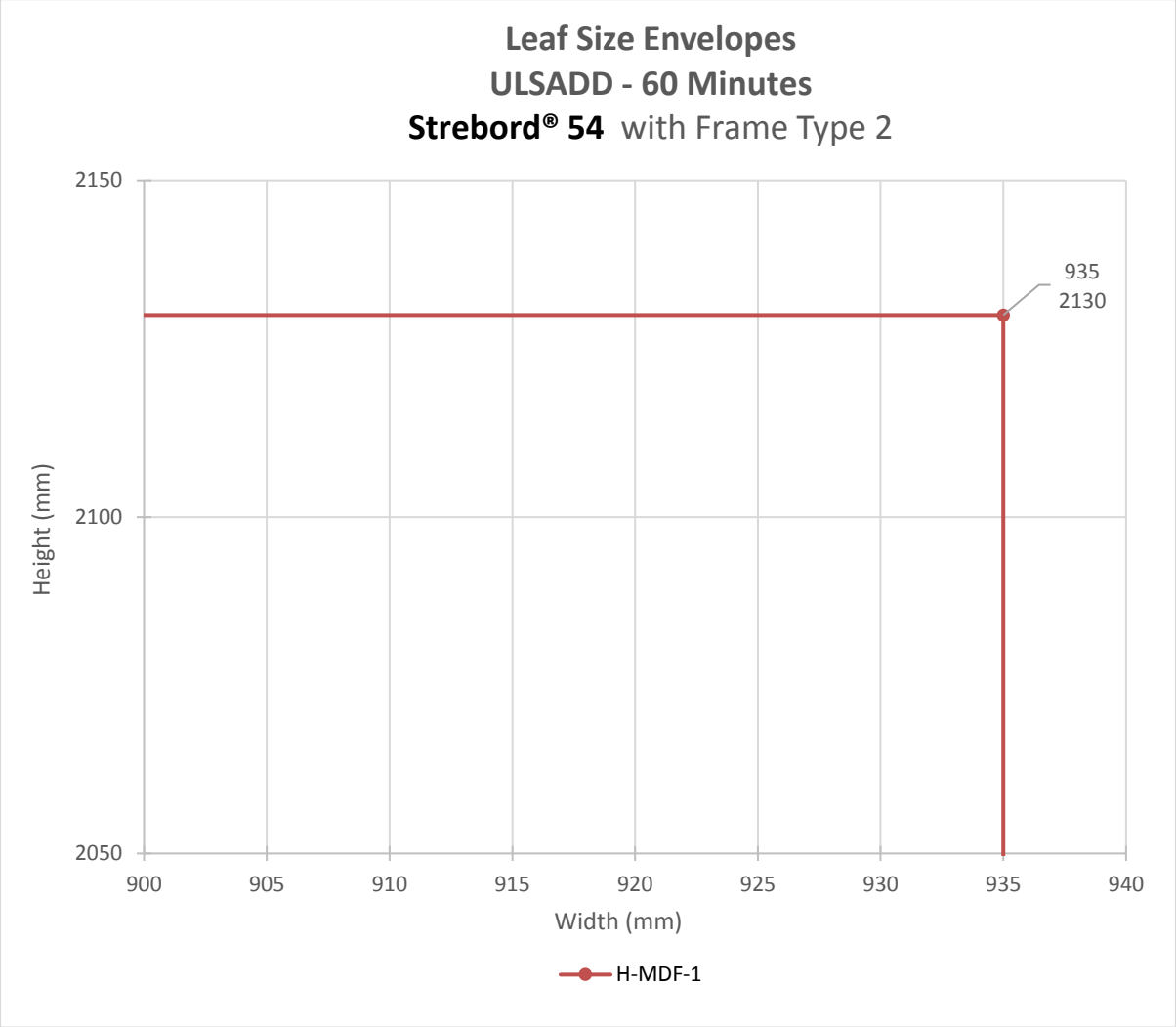
Intumescent Specification for ULSADD Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
HH6 (Chilt/RF13082)	Rigid Box FO8700	Pyroplex Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.

4.5.11.2 Strebord® 54 + Frame 1 with Intastop Edge Protectors



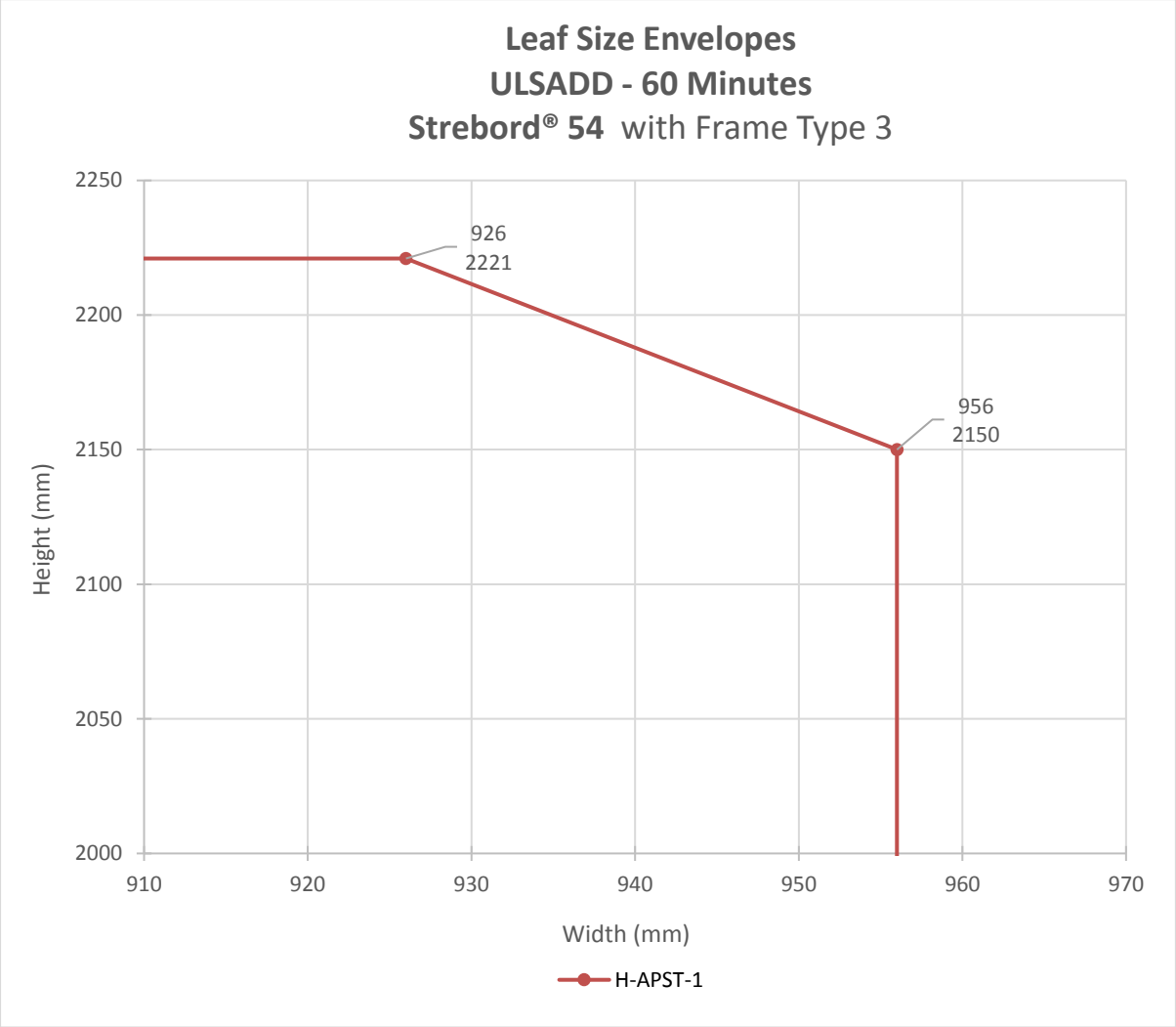
Intumescent Specification for LSASD with Intastop Edge Protectors Strebord® 54 with Frame 1			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
HH7 (WF523041 Doorset B)	Therm-A-Seal / Therm-A-Blade	Intumescent Seals Ltd	**Frame Perimeter Intumescents:** 2 No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the frame reveal. **Leaf Hanging Edge:** 1 No.15x4mm Fitted centrally in the Intastop Edge Protector. **Meeting Edges:** **Primary Leaf**: 1 No.15x4mm Fitted centrally in the Intastop Edge Protector. **Secondary Leaf:** 2 No. 15x4mm Fitted 5mm either side of the door leaf centreline (10mm apart) in the Intastop Edge Protector.
	Graphite	Intumescent Seals Ltd	**Rear of MDF Insert – Integral to the Intastop Edge Protector** 2No. 10x2mm, fitted centrally and spaced 19mm apart

4.5.11.3 Strebord® 54 + Frame 2



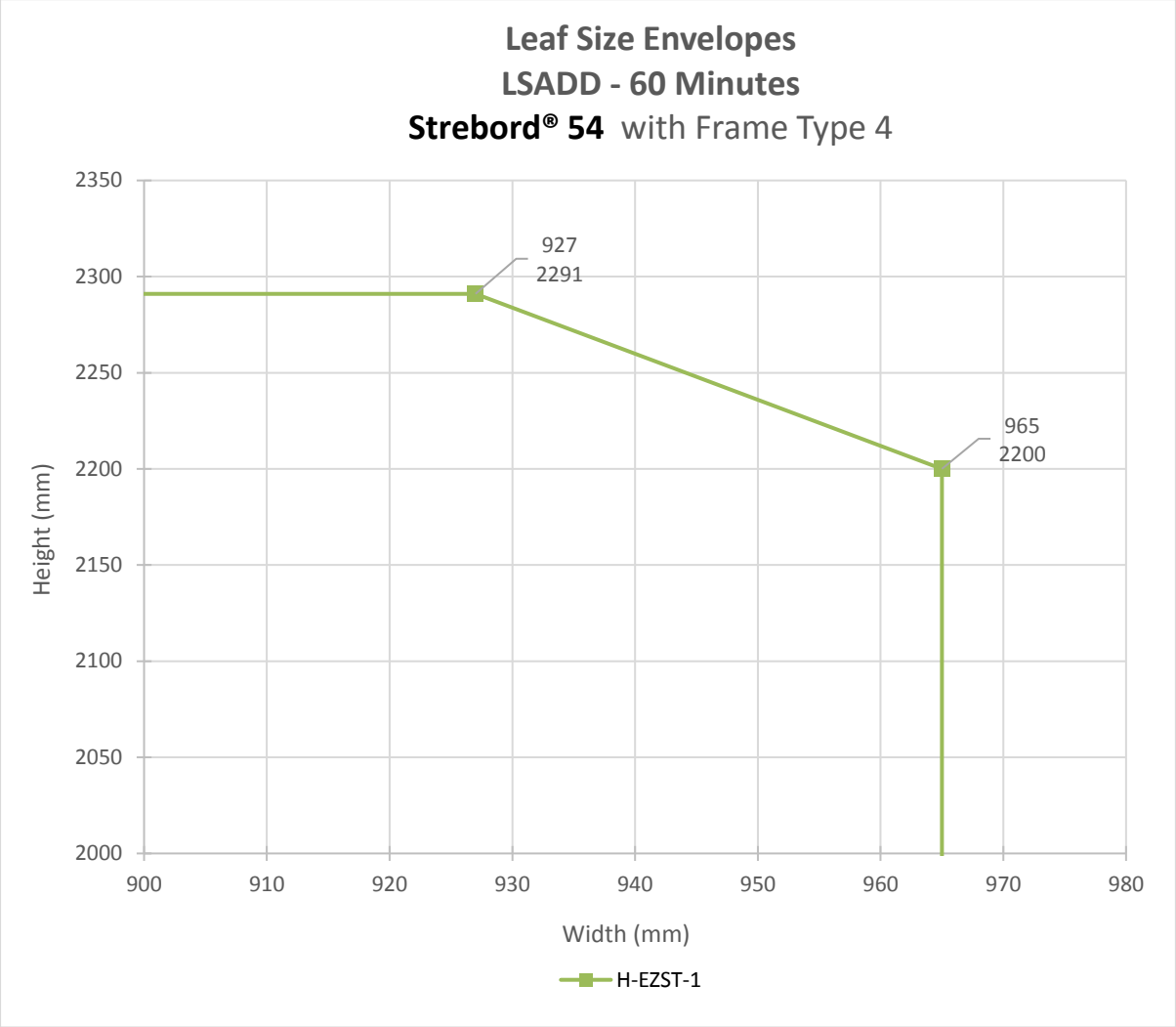
Intumescent Specification for ULSADD Strebord® 54 with Frame 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
H-MDF-1 (Chilt/RF13082)	Rigid Box FO8700	Pyroplex Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.

4.5.11.4 Strebord® 54 + Frame 3



Intumescent Specification for LSADD Strebord® 54 with Frame 3			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
H-APST-1 (WF435986)	LP2002 Mono-Ammonium Phosphate (MAP)	Lorient Polyproducts Ltd.	**Door Leaf, Head, Hanging Jambs & Meeting Edge of One Leaf:** 2No. 20 (w) x 2 (t), seals 5mm apart and 4.5mm from the opening face.
	LP2004 Type 617	Lorient Polyproducts Ltd.	**Door Leaf, Head, Hanging Jambs & Meeting Edge of One Leaf:** 2No. Lorient Polyproducts LP2004 617 seals, 20 (w) x 4 (t), placed on top of the 20 x 2mm mono-ammonium seals in the head & jambs

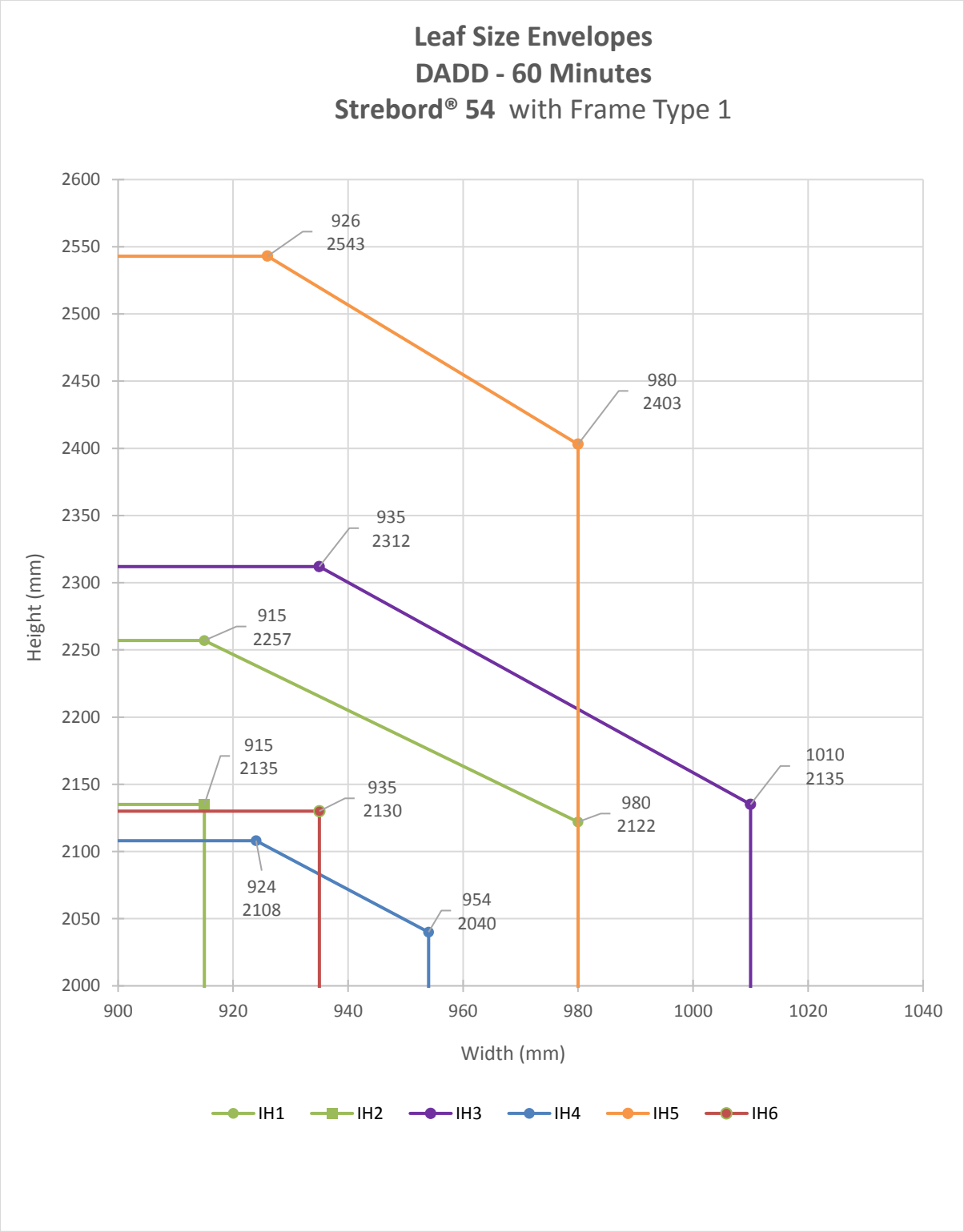
4.5.11.5 Strebord® 54 + Frame 4

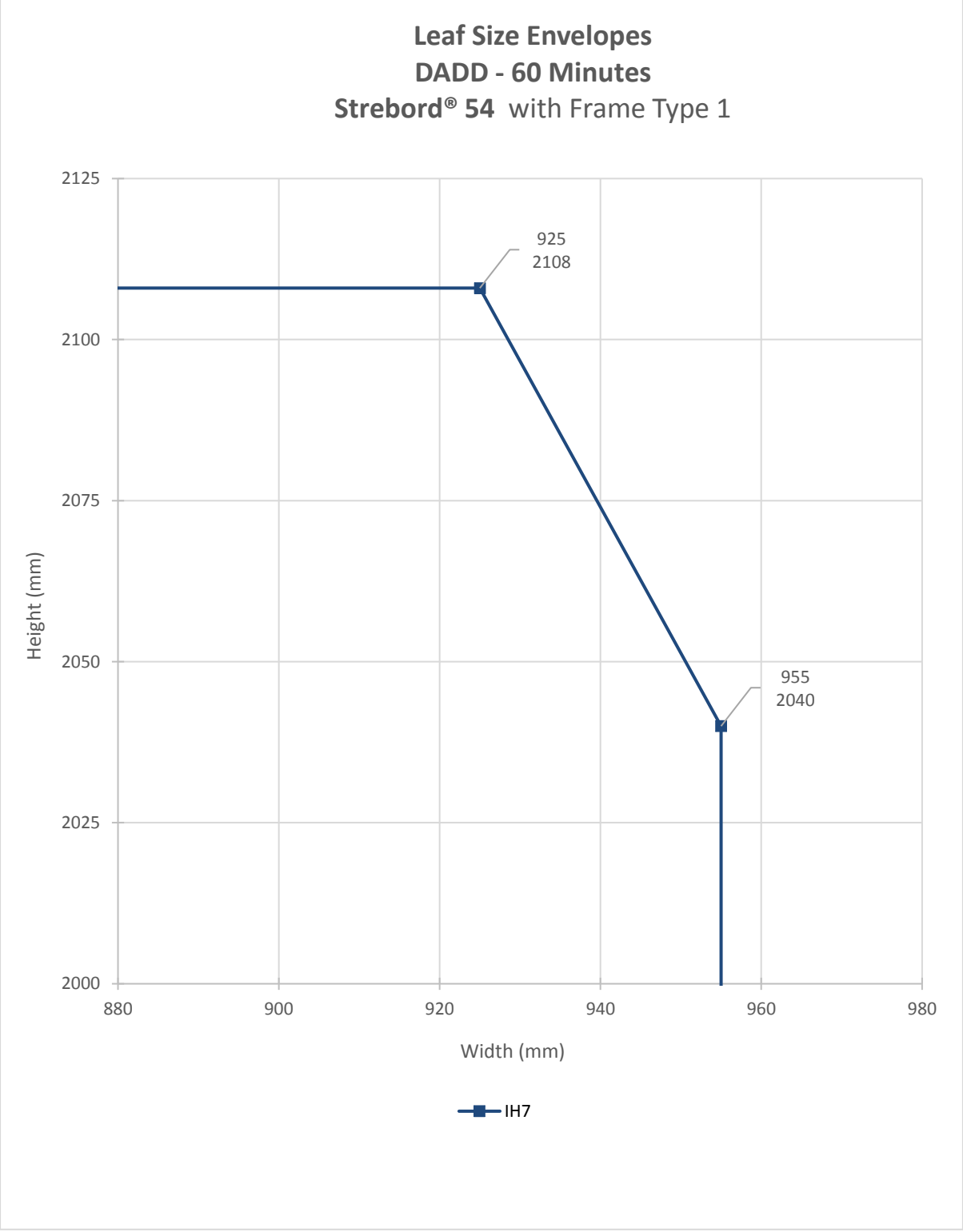


Intumescent Specification for LSADD Strebord® 54 with Frame 4			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
H-EZST-1 (WF415618 - B)	LP2004 Type 617	Lorient Polyproducts Ltd.	**All door leaf edges (Primary Leaf):** 2No. 20x4mm. Fitted 2.5mm either side of the door leaf centreline (5mm apart) in the leaf edge or frame reveal. **Hanging, Top & Bottom Edges (Secondary Leaf):** 2No. 20x4mm. Fitted 2.5mm either side of the door leaf centreline (5mm apart) in the leaf edge or frame reveal.

4.5.12 DADD Configuration: Leaf Sizes & Intumescent Specification

4.5.12.1 Strebord® 54 + Frame 1

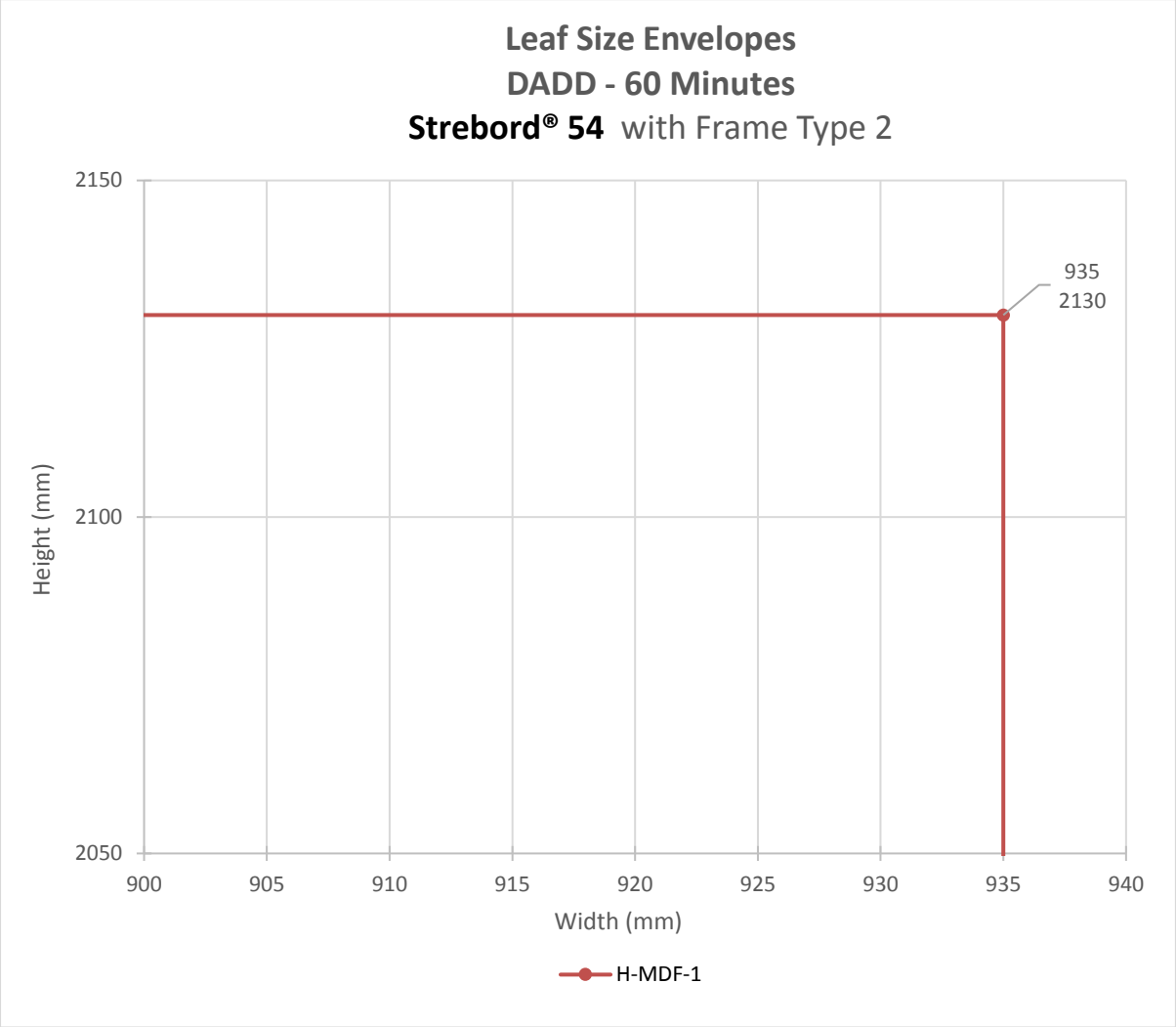



Leaf Size Envelopes
DADD - 60 Minutes
Strebord® 54 with Frame Type 1
2125
2100
2075
2050
2025
2000
Height (mm)
880
900
920
940
960
980
Width (mm)
925
2108
955
2040
IH7

Intumescent Specification for DADD Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
IH1 (Chilt/RF02020)	LP1504 Palusol	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
IH2 (Chilt/RF11171)	LP1504 Type 617	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
IH3 (WF413865)	Therm-A-Seal	Intumescent Seals Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
IH4 (WF417777)	STS154	Sealed Tight Solutions	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
IH5 (CFR2112211)	Pyrostrip 500PSA	Mann McGowan Fabrication Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.

Intumescent Specification for DADD Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
IH6 (Chilt/RF13082)	Rigid Box FO8700	Pyroplex Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.
IH7 (CFR2109081 Revision 1)	Therm-A-Seal or Therm-A-Blade	Intumescent Seals Ltd	**Head:** 2No. 20x4mm. Fitted 5mm either side of the door leaf centreline (8mm apart) in the leaf edge or frame reveal. **Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Leaf Head** 1No. 20x4mm Fitted centrally in the leaf thickness. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.

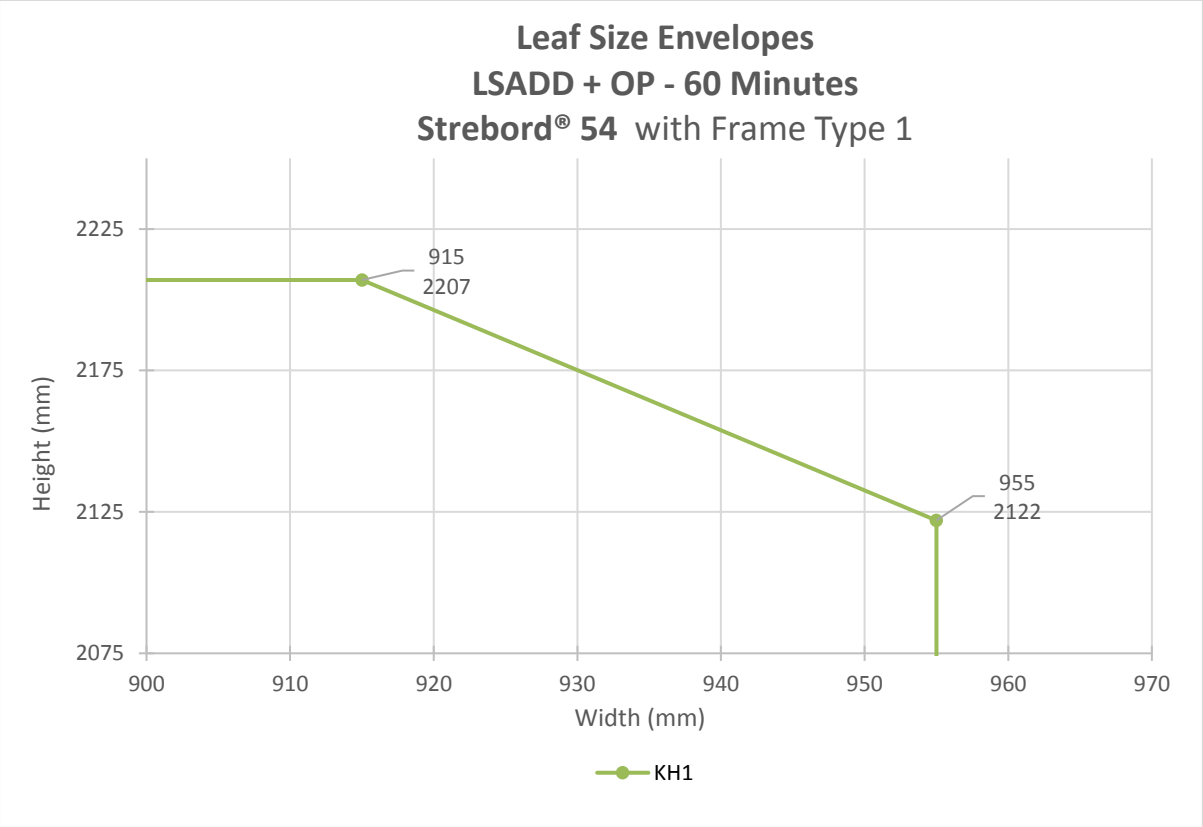
4.5.12.2 Strebord® 54 + Frame 2



Intumescent Specification for DADD Strebord® 54 with Frame 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
I-MDF-1 (Chilt/RF13082)	Rigid Box FO8700	Pyroplex Ltd	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only.

4.5.13 LSADD+ OP Configuration: Leaf Sizes & Intumescent Specification

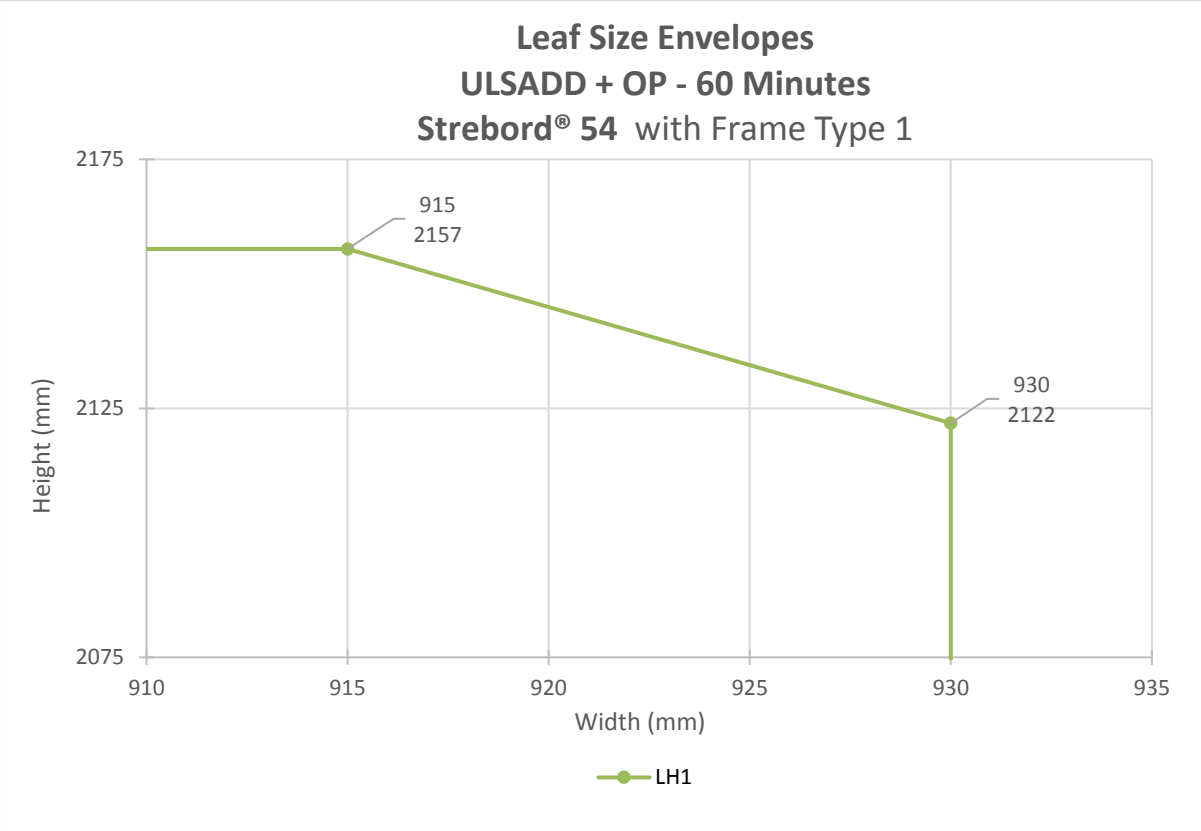
4.5.13.1 Strebord® 54 + Frame 1



Intumescent Specification for LSADD + OP Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
JH1 (Chilt/RF02020)	LP1504 Palusol LP2504 Palusol LP4004 Palusol	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only. **Rebated Leaf Head / Over panel** 1 No. 25x4mm exposed and fitted centrally in the leaf rebate with 1 No. 15x4mm exposed and fitted centrally in the overpanel rebate. **Square Lead Head / Overpanel** 40x4mm fitted centrally in the bottom edge of the overpanel.

4.5.14 ULSADD + OP Configuration: Leaf Sizes & Intumescent Specification

4.5.14.1 Strebord® 54 + Frame 1



Intumescent Specification for ULSADD + OP Strebord® 54 with Frame 1			
Intumescent Spec. Reference (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
KH1 (Chilt/RF02020)	LP1504 Palusol LP2504 Palusol LP4004 Palusol	Lorient Polyproducts Ltd.	**Head & Jambs:** 2No. 15x4mm. Fitted 5mm either side of the door leaf centreline (10mm apart) in the leaf edge or frame reveal. **Meeting Edges** 2No. 15x4mm exposed and fitted 5mm either side of the centreline (10mm apart) in one leaf only. **Rebated Leaf Head / Over panel** 1 No. 25x4mm exposed and fitted centrally in the leaf rebate with 1 No. 15x4mm exposed and fitted centrally in the overpanel rebate. **Square Lead Head / Overpanel** 40x4mm fitted centrally in the bottom edge of the overpanel.

5 General Description of Leaf Construction

5.1 Leaf Core Construction

The door leaf option detailed below is approved by this assessment.

5.1.1 Strebord® 54 – 54mm thick

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

Element	Material	Dimensions (mm)	Minimum Density (kg/m^3)
Core	Three layered solid core particleboard	54 (t)	510kg/m^3 - 650kg/m^3

The leaf must be lipped as specified in section 5.3.

The door core may be calibrated to each face prior to the application of decorative facings. A maximum of 0.4mm per face may be removed.

Minimum Door Core Thickness:

- Prior to application of permitted decorative facings / finishes which must be applied in this instance – 53.2mm (refer to Section 5.5 for decorative facing information).
- With or without decorative facings / finishes 54mm.

5.2 Leaf Size Adjustment During Manufacturing

The Falcon Timber Limited. Strebord© 54 door leaves may be altered as follows prior to the machining for hardware.

Pre-Machining Leaf Size Adjustment Specification	
Element	Reduction
Leaf	The size of the leaf may be reduced in height or width without restriction for manufacturing purposes, providing the finished leaf is lipped in accordance with section 5.3.
Timber Lipping	The timber lipping thickness can be reduced after it has been glued in place, providing it is not reduced below the minimum stated in section 5.3.

5.3 Timber Lipping

The testing documented in section 3 has generally been undertaken using 6-15mm thick lippings applied to the vertical or all edges using species at varying densities. A number of different adhesives have also been used to adhere the lippings.

For all door leaves and solid panels (overpanels or sidepanels), where appropriate, the following minimum lipping specification is required:

Frame Reference: 1 & 2 (Timber Based Frames)

- Require lipping to the vertical edges only.
- Lippings to horizontal edges are optional unless the doorset configuration or hardware option requires otherwise.

Frame Reference: 3 & 4 (Steel Based Frames)

- Require lippings to all edges.

On the above basis, Strebord 54 door blanks must be lipped with the following specification:

Timber Lipping Specification for Strebord 54			
Material	Size (mm)	Min Density (kg/m^3)	Frame Reference
Hardwood (excluding Beech *fagus species*)	**Flat Lipping** = 6–15 thick with a maximum of 2mm profiling permitted at corners of lipping[2]	640	1,2, 3 & 4
	Flat – "T" Angled Lipping = 18–23 thick including a 10 (d) x 21 (w) mm tongue with a maximum of 2mm profiling permitted at corners of lipping[11]		1 & 2
	Rounded Lipping = 8–17 thick with a radius matching the distance between leaf edge and floor pivot[3]		1 & 2
	Rebated Lipping (offset) = 20 – 25 thick with a 13mm deep x 33mm wide rebate in the leaf head and a 13mm deep x 22mm wide rebate in the bottom of the overpanel.[4,5]		1 & 2
Strelip® Engineered Hardwood[1]	**Flat Lipping** = 6–13 thick with a maximum of 2mm profiling permitted at corners of lipping[2]	660	1 & 2

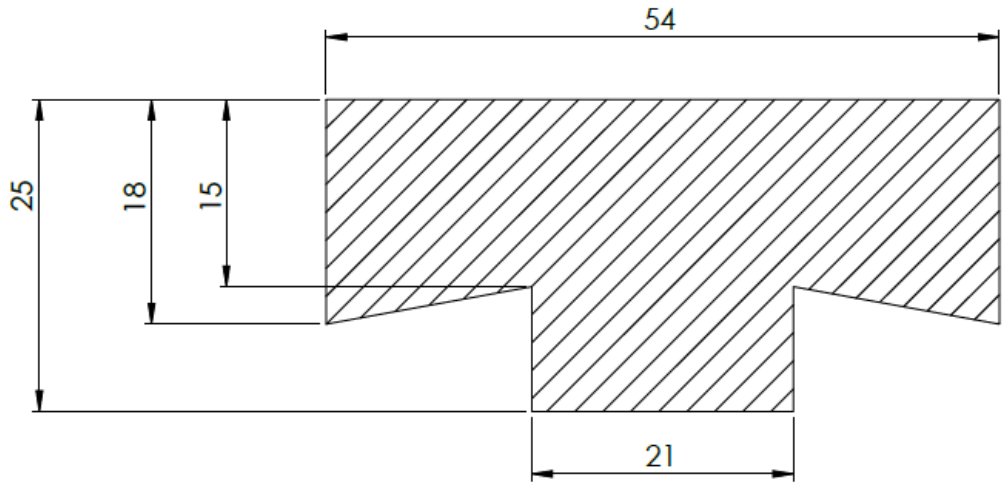
Note:

1. All lipping timber must meet or exceed class J30 as specified in BS EN 942: 2007 (subject to adequate repair of any defects).
2. For flat lippings that are fitted at the lock edge or meeting edges of double swing doorsets, it is permitted to apply maximum 8mm radius to the corners of the lipping at the vertical edges to create a maximum 2mm edge profiling.

   A 2mm radius is permitted to the vertical edges of single leaf doorsets.
3. Rounded lippings must only be applied to the hanging edges of door leaves where the door frame jamb has also been profiled to ensure door gaps meet

the requirements of section 11.7. A minimum of 6 to 8mm thickness of lipping shall be measured at the face of the door leaf where the lipping is its minimum thickness. Examples of permissible rounded edges are detailed in Section 7.

4. Rebated edges are only permitted between head of leaves and flush overpanel.
5. It is not permitted to fit hardware in the head of the leaves when using a rebated junction with overpanel, including flushbolts (surface mounted flush bolts affixed to the face of the leaf which do not remove material from the leaf may be used if required).
6. Doorsets with overpanels must be lipped on the vertical edges and additionally at the bottom edge of the overpanel and top edge of doors.
7. Double doorsets with flush overpanels may use a square or rebated overpanel junction but only in conjunction with square meeting edges.
8. Double doorsets must use square meeting edges.
9. Lippings must not conceal intumescent materials.
10. Lippings can be bonded with UF, PU or hotmelt PUR. These may be hand applied or may be applied using an edgebander. With either method it must be ensured that sufficient glue is applied. Other manufacturer's guidance should be followed, for either installation application.
11. Flat – "T" Angled Lipping, profile and critical dimensions:



5.4 Intastop Edge Protectors

Fire resistance test WF523041 Doorsets B supports the use of Intastop edge protectors comprising 2mm thick PVC bonded to an 18mm thick MDF insert, applied to the vertical edges of the door leaves.

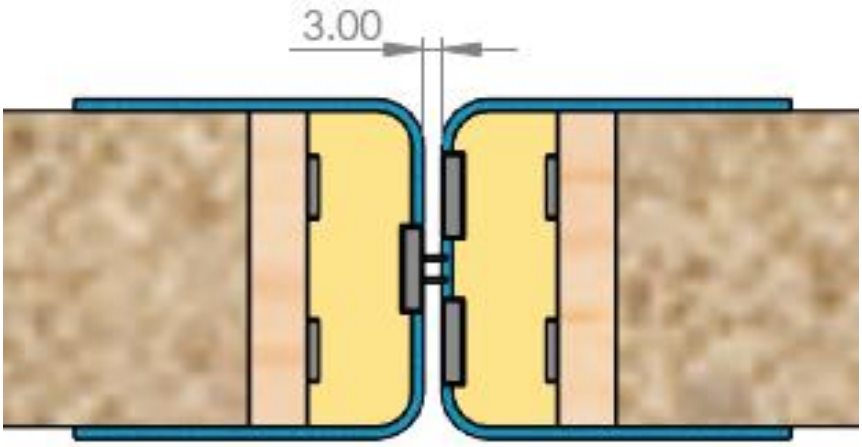
Frame option: 1 Only

Refer to the following sections for maximum permitted door leaf envelopes and intumescent specification:

- **LSASD:** Section 4.5.5.3
- **ULSASD:** Section 4.5.6.2
- **LSADD:** Section 4.5.10.2
- **ULSADD:** Section 4.5.11.2

Intastop edge protectors are approved subject to the following conditions:

- Intastop Edge Protectors may be applied to the leaves hung within frame option 1 only.
- The door blank must be lipped on all four edges prior to the installation of the edge protector. The 18mm MDF insert which is integral to the Intastop Edge Protector is not to be considered as a lipping.

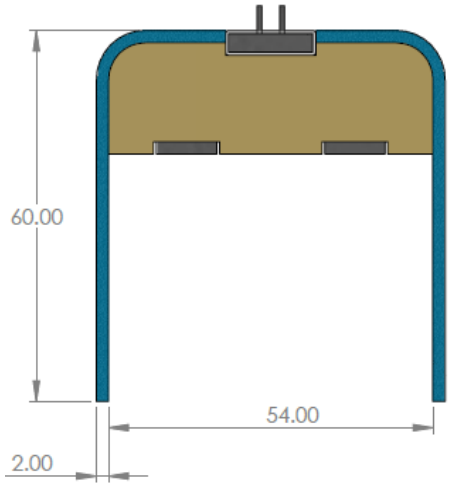
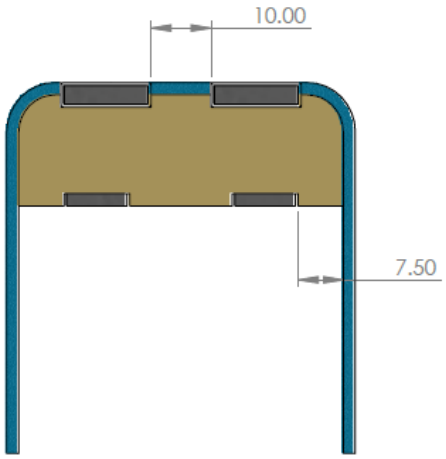


Detail of the doorset meeting stile showing the Intastop Edge Protectors installed onto the lipped door blank.

- The PVC protectors may be used on single action, double and single leaf doorsets.
- Single point engagement lockcases are permitted as described in section 10.4.1, limited to Zone 1 only and limited to one lock where Intastop Edge Protectors are installed.
- Flushbolts are not permitted for use in conjunction with edge protectors.
- Dropseals are not permitted for use in conjunction with edge protectors.

The performance obtained and the leaf sizes tested in WF523041, when using the PVC edge protectors, will enable the use of these edge protectors on door leaves with dimensions as outlined within the sections listed above.

Intastop Edge Protector Dimensions and Installation locations

<table>
<tr>
<td> 
</td>
<td> 
</td>
</tr>
<tr>
<td>Profile Applied to
• Hanging Edges
• Lock Edge (Single Leaves)
• Meeting Edge (Primary Leaf of Double Leaves)</td>
<td>Profile Applied to
• Meeting Edge
(Secondary Leaf of Double Leaves)</td>
</tr>
</table>

5.5 Decorative & Protective Facings

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

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

Decorative & Protective Facing Specification	
Facing Material	Maximum Permitted Thickness (mm)
Paint[5]	0.2
Timber veneers[3]	2
Plastic or resin laminates (HPL)[3]	2
PVC[3]	2
Cellulosic and non-metallic foils[3]	0.4

Notes:

1. Metallic facings are not permitted except for push plates and kick plates.
2. The door leaf thickness may be reduced on both sides by a maximum of 0.5mm for calibration purposes in order to accommodate the chosen finish. The minimum overall leaf thickness must remain at 54mm after finishing has been applied.
3. Materials may over sail lippings but must not return around leaf edges.
4. For all options, materials must not conceal intumescent strips.
5. Intumescent paints are not permitted.

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

5.6 Decorative Planted on Timber Mouldings

Decorative mouldings can be applied to Strebord® 54 door design providing the following criteria is adhered to:-

The mouldings:

1. Are surface applied to the door.
2. Are no higher than 30mm i.e. proud of the door
3. Are no wider than 50mm.
4. Cover no more than 20% of the door leaf area.
5. Are no closer than 80mm to the door leaf edge.
6. Are bonded into position with no mechanical fixings.
7. Are bonded using any glue which is suitable for bonding the lipping of the door.

5.7 Feature Grooves

Feature grooves were included within test reference Chilt/RF09145 Doorsets B & D without being of detriment to the overall performance of the doorset. The doorset they were included within achieved 64 and 72 minutes respectively.

Feature grooves may be applied to the leaves hung within frame options 1 & 2 only.

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

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

Grooves must not coincide with glazed apertures, a minimum distance of 100mm must be maintained between groove and aperture cut out.

The following section details the tested grooving arrangement and limitations.

Strebord® 54 door design 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	
Configuration	Latched, single acting, single doorsets only.	
Leaf size range (mm)	2100 high x 926 wide	
Intumescent seal dimensions (mm)	2No. 15mm (w) x 4mm (t) applied as detailed within section 4.5. May be any seal type permitted for single leaf doorsets.	

Note: 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.

5.8 Cableways

5.8.1.1 Cableway Method 1

This method has been successfully tested in test reference CFR2109152 and WF386959 Doorset B, with associated hardware and is suitable for use within the following parameters:

- Frame Options: 1 & 2
- Configurations: LSASD
- Maximum leaf width: 1040mm
- Intumescent specification: A minimum 2no intumescent strips of 15mm x 4mm for 54mm leaves, located 5mm either side of the centre line of the frame reveal.
- Cableway Intumescent Protection: Intumescent Seals Ltd, 1mm thick Therm-A-Strip applied to the circumference of the wireway.
- Grooves cannot be located within 100mm of the cableway.
- The hole must be located no higher than 900mm from the threshold and must be spaced a minimum of 100mm from any apertures within the leaf e.g. glazing, air transfer grilles or letter plates etc.
- May be used with the cable loops detailed in section 10.5, which must be located, fitted and protected as described.

Based on the performance of the doorset under test conditions, with no burn through of the core material, it is considered acceptable to allow the provision for a concealed cableway to facilitate electro-magnetic closing/latching mechanisms. The cableway must be concealed in the following way:

- A hole drilled horizontally through the leaf at the nominal centre of the leaf thickness which shall be of no greater than 11mm diameter.
- The cable for the electronic closing/latching mechanism must be PVC sheathed.
- May be used with the cable loops detailed in section 10.5, which must be located, fitted and protected as described.

5.8.1.2 Cableway Method 2 & 3

The principles of method 2 & 3 are basically the same, however there are variations in intumescent protection and timber insert sizes.

5.8.1.2.1 Cableway Method 2

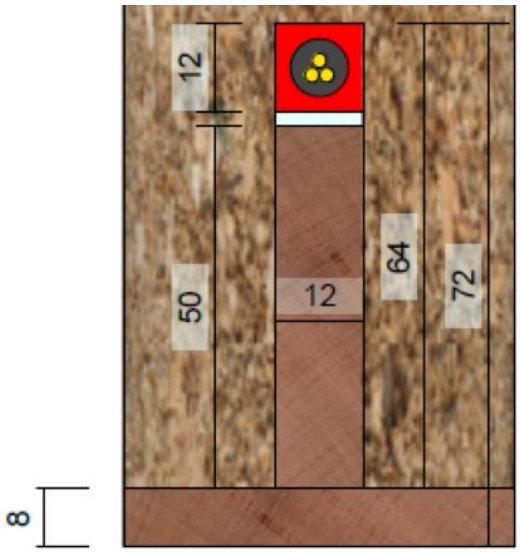
This cableway method has been successfully tested in test reference CFR2109152, with associated hardware and is suitable for use within the following scope:

- Frame Options: 1 & 2
- The frames must have a minimum density of 640kg/m^3 and minimum size of 32mm (w) x 90mm (d) (excluding stop).
- Configurations: LSASD & LSADD
- Maximum leaf size: 2185mm (h) x 1040mm (w)
- Intumescent specification: A minimum of 2no 15mm x 4mm located 5mm either side of the centre line of the frame reveal.
- The leaf can be grooved. Grooves cannot be located within 100mm of the cableway.
- May be used with the cable loops detailed in section 10.5, which must be located, fitted and protected as described.
- Cableway must be no higher than 1150mm from the bottom of the leaf to the highest point of the cableway.
- Cableway must be spaced a minimum of 90mm from any apertures within the leaf e.g. glazing, air transfer grilles or letter plates etc.

This method comprises a 12mm high x 12mm wide channel in the leaf edge, centralised in the leaf thickness, running down from the hanging edge to the bottom edge of leaf, along the

bottom edge to the closing edge, and up along the closing edge to the latch/lock location, and concealed in the following way:

- Prior to lipping**,** Groove the edge of the door core with a 12mm wide channel located centrally, to a depth of 64mm. This groove should run from the lock/keep location in the closing/meeting edge, down the edge, along the bottom of the door then back up the hanging edge to the cable loop location.
- Install the cable into the groove.
- Infill the groove with 50mm x 12mm hardwood (minimum density 640 kg/m^3), with 12x2mm Intumescent Seals Limited Therm-A-Strip affixed to the underside. The infill piece is bonded in place with PU adhesive.
- The door core can then be lipped and calibrated in the usual manner.
- Drop seals with bodies up to 27mm high may be included at the threshold:
  - NOR810s
  - STS422
  - Sealmaster 2712



Detail Showing Cableway Method 2

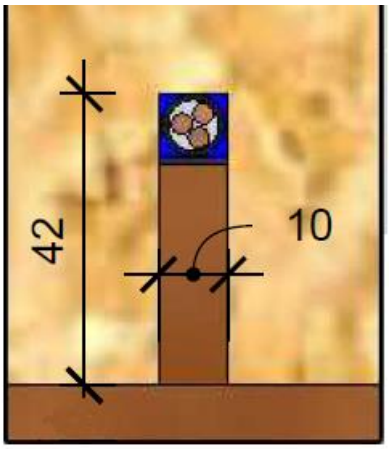
5.8.1.2.2 Cableway Method 3

This cableway method has been successfully tested in test reference WF386959, with associated hardware and is suitable for use within the following scope:

- Frames: 1 & 2
- The frames must have a minimum density of 640kg/m^3 and minimum size of 32mm (w) x 104mm (d) (excluding stop).
- Configurations: LSASD & LSADD
- Maximum leaf size: 2185mm (h) x 1040mm (w)
- Intumescent specification: A minimum of 2no 15mm x 4mm located 5mm either side of the centre line of the frame reveal.
- The leaf can be grooved. Grooves cannot be located within 100mm of the cableway.
- May be used with the cable loops detailed in section 10.5, which must be located, fitted and protected as described.
- Cableway must be no higher than 1120mm from the bottom of the leaf to the highest point of the cableway.
- Cableway must be spaced a minimum of 90mm from any apertures within the leaf e.g. glazing, air transfer grilles or letter plates etc.

This method comprises a 12mm high x 12mm wide in the leaf edge, centralised in the leaf thickness, running down from the hanging edge to the bottom edge of leaf, along the bottom edge to the closing edge, and up along the closing edge to the latch/lock location, and concealed in the following way:

- Prior to lipping**,** Groove the edge of the door core with a 10mm wide channel located centrally, to a depth of 42mm. This groove should run from the lock/keep location in the closing/meeting edge, down the edge, along the bottom of the door then back up the hanging edge to the cable loop location.
- Install the cable into the groove.
- Infill the groove with 30mm x 10mm hardwood (minimum density 640 kg/m^3), with 10x2mm Sealed Tight Solutions raw graphite. The infill piece is bonded in place with PU adhesive.
- The door core can then be lipped and calibrated in the usual manner.
- Drop seals are not permitted with this option.



Detail Showing Cableway Method 3

6 Glazing within the Leaf

6.1 General

The testing conducted on doorset designs contained herein has demonstrated that they are capable of tolerating glazed apertures, whilst providing a margin of over performance, this is supported by the summarised test evidence within section 3.

Glazing is therefore acceptable within the following parameters.

Apertures must not be less than 95mm from top and side edges and 100mm from the bottom edge. (Supported by RF11171 & CFR2201122).

Aperture shapes considered herein are rectilinear only. Alternative shapes may be permitted for specific glass or glazing systems but only as specified in the sections below.

Apertures cannot be rotated (e.g. a square to be rotated to create a diamond effect) unless explicitly stated within this document for specific glass or glazing systems.

Multiple apertures are acceptable within the permitted total assessed aperture area, with a minimum dimension of 100mm of core between apertures. (As demonstrated in CFR2201122, CFR2211162.)

Maximum glass thickness permitted is 23mm for single pane glazing as tested within RF13242, RF11171 & RF12068.

Minimum glass thickness permitted is 6mm, as tested and may not be reduced as tested within RF99113 & RF00169.

The subsequent sections within this report detail the permitted glass and glazing systems with their associated size ranges permitted within the Strebord 54 doorset design.

The maximum glazed areas given in each subsection supersede those given in sections 6.1.1 and 6.1.2 below and must be adhered to. However, the dimensional restrictions given in sections 6.1.1 and 6.1.2 below shall not be exceeded under any circumstance. The sizes permitted for glass types covered by this assessment are determined by the glass type selected. The presence of intumescent interlayers within the glass type's construction must be established prior to fabrication.

It is possible to include glass within the door leaf at smaller dimensions than given for any particular glass type or glazing system.

6.1.1 Maximum Permitted Glazed Aperture Dimensions (without intumescent interlayers)

The maximum total assessed aperture dimensions and area for any individual door leaf, with a glass type which does not include an intumescent interlayer, based on the test evidence detailed within section 3 is as follows:

Maximum total permitted aperture within the Strebord 54 door leaves		
Maximum Height (CFR2104282) (mm)	Maximum Width (CFR2104282) (mm)	Maximum Area (CFR2104282) (m^2)
1920	300	0.50

6.1.2 Maximum Permitted Glazed Aperture Dimensions (with intumescent interlayers)

The maximum total assessed aperture dimensions and area for any individual door leaf, with a glass type which does include an intumescent interlayer, based on the test evidence detailed within section 3 is as follows:

Maximum total permitted aperture within the Strebord 54 door leaves		
Maximum Height (RF13242) (mm)	Maximum Width (CFR2109152) (mm)	Maximum Area (RF13242) (m^2)
2232	938	1.19

6.2 Certifire Single Pane Glass and Glazing System Options

Alternative glass and glazing systems with a Certifire certificate – valid at the date of manufacture of the doorset which has been written in accordance with Warringtonfire Testing & Certification Ltd, Technical Schedule TS25 - may be used to glaze the Strebord 54 door design, subject to the following.

- The minimum thickness of glass permitted for alternative glass types is 6mm.
- The maximum thickness of glass permitted for alternative glass types is 23mm.
- Where a Certifire certificate is utilised to justify glazing the doorset, the full requirements given within that certificate for the glass, glazing system, glazing bead (dimensions & profile) and fixings specified must be complied with.
- All parameters in section 6.1 above must take precedence over those in the supporting Certifire certificate, e.g. the glazed area, maximum height and width permitted in section 6.1 above may not be increased on the basis of the area, height and width permitted within the Certifire certificate. If the area, height and width in the proposed Certifire certificate is smaller than that in section 6.1, the smaller dimension will take precedence for the proposed glass or glazing system.
- The general requirements within the proposed Certifire certificate are still applicable, the Certifire certificate must include the option for the certificated glass and / or glazing system to be fitted within a timber / cellulosic based door leaf within a timber / cellulosic frame with a leaf thickness of 54mm.
- Where the Certifire certificate requires a timber aperture liner, these must always be fitted.
- Bead fixings – The required pin or screw specification as given in the supporting Certifire certificate must be used, alternatives fixing details are not permitted.

6.3 Single Pane Glass and Glazing Systems (Timber Beading)

The tested and assessed glass and glazing system(s) combinations, detailed within the table below may be used, subject to the limitations and scope detailed in section 6.1 above.

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

The numerical figures in the main body of the table are the maximum height, width (m) & area of glass (in m^2) that is considered acceptable for an individual glazed aperture, based upon the specific system. Where a '-' is applied the glass type and glazing system has not been considered compatible.

Table Detailing Glazing Systems 1 - 8

Glass & Glazing System Specification			**Maximum Assessed Area (m^2), Height & Width (m)**							
Glass Type Manufacturer		**Thickness**	**System & Manufacturer →**	1	2	3	4	5	6	7	8
				ST105GT, 10 wide x 5 thick & ST302 Glazing Liner 30 wide x 2 thick	ST105GT (3), 9 wide x 3 thick & ST302 Glazing Liner 30 wide x 2 thick	ST104SG, 10 wide x 2 thick & ST302 Glazing Liner 30 wide x 2 thick	RF1 24 wide x 6.5 thick & B25402 Liner	FF1 13 wide x 3.5 thick & LX5402 Liner	System 90 Plus, 27 high x 27 wide with a 6mm channel & LX5402 Liner, 54 wide x 2 thick	Pyroglaze 60, 25 wide x 3 thick & Pyrostrip 100 ECSA Liner, 52 wide x 2 thick	ALFAS Closed Cell Foam Tape, 20 wide x 3 thick & Pyrostrip 100 ECSA Liner, 52 wide x 2 thick
				Sealed Tight Solutions	Sealed Tight Solutions	Sealed Tight Solutions	Lorient Polyproducts Ltd	Lorient Polyproducts Ltd	Lorient Polyproducts Ltd	Mann McGowan	Mann McGowan & ALFAS
			Fire Test Reference	PF15035 & WF417777	PF15288	CFR1812191_1	WF435986	RF11171	RF99113	CFR2112211 & PF14233	RF13111
1	Pyrobelite 7 AGC Flatglass	7	CFR2104282	-	-	-	-	-	-	-	-
2	Pyrobelite 12 AGC Flatglass	12	WF417777, CFR2112211, RF05126, PF15035, CFR2109152, PF15288, CFR2211162 & CFR1812191	Area: 0.86 Height: 1.38 Width: 0.72	Area: 0.96 Height: 1.92 Width: 0.576	Area: 0.79 Height: 1.45 Width: 0.627	-	-	-	Area: 0.79 Height: 1.2 Width: 0.753	Area: 0.92 Height: 2.164 Width: 0.49
3	Pyrobel 16 AGC Flatglass	16	WF435986 & CFR2109081	Area: 0.78 Height: 1.2 Width: 0.72 & Area: 0.58 Height: 1.38 Width: 0.368	Area: 0.78 Height: 1.2 Width: 0.576 & Area: 0.58 Height: 1.8 Width: 0.368	Area: 0.78 Height: 1.2 Width: 0.627 & Area: 0.58 Height: 1.45 Width: 0.368	Area: 0.78 Height: 1.2 Width: 0.75	-	-	Area: 0.78 Height: 1.2 Width: 0.75	Area: 0.78 Height: 1.2 Width: 0.49- & Area: 0.58 Height: 1.8 Width: 0.368-
4	Pyroshield 2 Pilkington UK Ltd	6	RF99113, RF00169 & WF155385	-	-	-	-	-	Area: 0.45 Height: 1.440 Width: 0.30	-	-
5	Pyroclear® 60-001 Pilkington UK Ltd	6	RF12077	-	-	-	-	-	-	-	-
6	Pyrodur 60-10 Pilkington UK Ltd	10	PF14233	-	-	-	-	-	-	Area: 0.2 Height: 0.48 Width: 0.48	-
7	Pyrostop EI30-10 Pilkington UK Ltd	15	RF13242	Area: 0.78 Height: 1.38 Width: 0.612	Area: 0.96 Height: 1.92 Width: 0.576	Area: 0.79 Height: 1.45 Width: 0.612	-	-	-	Area: 0.79 Height: 1.2 Width: 0.612	Area: 0.92 Height: 2.164 Width: 0.49-
8	Pyrostop EI60-101 Pilkington UK Ltd	23	RF05035 & RF13242	-	-	-	-	-	-	-	-
9	Pyrostem 2 Pyroguard UK Ltd	7	CFR2104282	-	-	-	-	-	-	-	-
10	Pyroguard EW30 Pyroguard UK Ltd	7	PF14029 Doorset A	-	-	-	-	-	-	-	-
11	Pyroguard 2-FD60/7-1 Pyroguard UK Ltd	7	CFR2201122	-	-	-	-	-	-	-	-
12	Pyroguard EW60 Pyroguard UK Ltd	11	PF14029	-	-	-	-	-	-	-	-
13	Pyroguard 2-EW60/11-2 Pyroguard UK Ltd	11	CFR2211162	-	-	-	-	-	-	-	-
14	Pyroguard EI60 INT Pyroguard UK Ltd	23	RF11171 & RF12068					Area: 0.39 Height: 0.786 Width: 0.578	-		

Note:

1. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.
2. Glass types 8 & 14 are fully insulating for 60 minutes in terms of the criteria set out BS 476: Part 20: 1987.
3. Pilkington UK Ltd, Pyroshield 2 – Textured is not permitted for fire resisting applications.

Table Detailing Glazing Systems 9 - 16

Glass & Glazing System Specification			Maximum Assessed Area (m^2), Height & Width (m)							
Glass Type Manufacturer		Thickness	System & Manufacturer →	9	10	11	12	13	14	15	16
				Pyroglaze 500PSA, 25 wide x 4 thick & Pyroglaze 300 Liner, 54 wide x 2 thick	Kerafix Flexit, 20wide x 5 thick (compressed to 4 thick) & Mann McGowan ELSA 1000 Glazing Liner, 54 wide x 2 thick & Interdens ®, 10 wide x 2 thick applied centrally between the beads on the liner.	Pyroplex 30095, 25 wide x 4 thick & 30096 Liner 54 wide x 2 thick	Hodgson Sealants Firestop 60, 20 wide x 3 thick & Norseal Flexible Liner, 50 wide x 2 thick	Hodgson Sealants, 20 wide x 2 thick & Norseal Flexible Liner, 54 wide x 2 thick	Sealmaster Compound, 20 wide x 4 thick & Norseal Liner 54 wide x 2 thick	Superwool X607, 25 wide x 2 thick & Sealmaster GL60 Liner 54 wide x 2 thick	Fireglaze Tape, 25 wide x 2.5 thick & Fireglaze Tape Liner 54 wide x 2.5 thick
				Mann McGowan	Mann McGowan & Kerafix & BASF	Pyroplex Ltd	Hodgson Sealants & Norseal	Hodgson Sealants & Norseal	Sealmaster UK Ltd & Norseal	Sealmaster UK Ltd & Odice	Sealmaster UK Ltd
			Fire Test Reference	RF12068	RF12077	WF155385	RF05035	RF13242	RF13242	RF05126	CFR2104282 & CFR2201122
1	Pyrobelite 7 AGC Flatglass	7	CFR2104282	-	-	Area: 0.31 Height: 0.6 Width: 0.3	-	-	-	-	Area: 0.5 Height: 1.92 Width: 0.3
2	Pyrobelite 12 AGC Flatglass	12	WF417777, CFR2112211, RF05126, PF15035, CFR2109152, PF15288, CFR2211162 & CFR1812191	-	-	Area: 0.31 Height: 0.6 Width: 0.6	-	-	-	Area: 1.64 Height: 2.20 Width: 0.858	Area: 0.74 Height: 1.92 Width: 0.445
3	Pyrobel 16 AGC Flatglass	16	WF435986 & CFR2109081	-	-	Area: 0.31 Height: 0.6 Width: 0.6	-	-	-	Area: 0.78 Height: 1.2 Width: 0.75 & Area: 0.58 Height: 1.8 Width: 0.368	Area: 0.74 Height: 1.2 Width: 0.445 & Area: 0.58 Height: 1.8 Width: 0.368
4	Pyroshield 2 Pilkington UK Ltd	6	RF99113, RF00169 & WF155385	-	-	Area: 0.31 Height: 0.6 Width: 0.3	-	-	-	-	Area: 0.45 Height: 1.44 Width: 0.3
5	Pyroclear® 60-001 Pilkington UK Ltd	6	RF12077	-	Area: 0.49 Height: 1.46 Width: 0.384	-	-	-	-	-	-
6	Pyrodur 60-10 Pilkington UK Ltd	10	PF14233	-	-	Area: 0.2 Height: 0.48 Width: 0.48	-	-	-	-	Area: 0.2 Height: 0.48 Width: 0.445
7	Pyrostop EI30-10 Pilkington UK Ltd	15	RF13242	-	-	Area: 0.31 Height: 0.6 Width: 0.6	-	Area: 1.19 Height: 2.23 Width: 0.612	-	Area: 1.19 Height: 2.20 Width: 0.612	Area: 0.74 Height: 1.92 Width: 0.445
8	Pyrostop EI60-101 Pilkington UK Ltd	23	RF05035 & RF13242		-	-	Area: 1.91 Height: 2.2 Width: 0.938	-	Area: 1.19 Height: 2.23 Width: 0.612	-	-
9	Pyrostem Pyroguard UK Ltd	7	CFR2104282	-	-	-	-	-	-	-	Area: 0.5 Height: 1.92 Width: 0.3
10	Pyroguard EW30 Pyroguard UK Ltd	7	PF14029	-	-	Area: 0.16 Height: 0.6 Width: 0.196	-	-	-	-	Area: 0.16 Height: 0.91 Width: 0.196
11	Pyroguard 2-FD60/7-1 Pyroguard UK Ltd	7	CFR2201122	-	-	-	-	-	-	-	Area: 0.74 Height: 1.92 Width: 0.445
12	Pyroguard EW60 Pyroguard UK Ltd	11	PF14029 Doorset B	-	-	Area: 0.16 Height: 0.6 Width: 0.196	-	-	-	-	Area: 0.16 Height: 0.91 Width: 0.196
13	Pyroguard 2-EW60/11-2 Pyroguard UK Ltd	11	CFR2211162	-	-	-	-	-	-	-	Area: 0.58 Height: 1.81 Width: 0.368
14	Pyroguard EI60 INT Pyroguard UK Ltd	23	RF11171 & RF12068	Area: 0.68 Height: 0.961 Width: 0.810	-	-	-	-	-	-	-

Note:

1. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.
2. Glass types 8 & 14 are fully insulating for 60 minutes in terms of the criteria set out BS 476: Part 20: 1987.
3. Pilkington UK Ltd, Pyroshield 2 – Textured is not permitted for fire resisting applications.

Table Detailing Glazing Systems 17 & 18

Glass & Glazing System Specification			Maximum Assessed Area (m^2), Height & Width (m)		
Glass Type Manufacturer		Thickness	**System** & **Manufacturer** →	17	18
				Fireglaze Tape, 20 wide x 5 thick & Fireglaze GL60 Liner 54 wide x 2 thick	Therm-A-Bead, 25 wide x 4 thick & Therm-A-Line 54 wide x 2 thick
				Sealmaster UK Ltd	Intumescent Seals Ltd
			Fire Test Reference	CFR2109081 & CFR2109152	CFR2211162 & RF14029
1	Pyrobelite 7 AGC Flatglass	7	CFR2104282	-	-
2	Pyrobelite 12 AGC Flatglass	12	WF417777, CFR2112211, RF05126, PF15035, CFR2109152, PF15288, CFR2211162 & CFR1812191	Area: 0.64 Height: 0.93 Width: 0.795 & Area: 0.62 Height: 0.765 Width: 0.938	Area: 0.78 Height: 1.81 Width: 0.496
3	Pyrobel 16 AGC Flatglass	16	WF435986 & CFR2109081	Area: 0.64 Height: 0.93 Width: 0.75 & Area: 0.62 Height: 0.765 Width: 0.75 & Area: 0.58 Height: 1.80 Width: 0.368	Area: 0.78 Height: 1.2 Width: 0.496 & Area: 0.78 Height: 1.80 Width: 0.368
4	Pyroshield 2 Pilkington UK Ltd	6	RF99113, RF00169 & WF155385	-	-
5	Pyroclear® 60-001 Pilkington UK Ltd	6	RF12077	-	-
6	Pyrodur 60-10 Pilkington UK Ltd	10	PF14233	-	-
7	Pyrostop EI30-10 Pilkington UK Ltd	15	RF13242	Area: 0.64 Height: 0.93 Width: 0.612 & Area: 0.58 Height: 1.80 Width: 0.368	Area: 0.78 Height: 1.81 Width: 0.496
8	Pyrostop EI60-101 Pilkington UK Ltd	23	RF05035 & RF13242	-	-
9	Pyrostem Pyroguard UK Ltd	7	CFR2104282	-	-
10	Pyroguard EW30 Pyroguard UK Ltd	7	PF14029	-	Area: 0.16 Height: 0.91 Width: 0.196
11	Pyroguard 2-FD60/7-1 Pyroguard UK Ltd	7	CFR2201122	-	-
12	Pyroguard EW60 Pyroguard UK Ltd	11	PF14029	-	Area: 0.16 Height: 0.91 Width: 0.196
13	Pyroguard 2-EW60/11-2 Pyroguard UK Ltd	11	CFR2211162	-	Area: 0.58 Height: 1.81 Width: 0.368
14	Pyroguard EI60 INT Pyroguard UK Ltd	23	RF11171 & RF12068	-	-

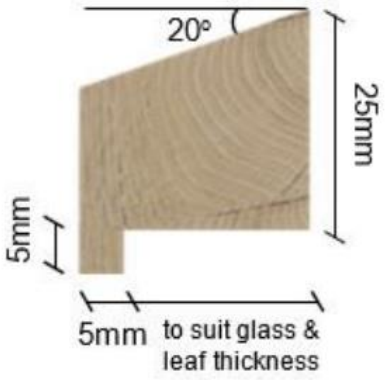
Note:

1. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.
2. Glass types 8 & 14 are fully insulating for 60 minutes in terms of the criteria set out BS 476: Part 20: 1987.
3. Pilkington UK Ltd, Pyroshield 2 – Textured is not permitted for fire resisting applications.

6.3.1 Permitted Glazing Beading and Glass Retention (Timber Beads)

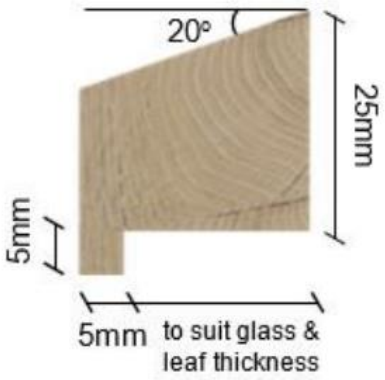
The following sections detail the permitted glazing beading, aperture lining requirements and minimum fixing details for the above detailed glass and glazing systems. Each section deals with a specific type of glazing bead and indicates which glass and or glazing system it is applicable to. Glazing beads shall only be used with the permitted glazing system as identified, the applicable glass types permitted for use with the selected glazing system are as detailed in the table within 6.3 above.

6.3.1.1 Chamfer Beads Option 1

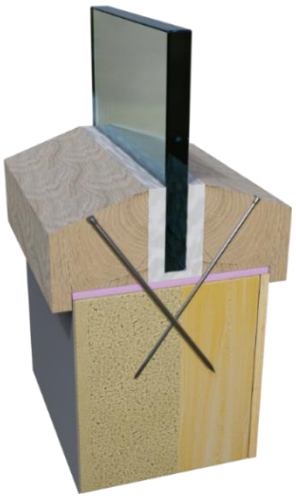
Permitted Glazing Systems (Defined in Section 6.3)	**1, 2, 4, 10, 13, 15, 16 & 17**
	
• The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. • The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density. • Glazing beads must be retained in position with minimum length of 50mm long steel pins or 50mm long No. 6-8 screws, inserted at 35-40º to the vertical. • Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.3.2 below. • A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive. • The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions. • Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires	

6.3.1.2 Chamfer Beads Option 2 (for 23mm thick Glass)

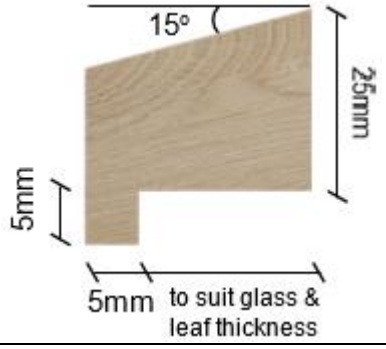
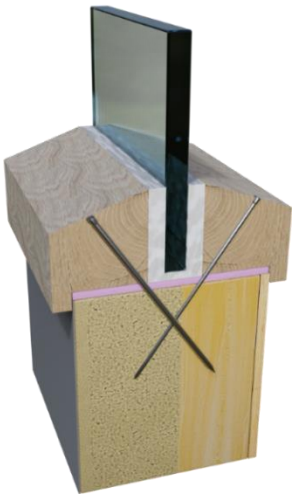
Permitted Glazing Systems (Defined in Section 6.3)	**9 & 14**



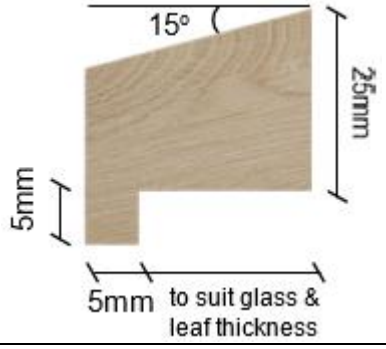
- The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum.
- The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density.
- Glazing beads must be retained in position using the following fixing methods:
  - System 9 - 60mm long No. 6-8 screws, inserted at 35-40º to the vertical.
  - System 14 – Steel pins or screws of minimum length 63mm, inserted at 35-40º to the vertical.
- with minimum length of 63mm long steel pins or 60mm long No. 6-8 screws, inserted at 35-40º to the vertical.
- Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.3.2 below.
- A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive.
- The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.
- Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires



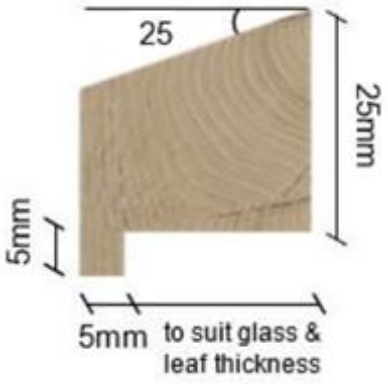
6.3.1.3 Chamfer Beads Option 3

Permitted Glazing Systems (Defined in Section 6.3)	**1, 7, 16 & 18**
	
• The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. • The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density. • Glazing beads must be retained in position with minimum length of 50mm long steel pins or 50mm long No. 6-8 screws, inserted at 35-40º to the vertical. • Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.3.2 below. • A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive. • The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions. • Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires	

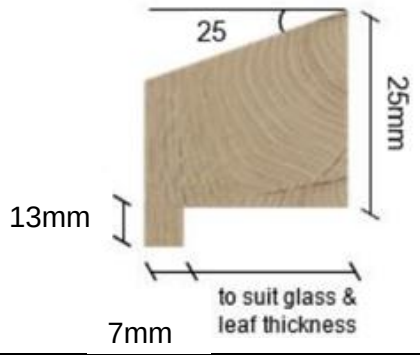
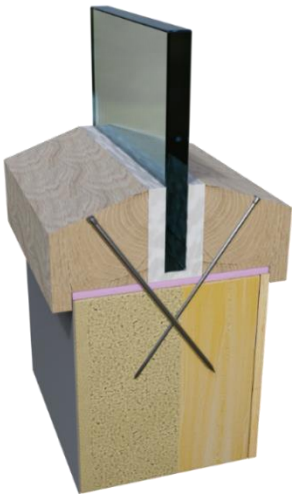
6.3.1.4 Chamfer Beads Option 4 (for 23mm glass)

Permitted Glazing Systems (Defined in Section 6.3)	**5**
	
• The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. • The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density. • Glazing beads must be retained in position with minimum length of 70mm long No. 6-8 screws, inserted at 35-40º to the vertical. • Fixings must be at 150mm maximum centres and no more than 50mm from each corner. • A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive. • The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions. • Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires	

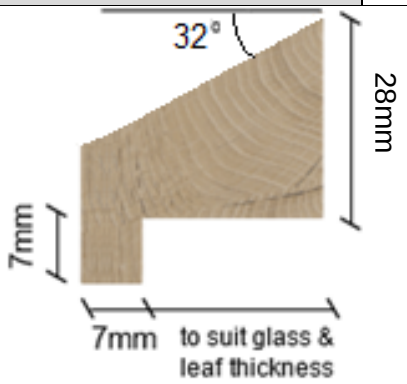
6.3.1.5 Chamfer Beads Option 5

Permitted Glazing Systems (Defined in Section 6.3)	**3, 8 & 18**
	
• The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. • The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density. • Glazing beads must be retained in position with minimum length of 60mm long steel pins or 50mm long No. 6-8 screws, inserted at 35-40º to the vertical. • Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.3.2 below. • A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive. • The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions. • Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires	

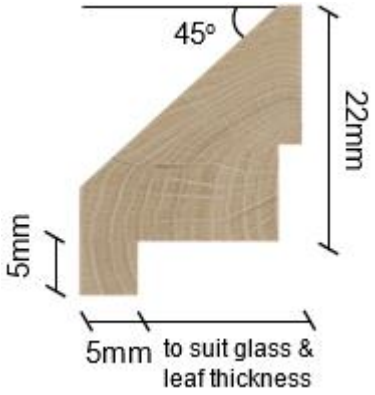
6.3.1.6 Chamfer Beads Option 6

Permitted Glazing Systems (Defined in Section 6.3)	**18**
	
• The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. • The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density. • Glazing beads must be retained in position with minimum length of 50mm long steel pins or 50mm long No. 6-8 screws, inserted at 35-40º to the vertical. • Fixings must be at 120mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.3.2 below. • A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive. • The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions. • Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires	

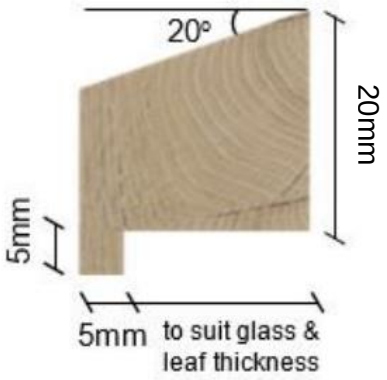
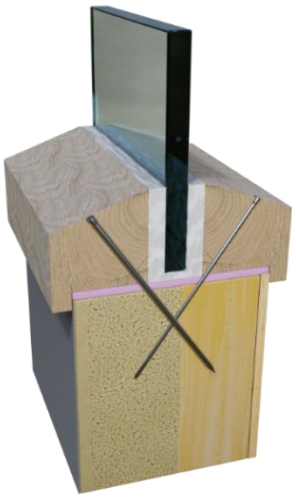
6.3.1.7 Chamfer Beads Option 7

Permitted Glazing Systems (Defined in Section 6.3)	**1**
	
• The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. • The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density. • Glazing beads must be retained in position with minimum length of 50mm long steel pins or 50mm long No. 6-8 screws, inserted at 35-40º to the vertical. • Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.3.2 below. • A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive. • The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions. • Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires	

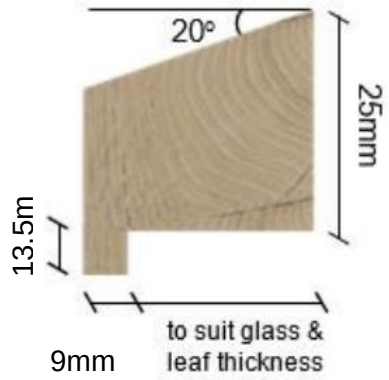
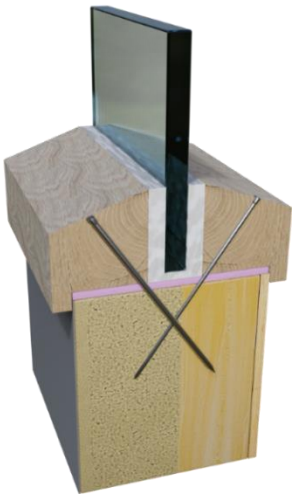
6.3.1.8 Chamfer Beads Option 8

Permitted Glazing Systems (Defined in Section 6.3)	**6**
	
• The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. • The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density. • Glazing beads must be retained in position with minimum length of 50mm long No. 6-8 screws, inserted at 35-40º to the vertical. • Fixings must be at 150mm maximum centres and no more than 50mm from each corner. • A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive. • The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions. • Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires	

6.3.1.9 Chamfer Beads Option 9

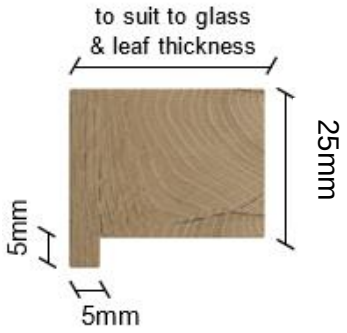
Permitted Glazing Systems (Defined in Section 6.3)	**12**
	
• The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. • The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density. • Glazing beads must be retained in position with minimum length of 60mm long No. 6-8 screws, inserted at 30º to the vertical. • Fixings must be at 150mm maximum centres and no more than 50mm from each corner. • A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive. • The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions. • Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires	

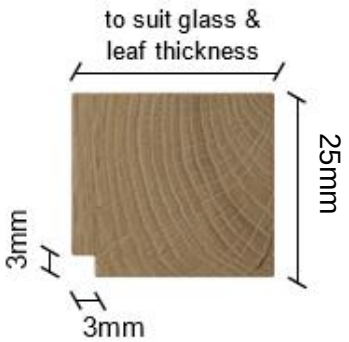
6.3.1.10 Chamfer Beads Option 10

Permitted Glazing Systems (Defined in Section 6.3)	**11**
	
• The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. • The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density. • Glazing beads must be retained in position with minimum length of 50mm long No. 6-8 screws, inserted at 35-40º to the vertical. • Fixings must be at 150mm maximum centres and no more than 50mm from each corner. • A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive. • The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions. • Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires	

6.3.1.11 Square Beads Option 1

Permitted Glazing Systems (Defined in Section 6.3)	**1**





- The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. In addition, it is permitted to apply up to a 20º splay to the bolected bead as detailed above. A splay must not be applied to the bead designs without a bolection.
- The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density.
- Glazing beads must be retained in position with minimum of 50mm long steel pins or 50mm long No. 6-8 screws, inserted at 35-40º to the vertical.
- Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.3.2 below.
- A 6 – 10mm thick square aperture liner is optionally permitted for use with square beads it shall be constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive. When fitted the intumescent liner, if narrower than 54mm may be rebated by the thickness of the intumescent liner into the top of the hardwood aperture liner.
- The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.
- Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires

6.3.2 Pneumatically Fired Pins

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

Option 1 – Round, Oval & Rectangular Pins

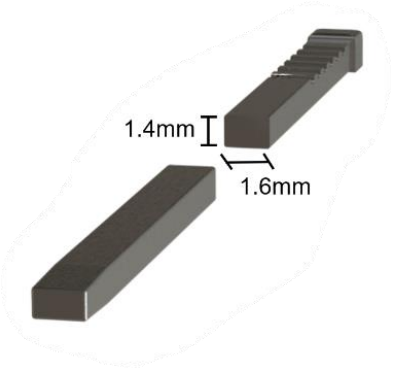
The following dimension of pin has been approved for round, oval and rectangular shaped pins which are hand applied:

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

Option 2 – Gun (Pneumatically) Fired Rectangular Pins

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

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



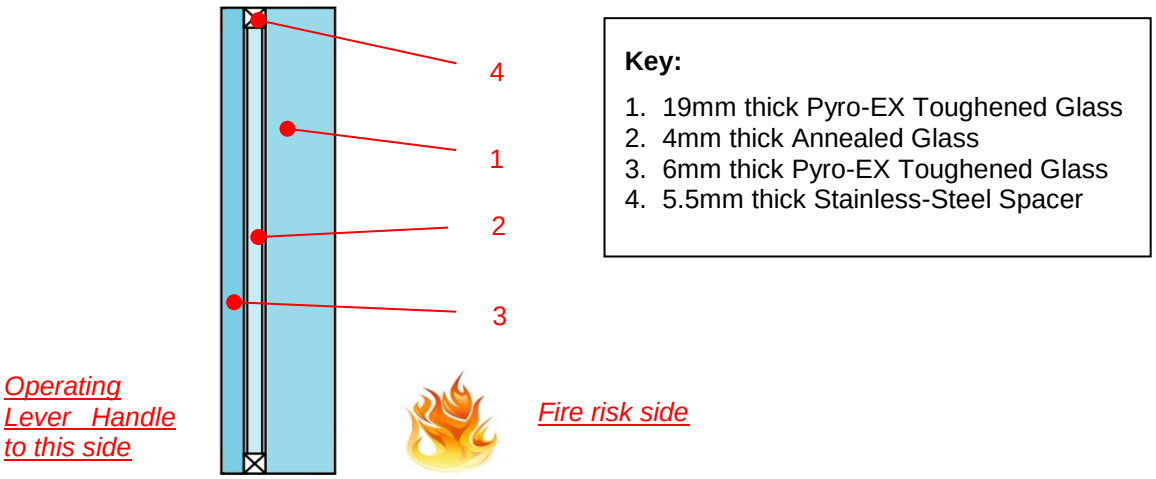
Pins with dimensions less than those stated above are not covered by this assessment.

6.4 Vistamatic VS1 Secure Vision Panel

The following specification must be followed when using the Vistamatic VS1 secure vision panel tested in IF13037.

The Vistamatic VS1 vision panel comprises a double-glazed unit with an additional, movable centre layer of obscure glass. This unit can only be considered fire resisting from one direction in terms of exposure to fire test conditions (i.e. when the 19mm toughened glass is oriented on the face exposed to fire test conditions).The control lever for the operation of the unit is permitted only to non-risk side of the unit, the hole for the spindle being cut into the 6mm thick Pyro-EX Toughened Glass.

The drawing below shows the essential elements of the Vistamatic glazing unit:



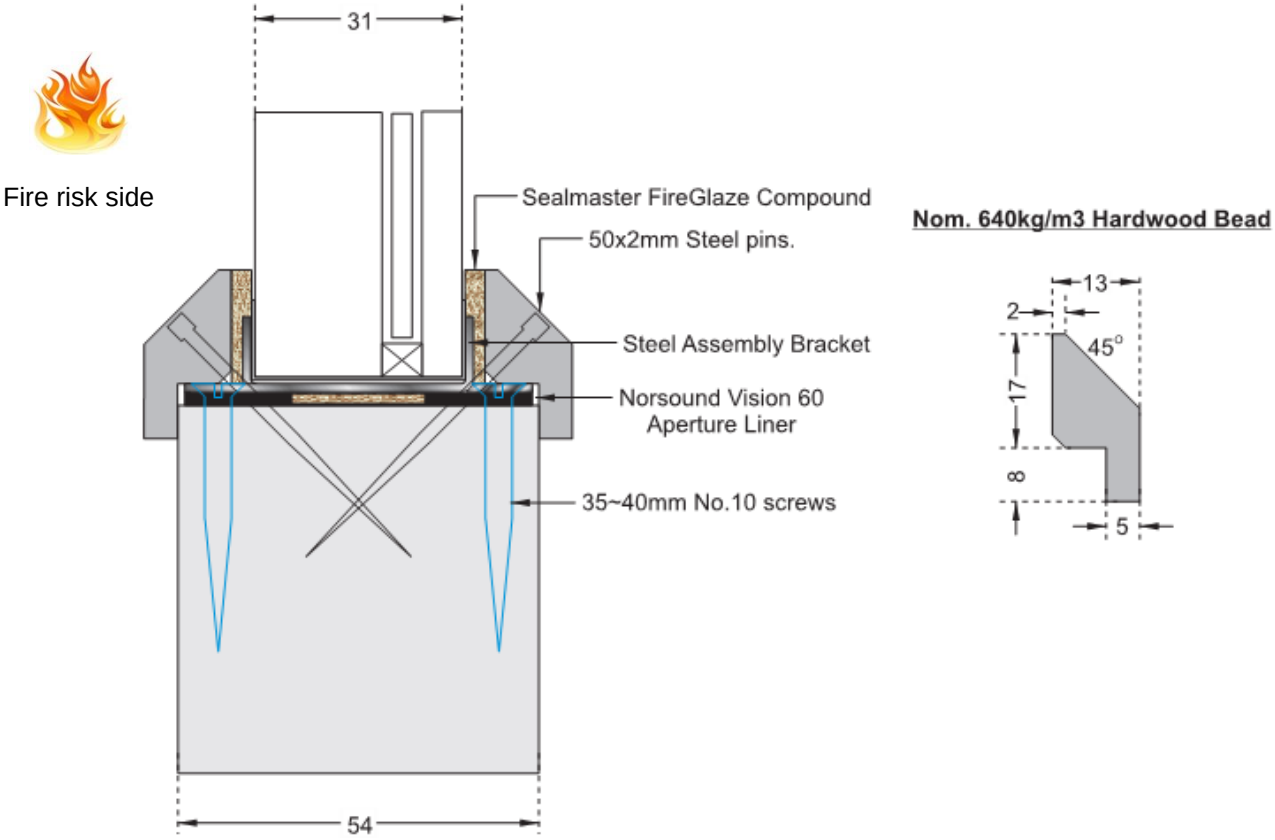
Key:

1. 19mm thick Pyro-EX Toughened Glass
2. 4mm thick Annealed Glass
3. 6mm thick Pyro-EX Toughened Glass
4. 5.5mm thick Stainless-Steel Spacer

The vision panel is retained within the door leaf with either timber or steel beads, which must meet the specifications below:

6.4.1 Timber Beads

Element	Specification
Timber bead material	Hardwood (min. density 640kg/m^3) excluding beech (Fagus species)
Glazing system	4mm thick Fireglaze Compound – Sealmaster Ltd.
Aperture liner	54x2mm Norsound Vision 60 glazing liner – Norseal Ltd.
Around centre glass actuator spindle	2No. 5mm thick (overall) graphite sheet; Ref: 2.5-390 x 10/SA – Norseal Ltd.
Bead fixings	50mm long x 2mm diameter steel pins located at minimum 100mm centres and 50mm from each corner. Fixings must be inserted at 45° to the face of the glass.
Glazing clips	6No. 1.2mm (t) x 52mm (w) x 11.2mm (h) steel assembly bracket glazing clips fitted around the glazing aperture, fixed with 2No. M8 x 40mm long screws per bracket. 2No Glazing clips to each vertical edges 200mm from corners and 1 No. Glazing clip fitted centrally to the top and bottom edges.
Minimum required bead size	25mm (h) x 13mm (d) including a 45° chamfer and a (minimum) 8mm high x 5mm wide bolection return.
Maximum glazed area (m^2)	0.32



Notes:

1. Glazing beads must not be manufactured using beech (Fagus species).
2. Glazed openings must not be less than 100mm from any edge. Multiple apertures are permitted with a minimum dimension of 100mm between apertures.
3. Refer to Section 6.1 for Glazing Aperture Shape restrictions.

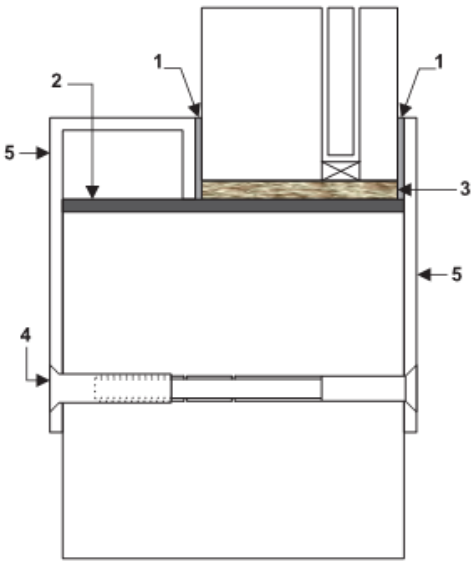
6.4.2 Steel Beads

Element		Specification
Bead material		2mm thick stainless steel
Glazing system		1mm thick Autostic adhesive
Aperture liner		54x2mm Norsound Vision 60 glazing liner – Norseal Ltd.
Around centre glass actuator spindle		2No. 5mm thick (overall) graphite sheet; Ref: 2.5-390 x 10/SA – Norseal Ltd.
Bead fixings		40mm long M6 machine security screws fixed from the exposed face to 12mm long M5 threaded studs welded to the unexposed face bead. The fixings to be located at minimum 200mm centres and 30mm from each corner.
Bead profile	Exposed face	54mm high x 2mm thick
	Unexposed face	54mm high x 22mm deep x 2mm thick
Maximum glazed area (m^2)		0.32

Notes:

1. Glazed openings must not be less than 100mm from any edge. Multiple apertures are permitted with a minimum dimension of 100mm between apertures.
2. Refer to Section 6.1 for Glazing Aperture Shape restrictions.

Fire risk side



1- Autostik mastic between metal and glazing to be confirmed
2- Graphite sheet
3 - 3mm hardwood packer
4-Intumescent mastic to be applied to hole before Through bolt
5 - Metal bracket

7 Door Frame Construction

7.1 Frame Type Details

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

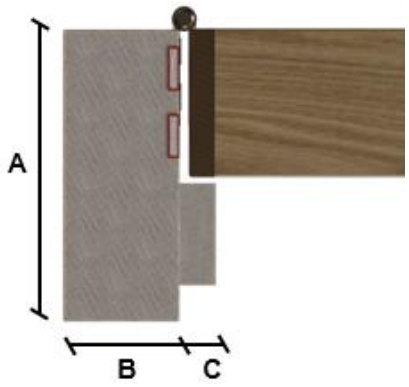
Frame specification			
Frame type	Material	Minimum section size (mm)	Minimum density (kg/m^3)
1	Hardwood The use of Beech (*Fagus species*) is NOT permitted.	Frame: 70 (d) x 32(w) (excluding stop) Stop: 12 (w) (integral or planted on)	640 (Hardwood)
2	MDF	Frame: 70 (d) x 30(w) (excluding stop) Stop: 12 (w) (integral or planted on)	700
3	Simplis Soleco – Steel Frame	1mm Thick Profiled Steel – 180 (d) x 75 (w) Stop: 13 (w)	N/a
4	Ezy Jamb Steel Frame	1mm Thick Profiled Steel – 99 (d) x 47 (w) Stop: 13 (w)	N/a

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

7.2 Details for Frame 1

7.2.1 Standard frame detail

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



A: Frame depth = 70mm minimum

B: Frame width = 32mm minimum

C: Stop width = 12mm minimum

Minimum section size when using a transom overpanel:

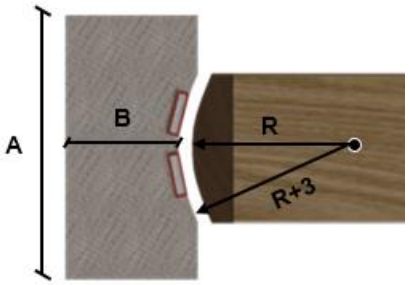
A: Frame depth = 70mm minimum

B: Frame width = 44mm minimum

C: Stop width = 12mm minimum

7.2.2 Scalloped frame detail

The diagram below shows detail of the scalloped frame construction hanging edge only. When using scalloped frames for double acting doorsets, the grooves for the specified intumescent strips must be as shown below and to the correct depth.



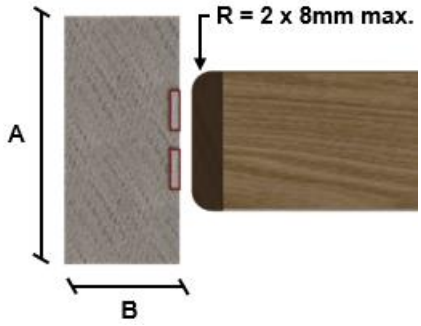
A: Frame depth = 70mm minimum

B: Frame width = 32mm minimum

R: Radius from floor spring or pivot = 8mm maximum to create a maximum 2mm edge profiling

7.2.3 Square frame detail for double acting doorsets

The diagram below shows detail of the square frame construction for the closing edge of a double acting single leaf doorset. Where utilising square frames for double acting doorsets, any radius to the lipping must comply with section 5.3.



A: Frame depth = 70mm minimum

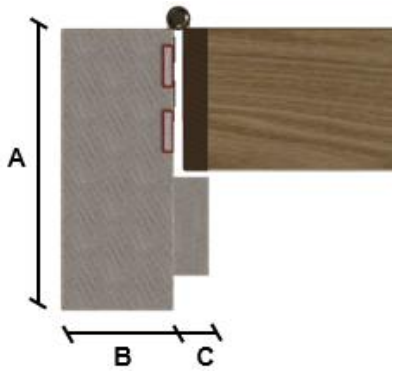
B: Frame width (Jambs) = 32mm minimum

B: Frame width (Head) = 47mm minimum (to fully incorporate the door pivot within the frame head)

7.3 Details for Frame 2

7.3.1 Standard frame detail

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



A: Frame depth = 70mm minimum

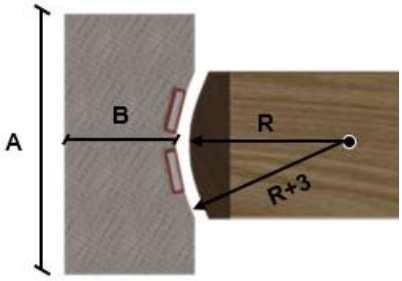
B: Frame width = 30mm minimum

C: Stop width = 12mm minimum

Transoms are not permitted with this frame type.

7.3.2 Scalloped frame detail

The diagram below shows detail of the scalloped frame construction hanging edge only. When using scalloped frames for double acting doorsets, the groove for the specified intumescent strips must be as shown below and to the correct depth.



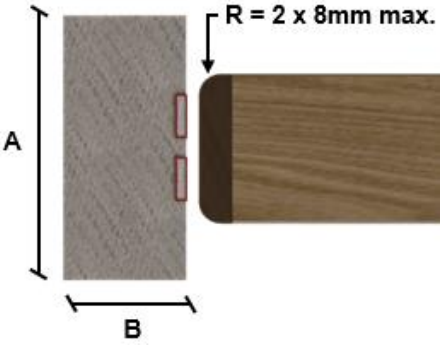
A: Frame depth = 70mm minimum

B: Frame width = 30mm minimum

R: Radius from floor spring or pivot = 8mm maximum to create a maximum 2mm edge profiling

7.3.3 Square frame detail for double acting doorsets

The diagram below shows detail of the square frame construction for the closing edge of a double acting doorset. Where utilising square frames for double acting doorsets, any radius to the lipping must comply with section 5.3.



A: Frame depth = 70mm minimum

B: Frame width (Jambs) = 30mm minimum

B: Frame width (Head) = 47mm minimum (to fully incorporate the door pivot within the frame head)

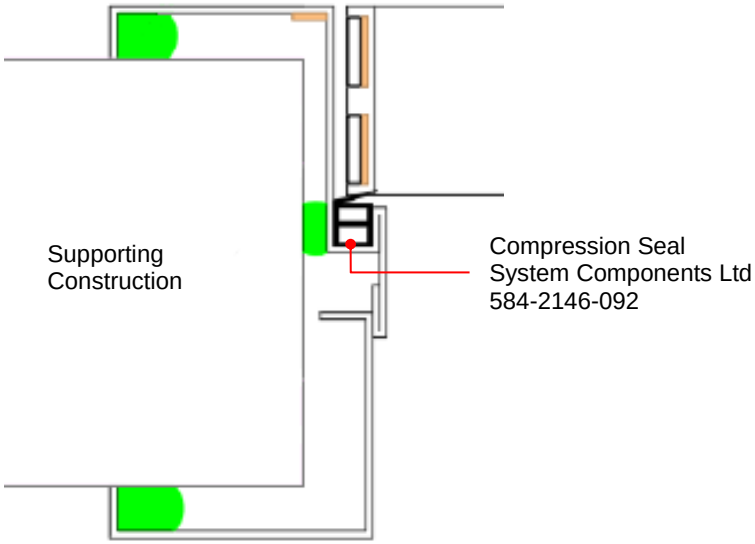
7.4 Details for Frame 3

The following two-piece Simplis Soleco Visible frame steel frame profile has been successfully tested in WF435986 with 54mm thick Strebord and is therefore assessed for use.

The tested frame specification comprised the following.

Material	**Size** (mm)	**Test Report**
1.0mm thick profiled steel	180mm wide x 75mm thick including a 13mm deep integral stop	WF435986 Doorset B

The door frames must be manufactured from steel as tested.



- Intumescent: 2No 20x6mm fitted 5mm apart and 4.5mm from the opening face as tested.
- Refer to section 4.5 for intumescent composition and leaf sizes.
- Maximum threshold gap: 8mm.

7.5 Details for Frame 4

The following two piece Ezy Jamb steel frame profile has been successfully tested with 54mm thick Strebord and is therefore assessed for use.

The tested frame specification comprised the following.

Component	**Material**	**Size** (mm)
Primary & Secondary Frame Sections	1.0mm thick profiled steel	99mm wide x 47mm thick including a 12mm deep x 41mm wide integral stop

The door frames must be manufactured from steel as tested.

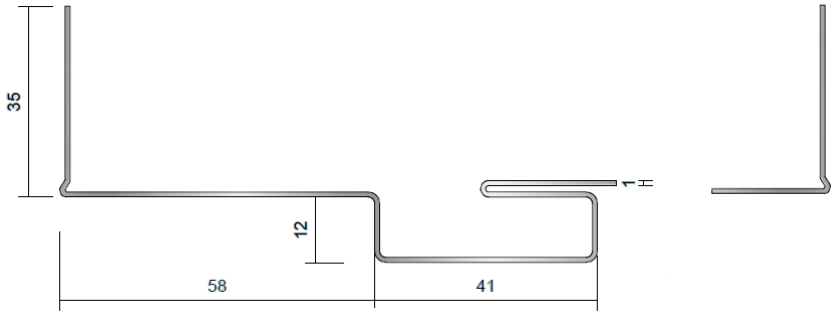
Test WF415618 Doorset B included only the primary component of the EzyJamb system where the primary section was positioned towards the heating conditions.

The EzyJamb EZC Secondary Section slides into the primary section. The secondary section is supplied in 10mm increments to allow for various wall thicknesses.

The two frame components while interlocking, do have a degree of free movement that under heating conditions allows for some independent distortion of each section.

It is therefore the opinion of Warringtonfire that the secondary sections may be included in the frame assembly for supporting partition thicknesses of up to 150mm.

The frame components are shown below:



EzyJamb EZC Primary Section

EzyJamb EZC Secondary Section

Test WF415618 Doorset B incorporated a four sided frame with a raised threshold, detailed in section 7.7.4. Based on the performance of this test a three sided frame option is permitted providing it complies with the following:

- Intumescent: 2No 20x4mm fitted centrally and 10mm apart in the door leaf as tested, see relevant leaf sizes in section 4.5 for details.
- Maximum threshold gap: 8mm

7.6 Thresholds

The following threshold details are permitted for use in conjunction with frame types 1, 2 & 4 with the Strebord® 54 doorsets design, based upon the available test evidence.

7.6.1 Raised Threshold Detail

A raised threshold has been successfully tested with the Strebord® 54 door blank in test reference WF518622 Doorset A is permitted providing it complies with the following:

- Frame: 1 & 2
- Configuration: All single leaf configurations
- Hardwood: minimum density of 640kg/m^3
- Threshold is to be jointed to the frame jambs as detailed in section 7.8.
- Minimum cross sectional dimensions of 95mm deep and between 30 & 45mm thick
- The upstand must be of a suitable 60 minute supporting construction that is capable of supporting the weight of the doorsets. The upstand may raise the frame threshold by no more than 250mm from floor level.
- Minimum 30mm thick x minimum 12mm wide timber stop shall be applied to the threshold element. This may be planted (screwed or pinned) or integral.
- Intumescent: 2No 15x4mm fitted centrally and 10mm apart in the threshold or bottom of the door leaf. The intumescent must be of the same intumescent manufacturer / type as that in the other frame components.
- Maximum threshold gap: 3.5mm

7.6.2 Timber threshold with door stop

Based on the successful raised threshold fire test WF518622 Doorset A, a hardwood timber threshold is permitted providing it complies with the following:

- Frame: 1 & 2
- Configuration: All single leaf configurations
- Hardwood: minimum density of 640kg/m^3
- Threshold is to be jointed to the frame jambs as detailed in section 7.8.
- Minimum cross sectional dimensions of 95mm deep and between 30 & 45mm thick
- Minimum 30mm thick x minimum 12mm wide timber stop shall be applied to the threshold element. This may be planted (screwed or pinned) or integral.
- Intumescent: 2No 15x4mm fitted centrally and 10mm apart in the threshold of bottom of the door leaf. The intumescent must be of the same intumescent manufacturer / type as that in the other frame components.
- Maximum threshold gap: 3.5mm

7.6.3 Timber threshold without door stop

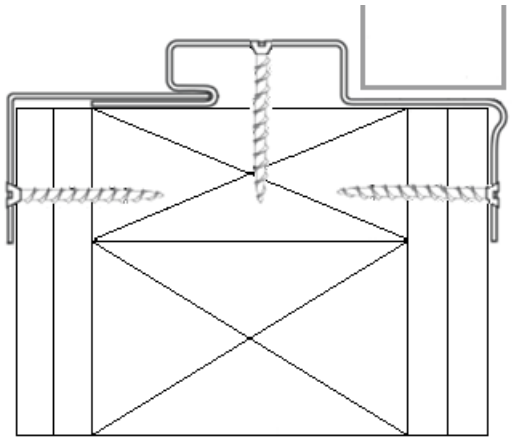
A number of tests, including Strebord® 54 have generally proven the following type of timber threshold for 60 minutes fire resistance performance:

- Frame: 1 & 2
- Hardwood timber of minimum density 640kg/m^3.
- Threshold is to be jointed to the frame jambs as detailed in section 7.8, alternatively, it is permitted to fix the threshold to the notional floor level bedded on a continuous bead of intumescent mastic. Fixings are to be no greater than 100mm from corners and 250mm centres.
- Minimum width of timber 95mm and between 12-25mm thick.
- No intumescent seal fitted to the threshold or bottom leaf edge.
- Maximum threshold gap: 3.5mm

7.6.4 Threshold for Ezy Jamb Metal Frames (Frame Option 4)

The diagram below illustrates the four sided frame detail and raised threshold as tested in fire test WF415618 and is permitted providing it complies with the following:

- Configuration: All permitted configurations for frame 4
- Timber Subframe: Softwood, minimum density of 510kg/m^3
- Minimum width of timber 100mm and between 50mm thick
- The upstand must be of a suitable 60 minute supporting construction that is capable of supporting the weight of the doorsets. The upstand may raise the frame threshold by no more than 100mm from floor level.
- Intumescent: 2No 15x4mm fitted centrally and 10mm apart in the door leaf as tested.
- Maximum threshold gap: 4mm
- Plasterboard facing must be installed to the fire risk face protecting the timber subframe
- For fixing details refer to Section 11.5.3.3
- Opening direction must remain as tested, toward the fire risk side as shown below.



Threshold Upstand Detail

7.7 Door Frame Joints

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

The corners of metal frames (Types 3) are welded. Frame Type 4 use location tabs and slots to allow assembly and site fixing.

Double Rebated Joint

Mitre Joint

Mortice & Tenon Joint

Butt Joint

Trenched or Half Lapped Joint

Approved door frame jointing options

7.8 Decorative Facings

Relatively thin facing materials are deemed to be decorative and their application is not considered to be of detriment to the overall stability or performance of the doorset design.

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

Decorative & Protective Facing Specification		
Facing Material	Maximum Permitted Thickness (mm)	Frame Option
Paint[3]	0.2	1, 2, 3, 4 & 5
Timber veneers	0.7	1,2 & 3

Notes:

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

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

8 Overpanels & Fanlights, Sidepanel & Sidelights

Overpanels, fanlights, sidepanels and sidelights are permitted based on the testing as summarised within section 3, the following sections outline the constructional details of each of the permitted elements and limitations associated with each configuration.

8.1 General

The testing undertaken on the doorset design allows for the application of:

Solid overpanels with three framing options (Modular, Transomed & Flush).

Solid sidepanels with one framing option (Modular).

Glazed fanlights with one framing option (Modular).

Glazed sidelights with one framing option (Modular).

Framing options are detailed in the following section depending on the panel or glazing utilised.

It is possible to utilise both methods of framing within any single doorset design providing the restrictions given in the following sections are adhered to. i.e. it is possible to provide a doorset with a solid overpanel separated by a shared transom with a modular framed sidelight beside it.

8.2 Framing

The following framing options as detailed below are permitted for the doorset design and are permitted depending on solid panel arrangement or glazed fanlight / sidelight utilised. Information on the frame type permitted for the solid panel or glazed element is detailed in sections 8.2.1 – 8.2.3.

8.2.1 Modular Framing

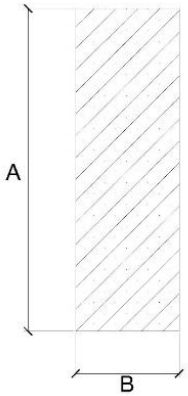
Modular framing for the purpose of this document is considered to be an element (glazing or panel) which is independently framed and fixed to the frame of a doorset design. An example of a modular framed solution is given below.

Single leaf doorset with glazed modular sidelight.

8.2.1.1 Standard Frame Detail (Modular Framing)

The frame listed below is the minimum size and density which has been assessed by this report. The frame must be constructed to meet the following specification for modular units containing solid panels or glazing, the frame section shall meet this specification on all four edges.

Modular Frame specification		
Material	**Minimum section size (mm)**	**Minimum density (kg/m^3)**
Hardwood: (see section 2.1) The use of Beech (*Fagus species*) is NOT permitted.	Frame: 70 (d) x 32 (w)	640



A: Frame depth = 70mm minimum

B: Frame width = 32mm minimum

Notes:

It is possible to include a 3mm x 3mm quirk detail to the rear edges of the frame where the jointing to the door frame or adjacent modular framing element shall occur.

The depth of the modular frame and the door frame shall be equal, this may result in increasing the depth of the permitted door frame to match the modular frame dimension, or vice versa. In all cases the greater dimension shall be used.

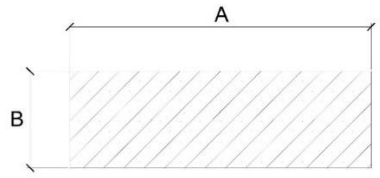
8.2.1.2 Transom or Mullion Detail (Modular Framing)

It is possible to include a single transom within a modular unit applied to the side of a doorset and / or a single mullion within a modular unit applied to the head of a doorset.

When applied the transom or mullion shall meet the following specification:

Modular Frame specification		
Material	**Minimum section size (mm)**	**Minimum density (kg/m^3)**
Hardwood: (see section 2.1) The use of Beech (*Fagus species*) is NOT permitted.	Frame: 70 (d) x 44 (w)	640

The transom or mullion when applied may be mortice and tenon or butt jointed as depicted in section 8.2.1.3. The joints are required to be tight, with no gaps, and require mechanical fixing with 2No. steel screws of a minimum dimension Ø5 x 80mm a minimum of 40mm penetration into the transom section must be achieved.



A: Frame depth = 70mm minimum

B: Frame width = 44mm minimum

Transoms when applied shall not be greater than 1000mm from the centre of the transom to the notional floor level. This may inhibit the use of transoms in some configurations.

Mullions shall not be applied in modular sidepanels or sidelights.

It is possible to include solid panel and glazing arrangements which are permitted as detailed in section 8.3 and 8.4 either side of a transom within a modular unit applied to the side of a doorset subject to the positioning requirement of the transom given above and the maximum permitted glass or panel size given in the following sections.

8.2.1.3 Frame Jointing (Modular Framing)

Below are depictions of the framing joints that are deemed acceptable for corner jointing of modular framing. Please note that the drawings are provided as general illustrations of each type of frame joint; actual construction in terms of intumescent seal location and material, etc. must be as the text within this document specifies.

Double Rebated Joint

Mitre Joint

Mortice & Tenon Joint

Butt Joint

Trenched or Half Lapped Joint

The modular frame joints are required to be tight, with no gaps, and require mechanical fixing with 2No. steel screws of a minimum dimension Ø5 x 100mm a minimum of 40mm penetration into the frame section must be achieved. Frame joints must additionally be reinforced with the adhesives approved for the application frame jointing detailed within section 9.

8.2.1.4 Attachment Technique (Modular Framing)

The modular framing shall be affixed to the door frame or adjacent modular framed units utilising steel screws appropriate for use with timber substrates.

Screws must be fixed between 100mm and 150mm from corners at maximum of 250mm centres from each face. Fixings shall penetrate approximately half of the depth of the adjacent timber section.

8.2.2 Shared framing (Transomed)

Shared framing (Transomed) for the purpose of this document is considered to be when an element (panel) is contained within the frame for the doorset and separated from the door leaf by a shared transom. An example of a transomed solution is given below, though the construction of doorsets shall be as the text in this document specifies.

8.2.2.1 Standard Frame Detail (Transomed)

The permitted frame detail for the doorset shall meet the minimum requirements as outlined in section 7, where applicable. The detail for the permitted transom can be found within section 8.2.2.2 below.

8.2.2.2 Detail for Transom (Transomed)

It is possible to include a transom to separate a panelled overpanel within a door frame from the door leaf. It is not permitted to include a mullion within a doorset which is constructed using the shared framing design. When applied the transom shall meet the following specification:

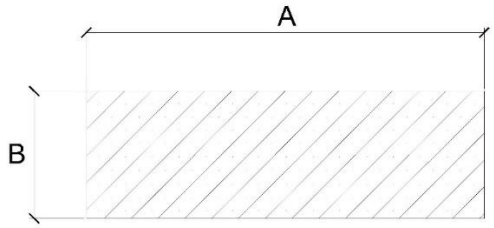
Modular Frame specification		
Frame Type	**Minimum section size (mm)**	**Minimum density (kg/m^3)**
Frame 1	Transom: 70 (d) x 44 (w)	640
Frame 2	Not Permitted	
Frame 3		
Frame 4		

Notes:

When applied the material for the transom shall match the timber species used for the frame surrounding the door frame.

The transom when applied shall be mortice and tenon or butt jointed. The joints are required to be tight, with no gaps, and require mechanical fixing with 2No. steel screws of a minimum dimension Ø5 x 80mm a minimum of 40mm penetration into the transom section must be achieved.

Minimum Section Size – Frame 1



A: Transom depth = 70mm minimum

B: Transom width = 44mm minimum

8.2.2.3 Frame Jointing (Transomed)

The transom when applied shall be mortice and tenon or butt jointed. The joints are required to be tight, with no gaps, and require mechanical fixing with 2No. steel screws of a minimum dimension Ø5 x 100mm a minimum of 40mm penetration into the frame section must be achieved. Frame joints must additionally be reinforced with the adhesives approved for the application frame jointing detailed within section 9.

8.2.3 Flush Overpanels

Based on the testing undertaken on the doorset design it is possible to include solid flush overpanels.

A flush overpanel is where a solid over panel has been included within the door frame and has no additional separating element between the panel and the door leaf or leaves.

Flush overpanels where permitted are detailed within the permitted leaf configurations and require specific perimeter intumescent specifications, these are found within sections 4.5.8, 4.5.9, 4.5.13 & 4.5.14.

8.3 Solid Panels

Solid side and overpanels are permitted for use with the modular framing option given in section 8.2.1 above (Modular Framing).

Solid overpanels are also permitted for use with the shared framing option given in section 8.2.2 above. (Shared Framing).

Solid overpanels are also permitted for use as a flush over panel given in section 8.2.3 above, subject to meeting the requirements outlined within sections 4.5.8, 4.5.9, 4.5.13 & 4.5.14 which detail the required intumescent specification.

8.3.1 Solid Panel Construction (Side or Over Panels)

Based on the testing undertaken on the doorset design, it has been assessed to include the tested core construction as a solid fixed panel. This is because under test conditions the panel will be fixed within the perimeter framing limiting the deflection throughout the test duration and enhancing the expected fire resistance performance which was observed for the door leaf itself. Therefore, the following specification shall be met:

Element	Material	Dimensions (mm)	Minimum Density (kg/m^3)
Core	Three layered solid core particleboard	54 (t)	510kg/m^3 - 650kg/m^3

The panel must be lipped as specified in section 5.3, and the panel shall be constructed of a single board, joints are not permitted within any panels.

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

Decorative & protective facings may be applied to the surface of the solid panels in accordance with section 5.5.

The minimum panel thickness after finishes applied is 54mm.

8.3.2 Intumescent Sealing Arrangement (Side or Over Panels)

Solid side and overpanels when included within a doorset design (in either modular or shared framing) shall include the same intumescent specification as utilised within the door leaf or frame reveal.

Solid flush overpanels shall include the intumescent specification as detailed within sections 4.5.8, 4.5.9, 4.5.13 & 4.5.14 as applicable.

Permitted intumescent specifications are detailed in section 4.5, while there may be multiple options for manufacturer and seal types only one specification can be utilised with any single doorset, and the specification used shall match the specification used on the door leaf.

8.3.3 Fixing Arrangement (Side or Over Panels)

Solid panels must be fixed into the framing solution by steel screws appropriate for the timber-based substrates.

Screws shall be applied nominally centrally to the thickness of the solid panel, through the rear of the frame to all edges and transom reveal where applicable and shall penetrate into the solid panel by at least 30mm.

Fixings must be no more than 100mm from each corner and a maximum of 250mm centres in between.

When fitted the solid panel shall have no greater than 1mm between the panel edge and the adjacent framing element.

Where fitted within shared framing (transomed) the face of the solid overpanel shall be nominally in line with the face of the door leaf.

Where fitted within modular framing the panel may either be nominally in line with the face of the door leaf or centrally within the modular frame depth.

Where fitted in a flush arrangement the face of the solid overpanel shall be in line with the face of the door leaf.

8.3.4 Maximum Dimensions (Side or Over Panels)

Based on the testing undertaken within the doorset design the following maximum dimensions are permitted for any single panel, subject to the doorset not exceeding 2950mm in width including outer framing dimensions.

<table>
<tr><th>Solid Panel & Frame Type</th><th>Height (mm)</th><th>Width (mm)</th></tr>
<tr><td>Flush Overpanel</td><td>600</td><td rowspan="2">Overall doorset width</td></tr>
<tr><td>Overpanel (Shared Framing)</td><td rowspan="3">Up to maximum dimension given in section 4.5 for leaf size based on intumescent specification used.</td></tr>
<tr><td>Overpanel (Modular Framing)</td><td>Overall doorset width (Including Sidepanels if applicable)</td></tr>
<tr><td>Sidepanel (Modular Framing)</td><td>Up to maximum dimension given in section 4.5 for leaf size based on intumescent specification used.</td></tr>
</table>

The overall assembly shall form a rectilinear shape.

8.4 Glazed Fanlights & Sidelights

Based on the testing detailed within section 3, it has been possible to consider the use of glazed fanlights and sidelights with the modular framing given in section 8.2.1 above.

All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.

8.4.1 Glass types & Glazing Systems

The glazing system must have a Certifire certificate – Valid at the date of manufacture of the doorset which has been written in accordance with Warringtonfire Testing and Certification Ltd Technical Schedule 25. More information on the use of Certifire approved glass and glazing systems can be found within section 8.4.2.

The dimensions of any single glazed aperture must not exceed that stated below, nor shall the entire assembly exceed 2950mm wide x 2950mm high for any single doorset including the dimension of the door frame, overpanels, fanlights, sidepanels and sidelights.

8.4.2 Certifire Approved Glass & Glazing Systems

Glass and glazing systems with a Certifire certificate – valid at the date of manufacture of the doorset which has been written in accordance with Warringtonfire Testing & Certification Ltd Technical Schedule TS25 - may be utilised to glaze fanlights and sidelights for use with the doorset design, subject to the following.

- The chosen Certifire approved glass and glazing system must detail that it is suitable for use for 60 minutes fire resistance performance within a timber screen.
- Certifire approved glass and glazing systems may be utilised with the doorset design providing they are able to be applied in a self-contained modular frame.
- The modular frame must meet or exceed the specification for modular frames given within section 8.2.1 above, however, must be fixed to the doorset or adjacent modules in the manner specified in section 8.2.1.4.
- Where a Certifire certificate is utilised to justify fanlights and / or sidelights, the full requirements given within that certificate for the frame (which may require an increase in dimensional requirements given in section 8.2.1 for example), glass type, glazing system and glass retention method specified must be complied with.
- Parameters in section 8.4.1 above relating to the overall dimension of the doorset design including fanlight and sidelight modules must not be exceeded.
- Bead Fixings - The required pin or screw specification as given in the supporting Certifire certificate must be used, alternatives fixing details are not permitted.
- The doorset assembly must remain rectilinear.

9 Adhesives

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

Element	Product/Material Type
Door blank core	Manufacturer's Specification
Timber lipping	UF, PU or hotmelt PUR
"T" Angled Lipping	PVAc, UF, PU or hotmelt PUR
Decorative Facings	UF, PU, PVA, hotmelt PUR & CR
Frame Jointing	UF, PU & PVA

The list below provides the acronyms for the adhesive types used within this report, with other commonly used references:-

UF = Urea Formaldehyde (Plastic Resin Glue)

PU = Polyurethane

PUR = Polyurethane (Reactive)

PVA = Polyvinyl Acetate (PVAc, Polyethenyl Ethanoate)

CR = Polychloroprene Rubber (Contact Adhesive, Neoprene)

10 Hardware

10.1 General

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

- Latches & locks: Test Standard EN 12209
- Single axis hinges: Test Standard EN 1935
- Controlled door closing devices: Test Standard EN 1154
- Electrically powered hold-open devices: Test Standard EN 1155
- Door co-ordinators: Test Standard EN 1158
- Emergency exit hardware: Test Standard EN 179
- Panic exit hardware: Test Standard EN 1125.

Where an item of hardware is not covered by the scope of a relevant harmonised or designated standard, and cannot therefore be UKCA or CE Marked, inclusion of the hardware is only permitted with this doorset design, if it meets the specific requirements of the appropriate section within this Field of Application (i.e. supporting test evidence and specification). All items of hardware must be fitted in accordance with requirements of this assessment.

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

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

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

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

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

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

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

10.2 Intumescent to Hardware

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

The door gap perimeter intumescent seal specifications are documented in conjunction with the leaf envelope size limitations in section 4.5.

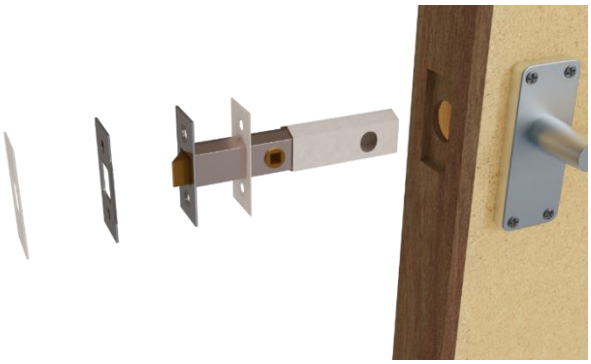
Hardware Intumescent Specification		
Item	**Location**	**Product/Manufacturer**
Butt or Lift Off Hinges	For frame options 1 or 2	1. 1mm Interdens - Dufaylite Developments Ltd. 2. 1mm MAP paper - Lorient Polyproducts Ltd. 3. 1mm Pyrostrip 300 - Mann McGowan Fabrications Ltd. 4. 1mm Therm-A-Strip - Intumescent Seals Ltd 5. 1mm NOR910 – Norsound Ltd. 6. 1mm STS Graphite – Sealed Tight Solutions Ltd
	For frame option 3	1. 1mm MAP paper - Lorient Polyproducts Ltd.
	Frame Option 1 with PVC Edge Protectors	1. 2mm Interdens
Concealed Hinges	Refer to Section 10.8.2 for intumescent details	
Lock/latches	Under forend & keep for all double leaf doorsets	1. 1mm Interdens - Dufaylite Developments Ltd. 2. 1mm MAP paper - Lorient Polyproducts Ltd. 3. 1mm Pyrostrip 300 - Mann McGowan 4. 1mm Therm-A-Strip - Intumescent Seals Ltd. 5. 1mm NOR910 – Norsound Ltd.1 *(see note 1 below for restrictions)* 6. 1mm STS Graphite – Sealed Tight Solutions Ltd 7. STS DIN 60 Kit - Sealed Tight Solutions Ltd *(Refer to Section 10.2.1.1 for installation details and restrictions)*
	Under forend & keep for all single leaf doorsets	1. 1mm Interdens - Dufaylite Developments Ltd. 2. 1mm MAP paper - Lorient Polyproducts Ltd. 3. 1mm Pyrostrip 300 - Mann McGowan 4. 1mm Therm-A-Strip - Intumescent Seals Ltd. 5. 1mm NOR910 – Norsound Ltd.1 *(see note 1 below for restrictions)* 6. 1mm STS Graphite – Sealed Tight Solutions Ltd 7. STS DIN 60 Kit - Sealed Tight Solutions Ltd – *(Refer to Section 10.2.1.1 for installation details and restrictions)*
	Under latch strike and keep for all doorsets with PVC Edge Protectors	1. 2mm Interdens
Concealed overhead closers	Refer to Section 10.9.3.1 for Single Action Closer intumescent details Refer to Section 10.9.3.2 for Double Action Closer intumescent details	

Hardware Intumescent Specification		
Item	**Location**	**Product/Manufacturer**
Top pivots & & bottom straps	Refer to Section 10.9.4 for intumescent details	
Flush bolts	Encasing the entire body of the flush bolt including the back surface of the face plate	1. 1mm MAP paper - Lorient Polyproducts Ltd. 2. 1mm Pyrostrip 300 - Mann McGowan

Notes:

1. The maximum latch forend size for use with 1mm NOR910 is 155mm high by 25mm wide.

Example of hinge protection detail



Example of lock & latch protection detail

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

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

10.2.1.1 STS DIN 60 Kit – Sealed Tight Solutions

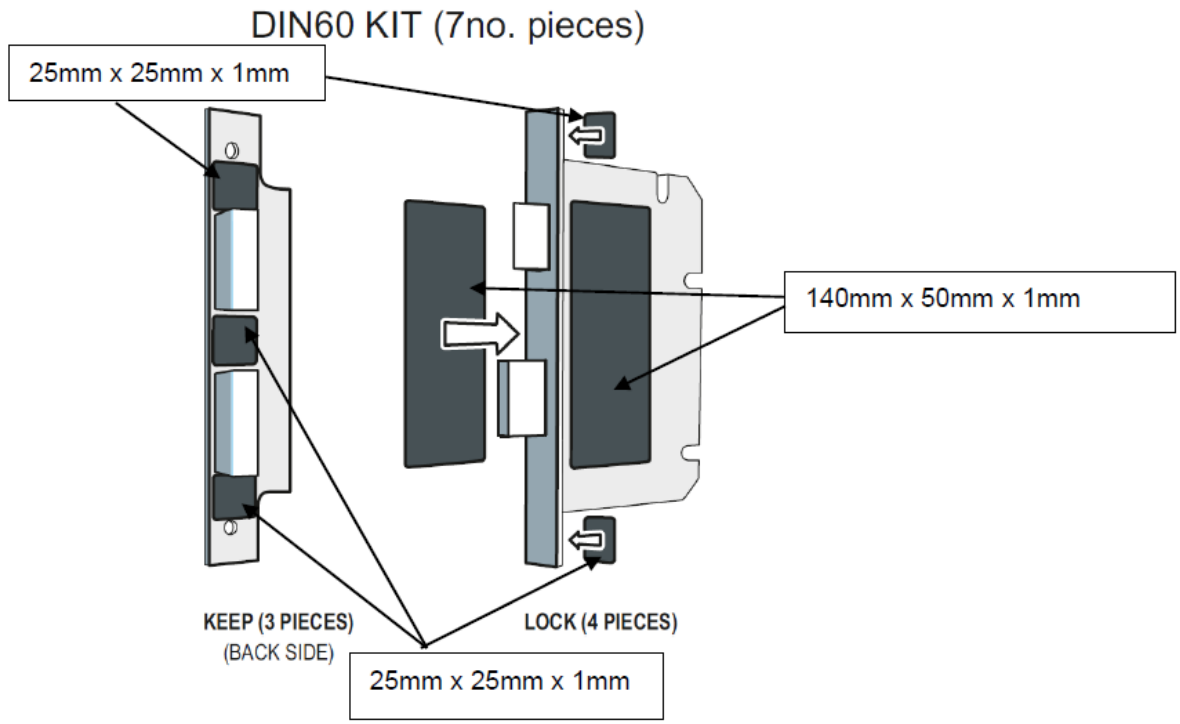
The STS DIN 60 Kit is only permitted for use where a minimum of 2No perimeter intumescent seals are installed with a minimum of 7.5mm of any graphite-based type of seal running past both sides of the latch forend in the meeting edge of a double leaf door or closing edge of a single leaf door.

For single leaf doorsets where the 2No. seals are fitted in the frame reveal, a minimum total of 15mm of any graphite-based type of seal must run past the strike plate in the frame reveal (e.g. one 15mm(w) strip uninterrupted to run continuous past the strike plate with the other strip fully interrupted, or both 15mm(w) strips partially interrupted but with the total minimum width of each strip equal to 15mm running past both sides of the strike plate.

For smaller locksets, all pieces of the DIN 60 Kit must be fitted to the latch body, forend and strike plate. It is only permitted to trim the gaskets where the pieces supplied with the kit are too large for latch body, forend and strike plate. The pieces must be trimmed tight to the edges (i.e. the amount of intumescent protection is increasing relative to the size of the latch or lock).

It is permitted to cut essential holes to allow for cylinders and spindles etc, providing the hole is cut tight to the aperture required.

The STS DIN 60 Kit is depicted below, including dimensions of the individual pieces to be fitted to the lock body, forend and strike:



10.3 Essential Hardware

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

Configuration	Hardware
LSASD	• Latch • Handle • Hinges • Self-closing device (closer)
ULSASD	• Hinges • Self-closing device (closer)
DASD	• Top pivot & bottom strap • Self-closing device (closer)
LSASD+OP	• Latch • Handle • Hinges • Self-closing device (closer)
ULSASD+OP	• Hinges • Self-closing device (closer)
LSADD	• Latch • Handle • Hinges • Self-closing device (closer) • Flush bolt
ULSADD	• Hinges • Self-closing device (closer)
DADD	• Top pivot & bottom strap • Self-closing device (closer)
LSADD+OP	• Latch • Handle • Hinges • Self-closing device (closer) • Flush bolt
ULSADD+OP	• Hinges • Self-closing device (closer)

10.4 Latches & Locks

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

10.4.1 Single Point Engagement

The details within this section outline tested and assessed single point locks and latches that are morticed centrally (unless fire tested in an offset position) within the door leaf thickness and are to be used in conjunction with the handles and escutcheons detailed in section 10.7, along with cylinders detailed in section 10.4.3.

Locks and latches to be used in conjunction with electronic hardware and access control are detailed independently within section 10.6.

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

Element	Manufacturer & Product Reference
Locks & latches	• Zoo Hardware ZDL7260RSS (WF523041 Doorset B) • Rutland RDL-ESL-55-SSR (CFR2104282) • Eurospec Easi-Exit DLS7260ESC (WF413865) • ASSA Abloy EL160_100180 mortice latch (WF435986 Doorset B) • Zoo tubular latch (Chilt/RF12077 Doorsets A, B & C) • Henderson Hardware 63mm tubular mortice latch (Chilt/RF99113 & Chilt/RF00169) • E*S tubular mortice latch (Chilt/RF07035 & Chilt/RF05035)

Single Leaf doorsets

Frame option: 1 & 2

Alternatively, Certifire approved components certified for use within 60-minute fire resistance applications on 54mm thick timber door and timber frames with the following specification are also deemed acceptable for single leaf doorsets.

Element	Specification
Maximum forend and strike plate dimensions	235mm high x 25mm wide x 4mm thick
Maximum body dimensions	165mm high x 100mm wide x 18mm thick
Intumescent protection	see section 10.2
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel, stainless steel or brass with a melting point ≥ 800^0 C
Location[1,2]	Zone 1 - Between 750 – 1200mm from the threshold[3]
	Zone 2 - Between 1201 – 1875mm from the threshold[3, 4]

Notes:

1. A single lockcase may be positioned in either of the two location zones specified above.

2. A maximum of 2 latches or locks may be included within the same leaf provided there is a minimum of 200mm between lock forends or keeps. The locks must be located within the height limitations from the threshold as defined in the table above.
3. Threshold is defined as the bottom edge of the leaf.
4. Locks and latches in Zone 2 must always be fitted with intumescent gaskets under the forend and keep and on all sides of the mortice for the lock using one of the intumescent gaskets noted in section 10.2 (excluding the STS DIN 60 Kit).

Single leaf doorsets

Frame option: 3

Certifire approved components certified for use within 60-minute fire resistance applications on 54mm thick timber door and steel frames with the following specification are also deemed acceptable for single leaf doorsets.

Element	Specification
Maximum forend and strike plate dimensions	85mm high x 25mm wide x 4mm thick
Maximum body dimensions	75mm high x 25mm wide x 18mm thick
Intumescent protection	see section 10.2
Location	Zone 1 - Between 750 – 1200mm from the threshold

Single leaf doorsets

Frame option: 4

Certifire approved components certified for use within 60-minute fire resistance applications on 54mm thick timber door and steel frames with the following specification are also deemed acceptable for single leaf doorsets.

Element	Specification
Maximum forend and strike plate dimensions	160mm high x 25mm wide x 4mm thick
Maximum body dimensions	138mm high x 100mm wide x 18mm thick
Intumescent protection	see section 10.2
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel, stainless steel or brass with a melting point ≥ 800^0 C
Location	Zone 1 - Between 750 – 1200mm from the threshold

Note:

The lockcase dimensions permitted above are based on test WF415618 doorsets B which included concealed hinges. At the forend sizes permitted above the amount of intumescent material protection present at the lock location would be the same as that tested protecting the concealed hinges. The Strebord® 54 door blank has shown in various tests that when tested with various items of morticed hardware protected with intumescent the leaf design is capable of achieving in of the 60 minute integrity requirement.

Double leaf doorsets

Frame option: All frame Options

Certifire approved components certified for use within 60-minute fire resistance applications on 54mm thick timber door and timber frames with the following specification are also deemed acceptable for double leaf doorsets.

Element	Specification
Maximum forend and strike plate dimensions	235mm high x 25mm wide x 4mm thick
Maximum body dimensions	165mm high x 100mm wide x 18mm thick
Intumescent protection	see section 10.2
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel, stainless steel or brass with a melting point ≥ 800^0 C
Location[1,2]	Zone 1 - Between 750 – 1200mm from the threshold[3]
	Zone 2 - Between 1201 – 1400mm from the threshold[3, 4]

Notes:

1. A single lockcase may be positioned in either of the two location zones specified above.
2. A maximum of 2 latches or locks may be included within the same leaf provided there is a minimum of 200mm between lock forends or keeps. The locks must be located within the height limitations from the threshold as defined in the table above.
3. Threshold is defined as the bottom edge of the leaf.
4. Locks and latches in Zone 2 must always be fitted with intumescent gaskets under the forend and keep and on all sides of the mortice for the lock using one of the intumescent gaskets noted in section 10.2 (excluding the STS DIN 60 Kit).

10.4.2 Latches & Locks – Multi Point Engagement

These items are suitable in the following applications only:

Frame option: 1

Configurations: LSASD

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

Element	Manufacturer & Product Reference
Locks & latches	1. Winkhaus AV2 (BMT/FEP/F14233 AR1 Doorset B)

Notes:

1. When the Winkhaus AV2 multi-point latch is fitted, the leaf perimeter edge intumescent must be as tested in fire test WF518622 Doorset A. Further justification is provided within section 4.5.5.2.
2. Leaf size envelope is restricted to that shown in Section 4.5.5.2.
3. Lorient Polyproducts 1mm thick MAP Intumescent protection is required to be fitted:
   a. Lining the sides of all latch bodies.
   b. Under all latch keeps.

4. The centre, top and bottom keep plates must be the same size and must be manufactured from the same material as tested. The strike element of the keep plates may feature a flat, 45° or 90° leading edge, as supplied by the lock manufacturer.
5. The top and bottom hook locks must be engaged for fire performance.
6. In all instances the location of the handle must be between 800–1200mm from the threshold.

10.4.3 Cylinders

These items are suitable in the following applications only:

The table below details the tested cylinders that are approved.

Element	Manufacturer & Product Reference
Cylinder	• Zoo Hardware cylinder Ref. V5EP80CTPBE (WF417777 & WF415618 Doorset B) • ATK attack series TS008 3* KM586153 cylinder (WF435986 Doorset B) • ERA high security 3 star cylinder, with thumb turn (CFR2201122) • Assa Abloy CY326 half cylinder (CFR2109152) • Brisant ULTION 3* PLUS cylinder (WF523041 Doorset B)

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

- Where required for use with either single or multi point latches, the cylinder must be constructed of either brass or steel with a melting point in excess of 800^0C.
- The cylinder must be compatible with the lock/latch.
- Cylinder dimensions may be up to 33mm high x 17mm wide at the maximum dimension and may be of euro profile or oval.
- Single and double cylinders, along with cylinder & turn are permitted.
- Door preparation for single cylinders shall penetrate only half the door thickness.
- Intumescent protection and tightness of fitting:
    - If the lock body is not protected with an intumescent material, the maximum clearance between leaf and cylinder is 1mm to each edge.
    - If the lock body is protected with an intumescent material, maximum clearance between leaf and cylinder is 3mm to each edge.
    - 1mm thick MAP or non-pressure forming graphite intumescent around the cylinder is optionally permitted.

10.5 Cable Loops

The cable loop detailed in the following section has been successfully tested with the Strebord ® 54 door blank and is therefore suitable for use within the scope stated herein.

10.5.1 Assa Abloy EA280

This item has been successfully tested in test reference WF386959 and CFR2109152, with cable channels, and is suitable for use within the following scope:

- Frame: 1 & 2 – for minimum section size refer to Cableway options in section 5.8.
- Door configuration: LSASD, LSADD
- Intumescent protection:
  (a) Sealed Tight Solutions - Graphite ST302 liner trimmed to suit, 2 mm fitted under the forend and lining the cut out.
  (b) Intumescent Seals Ltd, 2mm thick Therm-A-Strip, fitted to all faces of the body and to the rear of the forend.
- May be used with cableways which must be fitted and protected as detailed in section 5.8.
- Minimum of 2No 15x4mm fitted centrally and 10mm apart in the frame hanging jamb(s), such that both strips are only partially interrupted at the cable loop with at least 10% remaining.
- Cable loop must be fitted no higher than 1150mm from the bottom of the door jamb(s).
- Cable loop must not be within 100mm of hinge or other items of hardware along the frame jamb.

10.6 Electronic Hardware & Access Control

10.6.1 GEM GK700 Electric Strike

The GEM GK700 electric strike has been successfully tested in test reference WF386959 Doorset B which comprised a latched single action double leaf doorset with the strike set in fail locked mode.

The GEM GK700 electric strike may be fitted provided the intumescent protection and other details are restricted to the following parameters:

- Frame Option: 1 (Hardwood only) – with minimum section size of 32mm thick x 70mm deep (excluding stop).
- Door configuration: LSASD, LSADD.
- Intumescent protection:
  - 2mm Sealed Tight Solutions 2mm graphite intumescent gasket around all mortices of the keep.
  - Graphite based intumescent strip – minimum of 2No 15x4mm fitted centrally and 10mm apart in the frame hanging jamb(s) or meeting stile of double leaf doorsets, such that both strips are only partially interrupted at the cable loop with at least 10% remaining.
  - Strike must be fitted no between 750 & 1120mm from the bottom of the door jamb.
- Alternative strikes from the GEM GK700 range are permitted provided the dimensions are smaller than or as tested in WF386959 Doorset B.
- The electronic strike can be used in conjunction with a cableway as described in section 5.8.
- The electronic strike is to be installed following the electronic strikes manufacturers guidance, taking into account the necessary details for fire resistance as stated above.

10.6.2 Assa Abloy EL560 Electronic Mortice Lock

The following Assa Abloy electronic lock and associated hardware have been successfully tested in test reference CFR2109152, as follows:

Element	Manufacturer & Product Reference

Lockcase	• Assa Abloy EL560
	  ○ Forend: 235x24x3mm forend
	  ○ Body: 168.5x93x60mm
	  ○ Backset: 60mm

Strike	• Assa Abloy EA322 strike
Cylinder	• Assa Abloy CY326 half cylinder
Handles	• Assa Abloy: INOXI 3-19SS / DH072

The Assa Abloy EL560 electronic lock may be fitted provided the intumescent protection and other details restricted to the following parameters:

- Frame Option: 1
  - Minimum frame section size: Minimum 32mm thick x 75mm deep for frame head and jambs (excluding stop).
- Door configuration: LSASD and LSADD
- Location: Between 750 – 1200mm from the threshold.
- Intumescent seals:
  a. Frame reveal (LSASD) and meeting edges (LSADD): 2no. 15x4mm minimum, graphite, positioned central to the leaf thickness and spaced 10mm apart.
- Intumescent protection: Intumescent Seals Ltd, 1mm thick Therm-A-Strip, around the latch body and under the latch forend and keep.
- The maximum permitted lock body and backset dimensions must not exceed those tested in fire test CFR2109152.

Note: A second (mechanical only) single point engagement lock is permitted, for details refer to section 10.4.1.

10.6.3 Maglocks

These items are suitable in the following applications only:

Frame options: 1

Configurations: All configurations

The Securefast Slimline surface mounted magnetic lock has been successfully fire tested in test reference WF414533 on both the exposed and unexposed faces of the door leaf and are approved for use on the proposed door designs when restricted to the following parameters:

- Minimum frame section size
  - Minimum 40mm thick x 102mm deep for frame head and jambs (excluding stop) for the frame component that houses the maglock.
  - Minimum 32mm thick x 102mm deep for other frame components (excluding stop).
- The armature plate may be bolted through the head of the door leaf.
- Maximum Permitted Maglock Body Dimensions: 250 (l) x 47 (w) x 26 (d)
- Intumescent Protection: None required

Alternatively, maglocks which have supporting fire resistance test evidence when applied to a timber-based door leaf in a timber frame which has achieved greater than 60 minutes integrity performance when tested to BS 476: Part 22: 1987 or EN 1634-1, may be fitted, providing the installation does not require the removal of any timber from the leaf, stop or frame reveal and it does not interfere with the self-closing action of the door leaf.

The fitting of mag locks is not considered to change the latching arrangement of the doorset and therefore the permitted leaf size shall be established using unlatched doorset configurations as detailed within section 4.5 where no further mechanical latch is fitted.

10.6.4 CQR Maximal FC620 Flush Contact

The CQR Maximal FC620 Door Contacts were included in the successful fire test WF386959 Doorset B and are approved for use on the proposed door designs when restricted to the following parameters:

- Frame Option: 1
  - Minimum frame section size: Minimum 32mm thick x 75mm deep for frame head and jambs (excluding stop).
- Door configuration: LSASD and LSADD
- Intumescent seals: Frame reveal and meeting edges: 2no. 15x4mm minimum, graphite, positioned 10mm apart.
- The door contact may be fitted in the:
  a. Head of the door leaf at a minimum of 300mm from the vertical edges.
  b. Vertical edges of the door leaf at a minimum of 300mm down from the leaf head.
- The door contact must be positioned centrally in the 10mm space between the two intumescent strips.
- Intumescent protection: None required

10.6.5 Arrone AR525-MC Digi Lock

Based on fire test WF518622 – Doorset A the above tested and assessed electro-mechanical locksets are permitted for use with the doorset design subject to the following parameters:

- Frame Option: 1 (Hardwood only) – with minimum section size of 32mm thick x 70mm deep (excluding stop).
- Configurations: LSASD, ULSASD
- The frame intumescent shall consist of a specification which has a minimum of 2No. 15mm x 4mm intumescent seals applied centrally within the frame jambs 10mm apart.
- The frame must be fitted with a stop of minimum 12mm.
- Intumescent Protection: 1mm Mann McGowan Pyrostrip Interdens around the latch body, under forend and keep.
- Locks may be fitted between 700mm – 1600mm from the floor level to the spindle.

Note: The Arrone AR525-MC Digi Lock may be included as a second single point engagement lock, for details refer to section 10.4.1.

10.7 Handles

The table below details the tested handles that are approved.

Element	Manufacturer & Product Reference
Handles	• Arrone: AR961/60-SP-SSS-SS304 (WF518622 – Doorset A) • Hoppe: Paris lever handle (CFR2104282 & CFR2201122) • Assa Abloy: INOXI 3-19SS / DH072 (CFR2109152) • Zoo Hardware: ZCS2030SS (WF417777) • Zoo Hardware: ZCS030RSS (WF415618 Doorset B)
Escutcheons	• Zoo Hardware: ZCS001S (CFR2112211) • Zoo Hardware: VS001 (WF415618 Doorset B)

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

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

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

- Lever on rose with a rose diameter up to 54mm
- Lever on back plate with a back plate size up to 243mm high x 56mm wide
- Lever handle length 250mm

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

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

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

10.8 Hinges

10.8.1 Butt and Lift Off Hinges

Frame options: 1, 2 & 3

The table below details hinges that have been successfully tested in the Strebord® 54 door assembly system for 60 minute applications and are approved:

Element	Manufacturer & Product Reference
Hinges	• Royde & Tucker H101 (Chilt/RF13082, Chilt/RF13111, Chilt/RF13242 & WF386959 Revision A - Doorset B) • Royde & Tucker H102 (Chilt/RF10011 Doorset B) • Royde & Tucker H105 (Chilt/RF99113, Chilt/RF00169, Chilt/RF02020, Chilt/RF07035 & Chilt/RF08051) • Royde & Tucker H207 (TA087-9&10 – Doorset B) • Zoo Hardware Ltd: ZHSS243S & ZHSS243RS (CFR2112211 & WF523041 Doorset B) • Hoppe AR812 & AR8180 (WF518622 – Doorset A) • Eurospec HIN1433/13SSS/R (WF413865)

This Field of Application also considers hinges tested in similarly constructed timber-based door assemblies where the evidence is made available to the sponsor.

Hinges are permitted for use with all single acting doorset configurations.

Based on the dimensions of the hinges tested in the Strebord® 54 doorset design, hinges which meet the following specification are acceptable, providing the hinges have been tested to BS 476: Part 22: 1987 or BS EN 1634-1 in a timber door assembly having a maximum 54mm thick door leaf and achieved a minimum of 60 minutes.

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

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

In all instances, the hinge positioning must be the following specifications:

Element		Specification	
Hinge positions:	If 3 hinges are required:	Top	100 –180mm from the head to top of hinge
		2nd	Minimum 200mm from top hinge or centrally fitted between top and bottom hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
	If 4 hinges are required (Refer to Point 1 below):	Top	100-180mm from the head to top of hinge
		2nd & 3rd	Equispaced between top and bottom or 2nd hinge 200mm from top hinge and 3rd hinge equally spaced between 2nd and bottom hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
Intumescent protection:		See section 10.2	

Notes:

1. Frame Option 3 requires a minimum of four hinges.
2. Leaves less than 2400mm (h) must be hung on a minimum of 3 hinges. Leaves greater or equal 2400mm (h) must be hung on 4 hinges.
3. For Frame types 1 & 2, Certifire approved hinges approved for 60 minutes in an ITT door assembly (i.e. a door assembly containing intumescent, a timber frame and a timber leaf) are acceptable providing all the requirements for intumescent and frame are complied with.
4. For Frame type 3, Certifire approved hinges approved for 60 minutes in an ITM door assembly (i.e. a door assembly containing intumescent, a metal frame and a timber leaf) are acceptable providing all the requirements for intumescent and frame are complied with.
5. Additional intermediate hinges may be included within door assemblies in between the hinges required for the leaf as specified in the table above, provided there is a minimum 100mm between hinges. Where intermediate hinges are introduced, their positioning may influence 2nd and 3rd hinge parameters. No more than 5 hinges at the hanging edge of doorsets may be fitted and providing the spacing requirements of this assessment can be met.
6. Rising butt hinges are not assessed for the Strebord 60 minute doorset system.

10.8.2 Concealed Hinges

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

Element	Manufacturer & Product Reference	Frame Type
Concealed Hinges	• Simonswerk Tectus TE527FR (WF414533)	1
	• Arrone AR8990-60 3D (WF525485)	1
	• Atomika Karakter (WF415618 Doorset B)	4

10.8.2.1 Simonswerk Tectus TE527FR

Frame options: 1

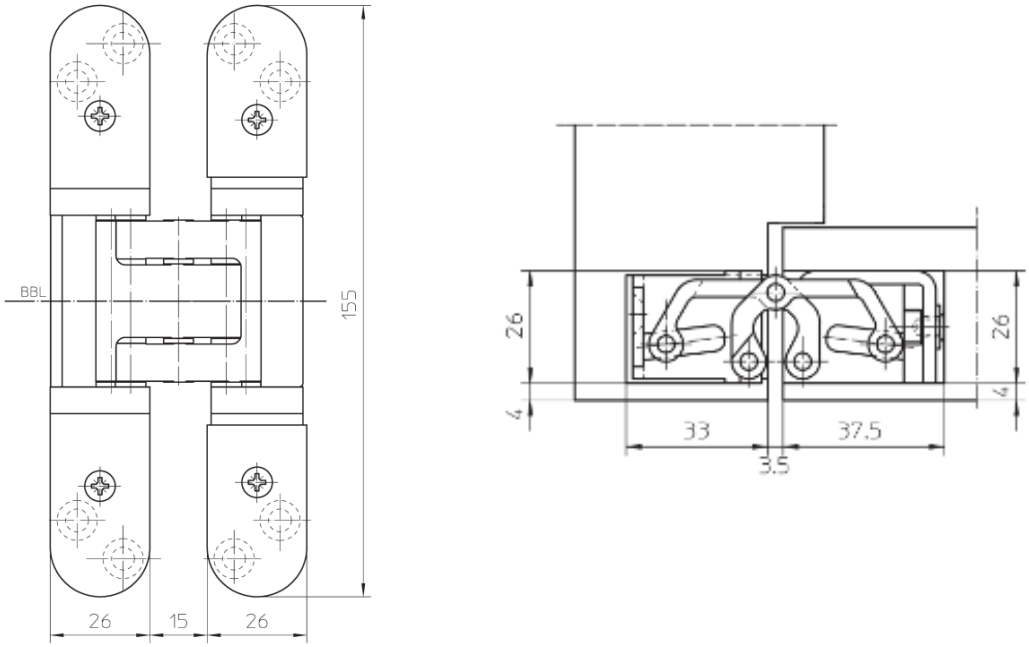
Element	Specification
Maximum Blade height:	155mm
Maximum Blade width	26mm
Maximum Blade Depth	33mm into frame, 37.5mm into door leaf.
Fixings:	Minimum of 4 No. fixings per hinge blade. The manufacturers supplied fixings must be used.
Materials:	Steel or stainless steel
Intumescent	Hinge manufacturer supplied Graphite kit – Ref 8820

In all instances, the hinge positioning must be the following specifications:

Element		Specification	
Hinge positions:	If 3 hinges are required:	Top	200 - 220mm from the head to the centre of hinge
		2nd	Centrally fitted between top and bottom hinge
		Bottom	195 - 220 from the foot of leaf to bottom of hinge
	If 4 hinges are required:	Top	200 - 220mm from the head to top of hinge
		2nd & 3rd	Equispaced between top and bottom or 2nd hinge 200mm from top hinge and 3rd hinge equally spaced between 2nd and bottom hinge
		Bottom	195 - 220 from the foot of leaf to bottom of hinge

Note:

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



Simonswerk Tectus TE527FR Dimensional Data

The hinges must be fixed in accordance with manufacturer's instructions including using the supplied hinge fixings and instructions for morticing and taking into account the necessary details for fire resistance as stated above.

The mortice for concealed hinges must no closer than 50mm to any aperture, recessed area or other mortice within the door leaf.

The minimum permitted frame thickness excluding stop is 44mm.

10.8.2.2 Arrone AR8990-60 3D

Frame options: 1

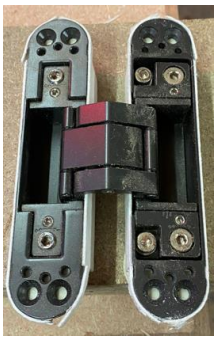
Assessed frame profiles are:

- Type 1 with a minimum thickness of 32mm, not including the doorstop and must be a minimum density of 640kg/m^3.

Note:

- The material of the Arrone AR8990-60-3D hinges must remain as tested.
- The mortice must be as tight to the hinge body as is compatible with its operation.
- Fixings for the hinges must be those supplied and tested with the hinges.
- The hinges must be fixed in accordance with manufacturer's instructions including using the supplied hinge fixings and instructions for morticing and taking into account the necessary details for fire resistance as stated above.
- The mortice for concealed hinges must no closer than 50mm to any aperture or other mortice or recessed area within the door leaf.
- The hinges may be used in conjunction with a twin strip perimeter graphite based intumescent arrangement (minimum dimensions 15 x 4).
- Intumescent protection as shown in the table below must be installed for the Arrone AR8990-60 3D hinge.

The following tables define the permitted intumescent protection and installation details required for use with the tested Arrone AR8990-60 3D hinges.

Element		Specification	
Hinge positions:	If 3 hinges are required:	Top	150 - 180mm from the head to the centre of hinge
		2nd	Centrally fitted between top and bottom hinge
		Bottom	180 - 250 from the foot of leaf to bottom of hinge
	If 4 hinges are required:	Top	200 - 220mm from the head to top of hinge
		2nd & 3rd	Equispaced between top and bottom or 2nd hinge 200mm from top hinge and 3rd hinge equally spaced between 2nd and bottom hinge
		Bottom	195 - 220 from the foot of leaf to bottom of hinge
Intumescent protection:		Mann McGowan 1mm Pyrostrip, encasing the both the frame and door leaf bodies as illustrated below. 	

Note:

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

10.8.2.3 Atomika KaraKter K8080

Frame options: 4

Element	Specification
Maximum Blade height:	160mm
Maximum Blade width	28mm
Maximum Blade Depth	31.5mm into frame, 34mm into door leaf.
Fixings:	Minimum of 4 No. fixings per hinge blade. The manufacturers supplied fixings must be used.
Materials:	Steel or stainless steel
Intumescent	Manufacturer Lorient, 1mm Graphite encasing the hinge body in the door leaf only (refer to image below).

In all instances, the hinge positioning must be the following specifications:

Element		Specification	
Hinge positions:	If 3 hinges are required:	Top	200 - 220mm from the head to the centre of hinge
		2nd	Centrally fitted between top and bottom hinge
		Bottom	195 - 220 from the foot of leaf to bottom of hinge
	If 4 hinges are required:	Top	200 - 220mm from the head to top of hinge
		2nd & 3rd	Equispaced between top and bottom
		Bottom	195 - 220 from the foot of leaf to bottom of hinge

Note:

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

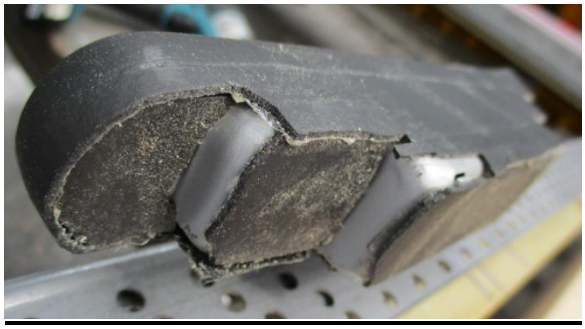
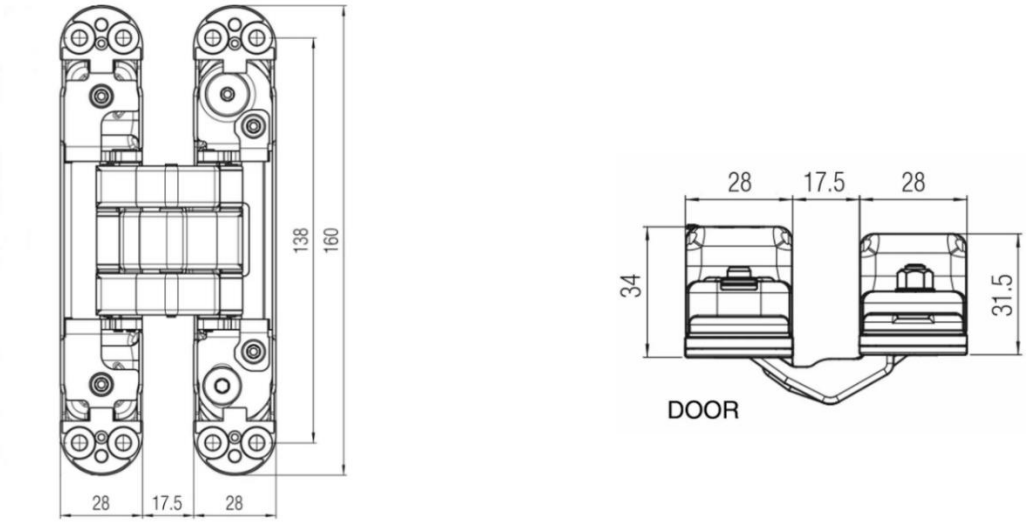


Image showing intumescent protection applied to the hinge body (leaf blade only)



Atomika KaraKter K8080 Dimensional Data

The hinges must be fixed in accordance with manufacturer's instructions including using the supplied hinge fixings and instructions for morticing and taking into account the necessary details for fire resistance as stated above.

The mortice for concealed hinges must no closer than 50mm to any aperture, recessed area or other mortice within the door leaf.

10.9 Doorset Self Closing

Doorset automatic self-closing can be provided by:

- Overhead face fixed closers
- Concealed jamb mounted closers
- Concealed overhead closers
- Floor springs with top pivots and bottom straps

Automatic doorset self-closing devices such as transom mounted closers, and offset pivots used with floor springs are not considered acceptable for use with the Strebord® 54 Doorsets.

10.9.1 Overhead Face Fixed Closer

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

Element	Manufacturer & Product Reference
Overhead face-fixed closers	• Dorma TS73V • Dorma TS83V • Rutland TS3204 • Rutland TS4204 • Rutland TS.24 Ezykam • Rutland TS5024 • Rutland TS5204BC

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

For frame types 1, 2 & 3:

- Certifire approved overhead face-fixed closers for 60-minute fire resistance applications on 54mm thick timber door with timber frames (ITT).

For frame types 4 & 5:

- Certifire approved overhead face-fixed closers for 60-minute fire resistance applications on 54mm thick timber door with steel frames (ITM).

Note:

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

10.9.2 Frame Jamb Mounted Closer

Frame options: 1 & 2

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

Element	Manufacturer & Product Reference
Jamb mounted concealed closer	• Astra Door Controls - Astra 4003 (WF413865)

The Astra 4000 series concealed jamb mounted closer, must be installed in accordance with the manufacturer's instructions. The minimum specifications detailed below must also be complied with.

Based on the tested door construction, the Astra 4000 series jamb mounted closer, may only be used within the following specifications:

Door configuration:

- All single acting configurations without flush overpanels.

Leaf:

- The leaf core thickness must be a minimum of 53.2mm excluding facings.
- Lipping – the Astra 4000 series must be used with 8-15mm (t) hardwood or Strelip® lippings at the vertical edges as a minimum (all other lipping details are to be according to section 5.3)

Frame:

- Frame 1 Only, Hardwood timber of minimum density of 640kg/m^3. Beech (Fagus species) is not permitted.
- The frame must have a minimum thickness of 32mm.

Door Dimensions:

- Maximum leaf size is as for the Type 617 envelopes in section 4.5, where 2No. 15 x 4mm seals are specified at the perimeter. Intumescent location and protection for the closer must be as detailed in this section (see below)

Perimeter intumescent seals:

- 2No. 15 x 4mm Type 617 – Lorient Polyproducts centrally fitted within the frame reveal spaced 10mm apart.
- Both seals are partially interrupted with a minimum of 4mm width of both seals running past the face plate in the frame reveal
- 1mm (t) Therm-A-Strip – Intumescent Seals Ltd must be fitted to encase the closer body in the door leaf and be fitted under the forend and keep.

Location:

- The closer must be located between 800mm and 1000mm from the bottom edge of the leaf.

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

- Certifire approved jamb mounted closers for 60-minute fire resistance applications on 54mm thick timber door with timber frames (ITT).

Note:

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

10.9.3 Concealed Overhead Self Closing Device

10.9.3.1 Single Action Doorsets

The following overhead single acting concealed closers have either been directly tested in the Strebord 54 door design or have been assessed based on test evidence on a fundamentally similar door design. The test evidence is cited in Section 3 of this report.

The following construction requirements (e.g. frame profile, lipping, perimeter intumescent, gaskets) must be followed for each of the closer options and the details below take precedence over the specification given for those specific items elsewhere in this report.

Overhead concealed closers are not permitted with steel frames.

10.9.3.1.1 Dorma ITS 96 3-6 with G96 EMF arm & channel

The Dorma ITS 96 3-6 with G96 EMF arm & channel has been successfully tested and detailed in the test report referenced WF379042 summarised in Section 3 of this report.

Based on the tested closer and slide channel, the Dorma ITS 96 2-4 concealed closer option and the alternative slide channels listed below are considered acceptable:

Dorma ITS 96 closer option:

- Dorma ITS 96 2-4
- Dorma ITS 96 3-6 (as tested)

Dorma ITS 96 arm & channel options:

- G96 N
- G96 N20
- G96 EMF (as tested)

The above alternative closer and slide channels are acceptable as they are of smaller dimensions and would therefore require a smaller section of timber material to be removed from the leaf and frame head for their installation, which is considered to be less onerous in terms of fire resistance performance.

The closers and slide channels are to be installed in accordance with the manufacturer's instructions, including the tested and approved spindle length as supplied by Dorma. The minimum specifications detailed below must also be complied with.

Based on the tested door construction, the Dorma ITS 96 concealed closers and slide channels referenced above may only be used within the following specifications:

Leaf:

- The leaf core thickness must be a minimum of 53.2mm excluding facings.
- Lipping – the Dorma ITS 96 concealed closers may be used with leaves without lipping at the head or with lipping between 6-15mm thick at the head of the door leaf

Frame:

- Frame Type 1 only
- Hardwood timber frames of minimum density of 640kg/m^3. Beech (Fagus species) is not permitted.
- When using the G96 EMF slide channel – the frame head must have a minimum thickness of 44mm, excluding the door stop. The frame jambs must be a minimum thickness of 32mm, excluding the door stop.
- When using the G96 N or G96 N20 slide channels – all frame elements must have a minimum thickness of 32mm, excluding the door stop.
- A minimum of 20mm deep rebated or 20mm thick planted doorstop is required at the frame head.

Note: for all slide channels, a minimum of 10mm thick timber must remain at the back of the mortice in the frame head in order to provide sufficient material for the slide channel fixings.

Door configuration:

- All single acting configurations without flush overpanels.

Door Dimensions:

- Maximum leaf size is as for the Pyroplex envelopes where 2No. 15 x 4mm seals are specified at the perimeter, in the following sections:
    - Section 4.5.5.1 - LSASD
    - Section 4.5.6.1 - ULSASD
    - Section 4.5.10.1 - LSADD
    - Section 4.5.11.1 - ULSADD

Intumescent location and protection for the closer must be as detailed in this section.

Perimeter intumescent seals:

- 2No. PVC encased Pyroplex Rigid Box 8700 (Fire Only seal), 15mm wide x 4mm thick. Alternatively, one of the two seals may be Rigid Box 8724 which includes a single flipper (per Certifire approval CF355).
- Seals must be fitted centrally, 10mm apart in the frame head and jambs. 1st seal (from the opening face) may only be partially interrupted by the channel with at least 10mm of the seal running continuous. 2nd seal may be fully interrupted by the channel.

Note: If using Rigid Box 8724 as one of the two seals, the 8724 seal must be the 1st seal which is to be only partially interrupted.

Intumescent protection:

- Closer: 1mm thick Interdens® intumescent kit supplied by Dormakaba, covering all concealed faces of the closer body and behind the faceplate.
- Slide channel: 2mm thick Interdens® intumescent kit supplied by Dormakaba, covering all concealed faces of the slide channel.

10.9.3.1.2 Synergy Hardware Ltd - Synergy S1000

The Synergy S1000 concealed overhead closer has been successfully tested and is detailed in the test report referenced WF324426 Issue 3, summarised in Section 3 of this report.

The Synergy S1000 concealed overhead closer and slide channel are to be installed in accordance with the manufacturer's instructions, including the tested and approved spindle length as supplied by Fortress Industrial. The minimum specifications detailed below must also be complied with.

Based on the tested door construction, the Synergy S1000 concealed closer and slide channel referenced above may only be used within the following specifications:

Slide channel:

The Synergy S1000 closer is approved with the following tested slide channel:

- Synergy S1000 guide rail - 31 x 20mm

Leaf:

- The leaf core thickness must be a minimum of 53.2mm excluding facings.
- Lipping – the Synergy S1000 concealed closer may be used with leaves without lipping at the head or with lipping between 6-15mm thick at the head of the door leaf.

Frame:

- Frame Type 1 only
- Hardwood timber frames of minimum density of 640kg/m^3. Beech (Fagus species) is not permitted.
- The frame head must have a minimum thickness of 37mm, excluding the door stop. The frame jambs must have a minimum thickness of 32mm, excluding the door stop.
- A minimum of 40mm (w) x 20mm (d) rebated or 20mm (t) planted doorstop is required at the frame head.

Note: for the slide channel, a minimum of 10mm thick timber must remain at the back of the mortice in the frame head in order to provide sufficient material for the slide channel fixings.

Door configuration:

- All single acting configurations without flush overpanels.

Door Dimensions:

- Maximum leaf size is as for the Therm-A-Seal envelopes where 2No. 15 x 4mm seals are specified at the perimeter, in the following sections:
    - Section 4.5.5.1 - LSASD
    - Section 4.5.6.1 - ULSASD
    - Section 4.5.10.1 - LSADD
    - Section 4.5.11.1 - ULSADD

Intumescent location and protection for the closer must be as detailed in this section.

Perimeter intumescent seals:

- 2No. PVC encased Therm-A-Seal, 15mm wide x 4mm thick
- Seals must be fitted 10mm apart and centrally in the frame head and jambs. The first seal is to be located 7mm from the closing face. The seals in the frame reveal head may be partially interrupted by the slide channel with a minimum width of 5mm of both seals running continuous either side of the slide channel.

Intumescent protection:

- Closer: 2mm (t) Lorient Polyproducts Interdens sheet, lining all sides of the mortice for the concealed closer
- Slide channel: 2mm (t) Lorient Polyproducts Interdens sheet, lining all sides of the mortice for the slide channel in the frame head

10.9.3.1.3 Synergy Hardware Ltd – Synergy 1036

The Synergy S1036 concealed overhead closer has been successfully tested and is detailed in the test report referenced WF375219 Issue 2, summarised in Section 3 of this report.

The Synergy S1036 concealed overhead closer and slide channel are to be installed in accordance with the manufacturer's instructions, including the tested and approved spindle length as supplied by Fortress Industrial. The minimum specifications detailed below must also be complied with.

Based on the tested door construction, the Synergy S1036 concealed closer and slide channel referenced above may only be used within the following specifications:

Slide channel:

The Synergy S1036 closer is approved with the following tested slide channel:

- Synergy S1036 guide rail - 31 x 20mm

Leaf:

- The leaf core thickness must be a minimum of 53.2mm excluding facings.
- Lipping – the Synergy S1036 concealed closer may be used with leaves without lipping at the head or with lipping between 6-15mm thick at the head of the door leaf.

Frame:

- Frame Type 1 only
- Hardwood timber frames of minimum density of 640kg/m^3. Beech (Fagus species) is not permitted.
- The frame head must have a minimum thickness of 37mm, excluding the door stop. The frame jambs must have a minimum thickness of 32mm, excluding the door stop.
- A minimum of 40mm (w) x 20mm (d) rebated or 20mm (t) planted doorstop is required at the frame head.

Note: for the slide channel, a minimum of 10mm thick timber must remain at the back of the mortice in the frame head in order to provide sufficient material for the slide channel fixings.

Door configuration:

- All single acting configurations without flush overpanels.

Door Dimensions:

- Maximum leaf size is as for the Pyroplex envelopes where 2No. 15 x 4mm seals are specified at the perimeter, in the following sections:
    - Section 4.5.5.1 - LSASD
    - Section 4.5.6.1 - ULSASD
    - Section 4.5.10.1 - LSADD
    - Section 4.5.11.1 - ULSADD

Intumescent location and protection for the closer must be as detailed in this section.

Perimeter intumescent seals:

- 2No. PVC encased Pyroplex, 15mm wide x 4mm thick
- Seals must be fitted 10mm apart and centrally in the frame head and jambs. The first seal is to be located 7mm from the closing face. The seals in the frame reveal head may be partially interrupted by the slide channel with a minimum width of 5mm of both seals running continuous either side of the slide channel.

Intumescent protection:

- Closer: 2mm (t) Lorient Polyproducts Interdens sheet, lining all sides of the mortice for the concealed closer
- Slide channel: 2mm (t) Lorient Polyproducts Interdens sheet, lining all sides of the mortice for the slide channel in the frame head.

10.9.3.1.4 Geze Boxer 2-4

The Geze Boxer 2-4 concealed overhead closer has been successfully tested and is detailed in the test report referenced WF414533 summarised in Section 3 of this report.

The Geze Boxer 2-4 closer and slide channel are to be installed in accordance with the manufacturer's instructions, including the tested and approved spindle length as supplied by Geze. The minimum specifications detailed below must also be complied with.

Based on the tested door construction, the Geze Boxer 2-4 concealed closer and slide channels referenced above may only be used within the following specifications:

Slide channel:

The Geze Boxer 2-4 closer is approved with the following tested slide channel:

- Non-hold open single action guide rail for Boxer with lever arm - 20 x 12mm

Leaf:

- The leaf core thickness must be a minimum of 53.2mm excluding facings.
- Lipping – the Geze Boxer 2-4 concealed closers **must** be used with 10-15mm thick lipping at the head of the door leaf Frame:
- Hardwood timber frames of minimum density of 640kg/m^3. Beech (Fagus species) is not permitted.
- Frame Type 1 only, the frame head must have a minimum thickness of 40mm, excluding the door stop. The frame jambs must have a minimum thickness of 32mm, excluding the doorstop.
- A minimum of 45mm (w) 18mm (d) rebated or 18mm (t) planted doorstop is required at the frame head.

Note: for the slide channel, a minimum of 10mm thick timber must remain at the back of the mortice in the frame head in order to provide sufficient material for the slide channel fixings.

Door configuration:

- All single acting configurations without flush overpanels.

Door dimensions:

- Maximum leaf size is as for the Type 617 envelopes where 2No. 15 x 4mm seals are specified at the perimeter, in the following sections:
    - Section 4.5.5.1 - LSASD
    - Section 4.5.10.1 - LSADD

Intumescent location and protection for the closer must be as detailed in this section.

Perimeter intumescent seals:

- 2No. PVC encased Lorient Polyproducts Type 617, 15mm wide x 4mm thick.
- Seals must be fitted centrally, 10mm apart in the frame head and jambs. The seals in the frame reveal head may be partially interrupted by the slide channel with a minimum width of 8mm of both seals running continuous either side of the slide channel

Intumescent protection:

- Closer: 1mm (t) intumescent kit supplied by Geze, covering all concealed faces of the closer body and 1mm (t) gasket to top face plate of closer in leaf head
- Slide channel: 1mm (intumescent kit supplied by Geze, covering all concealed faces of the slide channel).

10.9.3.1.5 Hoppe AR7383

The Hoppe AR7383 concealed overhead closer has been successfully tested and is detailed in the test report referenced BMT/FEB/F16012, summarised in Section 3 of this report.

The Hoppe AR7383 concealed overhead closer and slide channel are to be installed in accordance with the manufacturer's instructions, including the tested and approved spindle length as supplied by Hoppe. The minimum specifications detailed below must also be complied with.

Based on the tested door construction, the Hoppe AR7383 concealed closer and slide channels referenced above may only be used within the following specifications:

Slide channel:

The Hoppe AR7383 closer is approved with the following tested slide channel:

- Non-hold open single action guide rail - 23 x 15mm

Leaf:

- The leaf core thickness must be a minimum of 53.2mm excluding facings.
- Lipping – the Hoppe AR7383 concealed closer must be used with lipping between 6-15mm thick at the head of the door leaf.

Frame:

- Frame Type 1 only.
- Hardwood timber frames of minimum density of 640kg/m^3. Beech (Fagus species) is not permitted.
- The frame head must have a minimum thickness of 44mm, excluding the door stop. The frame jambs must have a minimum thickness of 32mm, excluding the doorstop.
- A minimum of 45mm (w) 12mm (d) rebated or 12mm (t) planted doorstop is required at the frame head.

Note: for the slide channel, a minimum of 10mm thick timber must remain at the back of the mortice in the frame head in order to provide sufficient material for the slide channel fixings.

Door configuration:

- All single acting configurations without flush overpanels.

Door dimensions:

- Maximum leaf size is as for the Pyroplex envelopes where 2No. 15 x 4mm seals are specified at the perimeter, in the following sections:
    - Section 4.5.5.1 - LSASD
    - Section 4.5.6.1 - ULSASD
    - Section 4.5.10.1 - LSADD
    - Section 4.5.11.1 - ULSADD

Intumescent location and protection for the closer must be as detailed in this section.

Perimeter intumescent seals:

- 2No. PVC encased Pyroplex, 15mm wide x 4mm thick.
- Seals must be fitted 10mm apart in the frame head and jambs. The first seal is to be located 9mm from the closing face. The seals in the frame reveal head may be partially interrupted by the slide channel with a minimum width of 7mm of the first seal (toward closing face) and 10mm width of the second seal running continuous either side of the slide channel

Intumescent protection:

- Closer: 2mm (t) intumescent kit supplied by Hoppe, covering all concealed faces of the closer body
- Slide channel: 2mm (t) intumescent kit supplied by Hoppe, covering all concealed faces of the slide channel.

10.9.3.1.6 Rutland ITS.11204

The Rutland ITS.11204 concealed overhead closer has been successfully tested and is detailed in the test report referenced TA087-9&10 – Doorset B, summarised in Section 3 of this report.

The Rutland ITS.11204 concealed overhead closer and slide channel are to be installed in accordance with the manufacturer's instructions. The minimum specifications detailed below must also be complied with.

Based on the tested door construction, the Rutland ITS.11204 concealed closer and slide channels referenced above may only be used within the following specifications:

The Rutland ITS.11204 closer is approved with the following tested slide channel:

- Non-hold open single action guide rail - 23 x 15mm

Leaf:

- The leaf core thickness must be a minimum of 53.2mm excluding facings.
- Lipping – the Rutland ITS.11204 concealed closer must be used with lipping between 8-15mm thick at the head of the door leaf.

Frame:

- Frame Type 1 only.
- Hardwood timber frames of minimum density of 640kg/m^3. Beech (Fagus species) is not permitted.
- The frame head must have a minimum thickness of 44mm, excluding the door stop. The frame jambs must have a minimum thickness of 32mm, excluding the doorstop.
- A minimum of 30mm (w) 15mm (d) rebated or 15mm (t) planted doorstop is required at the frame head.

Note: for the slide channel, a minimum of 10mm thick timber must remain at the back of the mortice in the frame head in order to provide sufficient material for the slide channel fixings.

Door configuration:

- All single acting configurations without flush overpanels.

Door dimensions:

- Maximum leaf size is as for the Mann McGowan 500P envelopes where 2No. 15 x 4mm seals are specified at the perimeter, in the following sections:
    - Section 4.5.5.1 - LSASD
    - Section 4.5.6.1 - ULSASD
    - Section 4.5.10.1 - LSADD
    - Section 4.5.11.1 - ULSADD

Intumescent location and protection for the closer must be as detailed in this section.

Perimeter intumescent seals:

- 2No. PVC encased Mann McGowan 500P, 15mm wide x 4mm thick.
- Seals must be fitted 10mm apart in the frame head and jambs. The first seal is to be located 9mm from the closing face. The seals in the frame reveal head may be partially interrupted by the slide channel with a minimum width of 7mm of the first seal (toward closing face) and 10mm width of the second seal running continuous either side of the slide channel.

Intumescent protection:

- Closer & Slide Channel: Rutland IP.114, 2mm intumescent as supplied by Rutland, covering the top of the mechanism and around the slide channel. (t) intumescent kit supplied by Rutland, covering all concealed faces of the closer body

- Slide channel: 2mm (t) as part of the IP.114 intumescent kit supplied by Rutland, covering all concealed faces of the slide channel.

10.9.3.2 Double Action Doorsets

10.9.3.2.1 Rutland ITS.11204 & Rutland PS190 Pivots

The Rutland ITS.11204 concealed overhead closer and Rutland PS190 pivots have been successfully tested and detailed in the test report referenced CFR2109081 Revision 1, summarised in Section 3 of this report.

The Rutland ITS.11204 concealed overhead closer, slide channel and Rutland PS190 pivots are to be installed in accordance with the manufacturer's instructions, including the tested and approved closer spindle length as supplied by Rutland. The minimum specifications detailed below must also be complied with.

Based on the tested door construction, the Rutland ITS.11204 concealed closer, slide channel and Rutland PS190 pivots referenced above may only be used within the following specifications:

Slide channel:

The Rutland ITS.11204 closer is approved with the following tested slide channel:

- Non-hold open single action guide rail - 23 x 15mm

Leaf:

- The leaf core thickness must be a minimum of 53.2mm excluding facings.
- Lipping – the Rutland ITS.11204 concealed closer must be used with lipping between 18-20mm thick at the head and bottom of the door leaf.

Frame:

- Frame Type 1 only.
- Hardwood timber frames of minimum density of 640kg/m^3. Beech (Fagus species) is not permitted.
- The frame head must have a minimum thickness of 44mm, excluding the door stop. The frame jambs must have a minimum thickness of 34mm, excluding the doorstop.

Note: for the slide channel, a minimum of 10mm thick timber must remain at the back of the mortice in the frame head in order to provide sufficient material for the slide channel fixings.

Threshold:

- Maximum gap: 2mm

Test CFR2109081 Revision 1 included a Norseal 620 aluminium threshold, 60 (w) x 5 (d) set between the frame jambs and is therefore approved for use. Alternative aluminium thresholds of a similar construction and not exceeding 60 (w) x 5 (d) are permitted, provided the threshold is capable of maintaining the maximum permitted threshold gap.

Door configuration:

- All double acting configurations without flush overpanels.

Door dimensions:

- Maximum leaf size is as for the ISL Therm-A-Seal envelopes as specified in the following sections:
    - Section 4.5.7.1 – DASD – Envelope Ref. CH7
    - Section 4.5.12.1 – DADD - Envelope Ref. IH7

Intumescent location and protection for the closer must be as detailed in this section.

Perimeter intumescent seals:

Head & Jambs:

- 2No. PVC encased Intumescent Seals Ltd Therm-A-Blade, 20mm wide x 4mm thick.
- Seals must be fitted 10mm apart in the frame head and jambs. The first seal is to be located 9mm from the closing face. The seals in the frame reveal head may be partially interrupted by the slide channel with a minimum width of 7mm of the first seal (toward closing face) and 10mm width of the second seal running continuous either side of the slide channel.

Leaf Head:

- 1No. Intumescent Seals Ltd Therm-A-15x4mm, Fitted centrally in the leaf thickness.

Intumescent protection:

Rutland ITS.11204 Closer

- Closer: 2mm (t) intumescent kit supplied by Rutland, covering all concealed faces of the closer body
- Slide channel: 2mm (t) intumescent kit supplied by Rutland, covering all concealed faces of the slide channel.

Rutland PS190 Pivot Set

- **Top Pivot:** Rutland UK, PS190 pre-cut kit. 1mm thick Mono Ammonium Phosphate set between the top pivot face plate and cover plate.
- **Top Strap:** Rutland UK, 2mm thick graphite based intumescent covering the external face of the top strap.
- **Bottom Strap:** Rutland UK, PS190 pre-cut kit, 6mm thick in total, comprising 3 layers of 2mm thick graphite based intumescent covering the external face of the bottom strap.
- **Floor Pivot:** Rutland UK, IP.114, 2mm thick graphite based intumescent lines the base of the rebate for the bottom pivot plate.

Note:

1. It must be ensured that the concealed overhead closer is of sufficient strength and power to ensure the door leaf/leaves fully engage into the frame reveal.
2. Intumescent protection shall be as detailed within the above table, as tested.
3. The dimensions of the concealed overhead door closer must not exceed the dimensions given within the table above.

10.9.3.2.2 Ruland Self Centring Magnet

The Rutland Self Centring magnet has been successfully tested and is detailed in the test report referenced CFR2109081 Revision 1, summarised in Section 3 of this report.

Frame Type 1 only.

Dimensions

Magnet Body: 31x32x12mm

Coverplate: 65x38x1.3mm

Intumescent Protection:

Rutland IP114, 2mm thick graphite based intumescent.

Minimum Spacing:

Coverplate to leaf edge: 18mm

Distance to other ironmongery: As tested or minimum 200mm from adjacent ironmongery.

Note:

1. The distance between the magnet and closer cannot be reduced from that tested, the **minimum** leaf width permitted when the Rutland Self Centring magnet is installed is 926mm.
2. Flush bolts cannot be used in conjunction with the Rutland Self Centring magnet.
3. The magnet in the frame and door leaf head are recessed in order to permit the intumescent strips to run over the 2mm graphite affixed to the Coverplate. As shown below:

Primary Leaf

Secondary Leaf

Note: The Rutland ITS.11204 has been tested without the self-centring magnets and therefore it is considered by this report that the magnets are optional.

10.9.4 Floor Spring Self Closing Device

Frame options: 1

The following floor spring and pivot set have been tested with the Strebord® 54 door design, they are permitted for use in double acting leaf configurations without flush overpanels.

The table below details the tested pivots that are approved.

Manufacturer & Product Reference	Test Report	Frame Type
Rutland Pivot Set PS190, comprising floor pivot, door top strap, frame top pivot and Rutland TS7104 double acting floor spring	WF417777	1

The following intumescent protection is required for the Rutland PS190 pivots and Rutland Floor spring:

- **Top Pivot:** Rutland UK, PS190 pre-cut kit. 1mm thick Mono Ammonium Phosphate set between the top pivot face plate and cover plate.
- **Top Strap:** Rutland UK, 2mm thick graphite based intumescent covering the external face of the top strap
- **Bottom Strap:** Rutland UK, PS190 pre-cut kit, 6mm thick in total, comprising 3 layers of 2mm thick graphite based intumescent covering the external face of the bottom strap.
- **Floor Spring:** Manufacturers kit fitted under the floor spring cover plate – 1mm thick.

The frame head dimensions must be a minimum of 90mm wide x 44mm deep to accommodate the body of the top pivot.

Alternatively, components with the following specification are deemed acceptable.

- Certifire approved pivot sets and double acting floor springs may be used with the Strebord® 54 door design providing they are approved for 60 minutes, when installed within a minimum 54mm thickness leaf, in an ITT door assembly (i.e. a door assembly containing intumescent, a timber frame and a timber leaf) and providing all the requirements for intumescent and frame detailed in this assessment are complied with. Where the Certifire Certificate identifies the pivot manufacturer's specific intumescent kit this must be used.

Notes:

- Pivots may be used conjunction with their associated double acting floor spring (supplied by the same manufacturer as the pivot set).
- The pivots are to be fitted in accordance with manufacturer's instructions taking into account the necessary details for fire resistance as stated above.
- Offset pivot variations are not allowed by this assessment

10.10 Flush Bolts

These items are suitable in the following applications only:

Configurations: LSADD, ULSADD & DADD

Flush bolts may be incorporated centrally into the top and bottom of one meeting edge, providing the following maximum dimensions are not exceeded and the components are fitted opposite the edge fitted with intumescent strips:

- 205mm long x 20mm deep x 20mm wide.

Flushbolts are:

- Permitted for use with doorsets with transomed overpanels / fanlights.
- Not permitted for use with doorsets with flush overpanels.

Flush bolts must be steel, and the mortice must be as tight to the mechanism as is compatible with its operation. All edges of the mortice of the keep and body must be protected with intumescent gaskets as specified in section 10.2. Alternatively, the hardware manufacturers tested gaskets may be used.

Flush bolt installation and intumescent protection

10.11 Non-Essential Hardware

Only the following items of non-essential hardware are permitted in addition to the prescribed essential hardware as detailed within sections 10.3 – 10.10.

10.11.1 Pull Handles

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

Element	Manufacturer & Product Reference
Pull Handles	• Touchpoint S/S Bolt through -Ø19 x 300mm centres (Test WF518622)

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

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

10.11.2 Push Plates & Kick Plates

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

Element	Manufacturer & Product Reference
Push & Kick Plates	• 1.5mm Stainless Steel (Test WF518622)

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

Approved specification:

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

10.11.3 Security Viewers

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

Element	Manufacturer & Product Reference
Security viewers	• Sealed Tight Solutions Ltd. STS4008 (WF386959 Revision A - Doorset B)

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

- Door security viewers with brass or steel bodies of a diameter less than or equal to 15mm may be used provided that the through-hole is bored tight to the case of the viewer (maximum tolerance +1 mm). Lenses must be glass and the item must be protected with a tested acrylic intumescent mastic.
- Must be fitted no closer than 100mm to door edge, glazing or any other hardware component.
- Maximum height from the bottom of the door leaf must not exceed 1800mm.

It is permitted that 2 No. viewers may be fitted per door leaf provided that they comply with the constructional and location restrictions above.

10.11.4 Air Transfer Grilles

10.11.4.1 General

The following air transfer grilles are permitted based on suitable test evidence to BS 476: Part 22: 1987 or BS EN 1634-1, which is cited in section 3.

10.11.4.2 Pyroplex Air Transfer Grilles

The following Pyroplex air transfer grilles have been considered acceptable for use with the Strebord© 54 door design based on the testing conducted in WF146521 (summarised in Section 3):

Part No.	**Dimensions** (mm)	**Air Flow** (sq. cm)	**Compatible Faceplates**
ATG 1500	150 x 150	153	FP1500
ATG 1503	150 x 300	307	FP1503
ATG 1300	300 x 300	614	FP1300
ATG 2251	112 x 225	161	FP2251
ATG 2250	225 x 225	323	FP2250

Notes:

- The Pyroplex air transfer grilles must be installed in accordance with the manufacturer's installation details, which include a 6mm thick hardwood (excluding beech (Fagus species)) aperture liner and Pyroplex intumescent mastic applied around the perimeter of the grille. Full details can be obtained from Pyroplex Ltd.
- The grilles must be fitted 100mm from the edge of the door leaf and 80mm apart if more than one grille is to be fitted.
- The area occupied by the air transfer grille must be deducted from the area of glazing, if both elements are fitted.
- The grilles may be fitted between 1000mm and 2200mm from the leaf threshold. The aperture cut out for the air transfer grille must be fully contained within this region of the door leaf.

10.11.4.3 Mann McGowan Air Transfer Grilles

The following Mann McGowan air transfer grilles have been considered acceptable for use with the Strebord© 54 door design based on the testing conducted in TA087-910 (summarised in Section 3):

Part No.	**Maximum Dimensions** (mm)
Pyrogrille 25*	300 x 300
Pyrogrille 100*	600 x 600

* Pyrogrille 25 be located between 700mm and 2275mm from the threshold to the top of the grille based on the pressure regime used within the supporting test and the location of the grille within the doors tested.

* Pyrogrille 100 may be located up to 825mm from the threshold to the top of the grille

The aperture cut out for the air transfer grille must be fully contained within this region of the door leaf.

Notes:

- The Pyrogrille air transfer grilles must be installed in accordance with the manufacturer's installation details, which include 2No. 3.8 diameter x 35mm screws per vertical edge located 35mm (Pyrogrille 25) and 55mm (Pyrogrille 100) from the corners. A steel framework is to be fitted on both sides of the grille to the face of the door leaf using 2No. 4mm diameter x 35mm long screws per vertical edge located 55mm (Pyrogrille 25) and 140mm (Pyrogrille 100) from the corners. Full details can be obtained from Mann McGowan Ltd.
- The grilles must be fitted 100mm from the edge of the door leaf and 80mm apart if more than one grille is to be fitted.
- The area occupied by the air transfer grille must be deducted from the area of glazing, if both elements are fitted.

10.11.4.4 Lorient Polyproducts Air Transfer Grilles

The following Lorient Polyproducts air transfer grilles have been considered acceptable for use with the Strebord© 54 door design based on the testing conducted in WF 380214 (summarised in Section 3):

Part No.	**Dimensions** (mm)
LVV40*	600 x 300

* LVV40 must be located at a maximum of 1035mm from the threshold of the door leaf to the top of the air transfer grille aperture, based on the pressure regime used within the supporting test and the location of the grilles within the door.

Notes:

- The LVV40 air transfer grilles must be installed in accordance with the manufacturer's installation details, which include a 6mm (t) hardwood lining to all edges of the aperture, fixed in position using polyurethane adhesive. The grille is to be bedded onto 8mm thick bead of Lorient Intumescent Sealant with a fillet of sealant on both faces at the junction between the liner and the air transfer grille Full details can be obtained from Lorient Polyproducts Ltd.
- The grilles must be fitted 100mm from the edge of the door leaf and 80mm apart if more than one grille is to be fitted.
- The area occupied by the air transfer grille must be deducted from the area of glazing, if both elements are fitted.

10.11.5 Environmental Seals

These items are suitable in the following applications only:

Frame options: 1, 2 & 4

A number of different environmental seals have been successfully tested as part of the Strebord® 54 doorset design. For example, the Lorient IS1212 Batwing seal was successfully tested in timber frame in report Chilt/RF11171 and report WF415618 Doorset B included the Lorient LAS1010 batwing seal with a steel frame.

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

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

10.11.6 Threshold drop Seals

Leaf options: All

Frame options: All

Configurations: All configurations

Drop seals have been successfully tested within the doorset design and are therefore, acceptable for use in the door designs considered herein. The table below details the permitted threshold Drop Seals as tested and summarised within section 3:

Manufacturer & Product Reference (Test Reference)	Body Dimensions H x W (mm)	Intumescent Protection
Norseal NOR810 drop seal (WF414533)	35 x 14	No Intumescent Protection
Lorient Polyproducts LAS8001si (WF435986 Doorset B)	35 x 14	No Intumescent Protection
Mann McGowan DD-1703ACU (CFR2112211)	29 x 13	Mann McGowan, 1mm thick Pyrostrip Interdens to all edges of the rebate between the drop seal casing and the leaf.
Sealmaster 2712 (CFR2109152)	27 x 12	Intumescent Seals Ltd, 2mm thick Therm-A-Strip, fitted to the top and both sides of the drop seal.

Notes:

1. If a rebated drop seal is fitted to the doorset then flush bolts, if approved, may not also be fitted to the bottom of the doorset.

The following alternative drop seals are deemed acceptable, recessed centrally within the leaf thickness in the bottom of the door leaves and fitted with a minimum 1mm thick Interdens or the drop seal manufacturers proprietary gasket to all edges of the rebate between the drop seal casing and the leaf:

Product	Manufacturer
LAS8007/0935A00	Lorient Polyproducts Ltd.
IS8010si	KIlargo – Dorma Kabba
RP8Si	Raven Products Ltd.
NOR810S, NOR810dB+	Norsound Ltd.
STS422, STS422GT	Sealed Tight Solutions Ltd

Alternatively, the components meeting all of the following specifications are also deemed acceptable, recessed into the bottom of leaves:

- Certifire approved threshold drop seals for 60-minute fire resistance applications on 54mm thick timber / cellulosic doors in timber / cellulosic frames.
- The threshold drop seal must not exceed:
    - Body dimensions of 35mm (h) x 14mm (t) and
    - Face plate dimensions of 57mm (h) x 21mm (w) x 1.5mm (t).
- The Certifire certificate shall be adhered to for intumescent protection and fitting requirements.
-

Note: In all instances, if a rebated drop seal is fitted to the doorset then flush bolts, if approved, may not be fitted to the bottom of the doorset.

10.11.7 Letter Boxes / Plates

Based on the proven capability of the Strebord® 54 door design to tolerate apertures for glazing and air transfer grilles, components with the following specification are also deemed acceptable.

- Letter boxes/plates must be Certifire approved for 60 minutes in doorsets with solid timber door leaves. Restrictions relating to size, location and intumescent protection around the letter box/plate detailed within the associated Certifire certificate 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.

10.11.8 Knockers, Numerals & Signage

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

Approved specifications:

Knockers:

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

Numerals & Signage:

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

10.11.9 Fire Door Identification Plates

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

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

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

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

10.11.10 Security Chains

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

Approved specification:

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

10.11.11 Panic Hardware

These items are suitable in the following applications only:

Frame options: 1 & 2

Configurations: All configurations

The table below details the tested panic hardware that is approved.

Element	Manufacturer & Product Reference
Panic Hardware (WF525485)	• Arrone AR515-PK Digilock • Arrone AR200S/10-SP lever handle • Arrone AR8805 OAD External Locking Attachment • Arrone Panic Latch AR882 • Arrone AR885 Panic Outside Access Device

Fire test WF525485 successfully included the Arrone components listed in the table above and these are permitted by this assessment to be installed within the doorsets provided that the following criteria are met:

- The item of panic hardware which controls the latching function must be fitted between 850 -1200mm from the bottom of the door leaf.
- Intumescent materials for surface mounted components is not required.
- The hole through the leaf to facilitate the spindle must be no greater than 20mm
- Machining and intumescent requirements for cylinders must be compliant with the stipulations of Sections 10.4.3.
- Where the operation of the panic hardware is required to co-ordinate with levers and cylinders located on the opening face of the doorleaf or with lockcases morticed into the leaf edges the machining for the cylinder must be in accordance with the details given in Section 10.4.3.
- The inclusion of the panic hardware must not cut into or reduce the perimeter intumescent, except where a single point lock which complies with the requirements of Section 10.4.1. is to be included. Installation of the panic hardware must not interfere with or amend the door to frame gap, essentially the association between the frame, door leaf and door stops must remain unchanged.

- Surface mounted vertical bars are permitted providing the installation does not require the removal of any timber from the leaf, stop or frame reveal and they do not interfere with the self-closing action of the door leaf.

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

- Single or multipoint (for example top and bottom latching locations) surface mounted panic hardware, providing the installation does not require the removal of any timber from the leaf, stop or frame reveal and it does not interfere with the self-closing action of the door leaf.
- Panic exit devices that are Certifire approved to "TS26 – The contribution of Panic Exit Devices to the Fire Resistance of Door Assemblies", for 30-minute fire resistance applications with 54mm thick timber door and timber frames

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

Fitting of the panic hardware must not interfere with the self-closing action of the door leaf

10.11.12 Tuscan Flush Pull Handle

The Tuscan Flush Pull Handle has been considered acceptable for use with the Strebord© 54 door design based on the testing conducted in PF14168 Rev. A (summarised in Section 3):

- Dimensions:
    - 150x150mm (footprint size)
    - 154x154x22mm (recess into door leaf)
- Door configuration: All configurations
- Flush pulls must be a minimum of a distance of 100mm (to the outer edge of the flush pull) from the door leaf edge, apertures or surface mounted or edge or face morticed hardware
- Where handles are recessed into each face of the door leaf they must be staggered, being separated by a minimum of 100mm of leaf core material
- Intumescent Protection:
    - Fitted on the back face of the pull handle:
        - 1mm Therm-A-Line – Intumescent Seals Ltd.
    - Fitted encasing the sides of the pull handle
        - 1mm Therm-A-Flex – Intumescent Seals Ltd.
    - Fitted inside the body of the handle8mm
        - Therm-A-Flex – Intumescent Seals Ltd.

11 Installation

11.1 General

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

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

11.2 Door Frame Installation

Frame options: 1 & 2

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

Permitted Installations	
	Instances where the door frame and the wall of the same depth such that architraves are fitted flush to both faces. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see door frame section. Architraves requirements are documented in the firestopping section of this report.
	Instances where the wall thickness is greater than the door frame depth. In this scenario timber architraves of minimum 18mm thick may be fitted to both faces, fitted with a minimum 15mm overlap to the door gap, other than when the architrave abuts the wall.
	Split frames are permitted providing that both frame sections are secured to the wall in accordance with section 11.5. Furthermore, the main frame section (from which the door is hung) must be constructed to at least the minimum door frame section size (width and depth) as per the requirements noted in this report – see door frame section. The extension piece must be constructed using the same timber species as the main frame section.

Note:

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

Frame option: 3

Refer to section 11.5.3 for Wall Types, Fixity and Firestopping of this frame type.

Frame option: 4

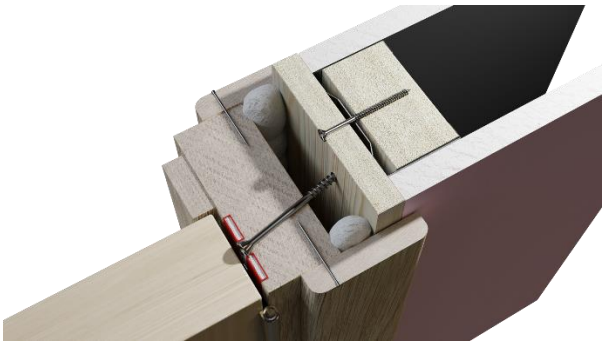
Refer to section 11.5.3 for Wall Types, Fixity and Firestopping of this frame type.

11.3 Firestopping

Frame options: 1 & 2

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

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

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

Frame option: 3

Refer to section 11.5.3 for Wall Types, Fixity and Firestopping of this frame type.

Frame option: 4

Refer to section 11.5.3 for Wall Types, Fixity and Firestopping of this frame type.

11.4 Packers

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

11.5 Wall Types, Structural Opening & Fixity

11.5.1 Wall Types

The following wall types are approved for this doorset design:

For Frame Types 1 & 2: (refer also to section 11.5.3.1)

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

For Frame Types 3 (refer also to section 11.5.3.2)

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

For Frame Types 4 (refer also to section 11.5.3.3)

a) Plasterboard clad timber stud partitions

Wall types a & b above must have supporting fire resistance test evidence which demonstrates that it is capable of staying in place and intact for a minimum of 60 minutes supporting a doorset design.

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

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

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

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

11.5.2 Structural Opening

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

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

11.5.3 Fixity

11.5.3.1 Frames 1 & 2

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

For single leaf doorset without sidepanels, the frame jambs only are to be fixed to the supporting construction using steel fixings at 600mm maximum centres and maximum of 150mm from corner. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm, in the case of timber studs or steel studs with timber inserts, the fixing is permitted to extend beyond the rear face of the timber stud or timber insert. It is not necessary to fix the frame head, although packers must be inserted.

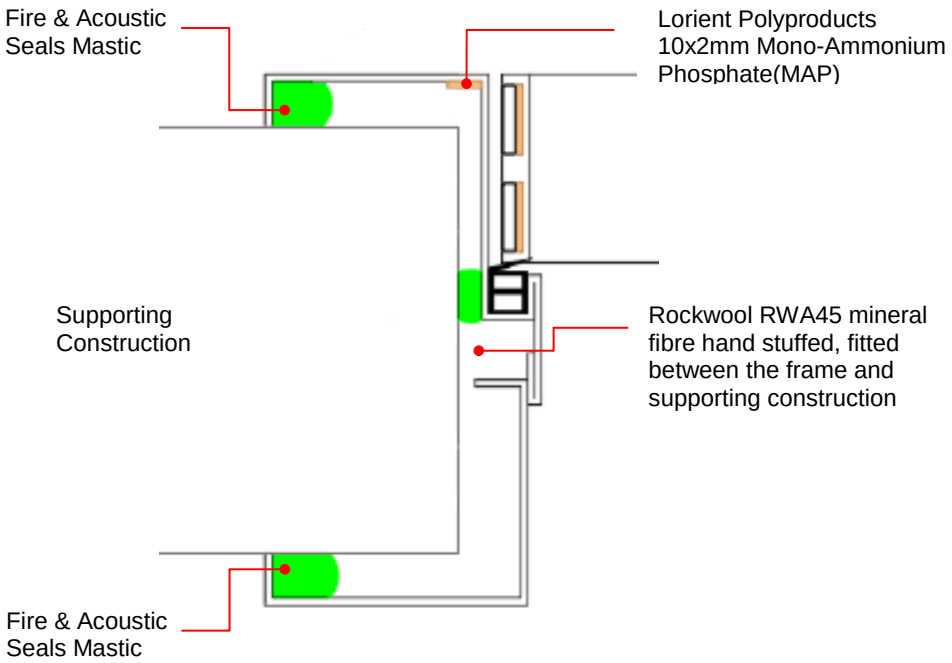
For all other configurations of doorset, the upper horizontal framing section abutting the structural opening must also be secured to the wall using steel fixings at 600mm maximum centres and maximum of 150mm from corner. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm, in the case of timber studs or steel studs with timber inserts, the fixing is permitted to extend beyond the rear face of the timber stud or timber insert.

11.5.3.2 Frame Type 3 - Simplis Soleco Visible frame

Fixing positions for the Simplis Soleco Visible frame are provided via pre-positioned welded tabs. A minimum of three are required per jamb.

The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 40mm.

Details of the firestopping requirements are shown in the diagram below:



11.5.3.3 Frame Type 4 - Ezy Jamb EZC Frame

The installation of the Ezy-Jamb two part frame will require a timber subframe and removal of some material from the supporting construction around the hardware support straps (for example, at hinge and lock locations). The contours of the support straps and hardware must be closely followed as tested in fire test WF415618.

The profiling around the hinge as tested is shown below

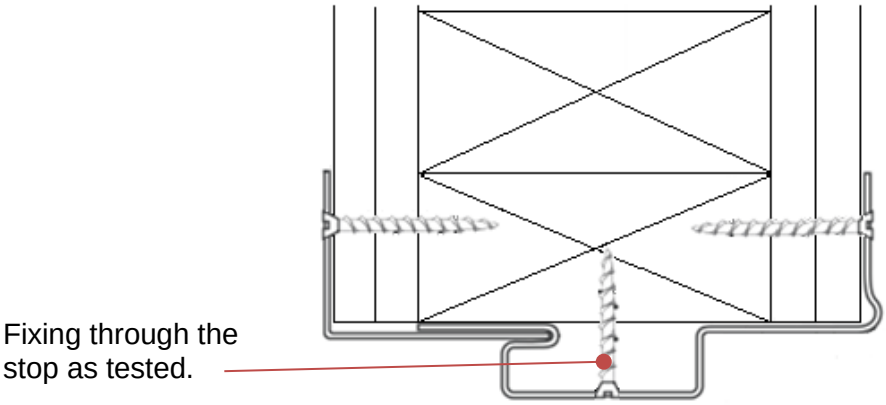
Stepped lining / plasterboard edging at hinge locations.

Other hardware locations will require similar detailing

The gap between the items of hardware as defined above shall be no greater than 5mm.

Installation into timber stud partitions requires twin timber studs and two layers of plasterboard as shown below. Material must not be removed from the inner stud.

The twin stud detail is only applicable when permitted by the wall system.



EzyJamb EZC Frame Installation Examples for Timber Stud Partitions

The Ezy Jamb EZC Concealed Two Part Frame must be fixed as follows:

1. All frame components (including the threshold if four-sided configurations) require twin fixings to be applied at the end of each length of frame and then single fixings at a minimum of 200mm centres. It is permitted to include additional fixings between the 200mm minimum centres if required.
2. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 60mm.
3. An additional fixing must be provided either side of hinge, jamb closers and lock locations.

11.6 Post Production (Onsite) Leaf Size Adjustment

The Strebord® 54 range of doorsets may be altered as follows:

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

11.7 Door Gaps

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

Door Gap & Alignment Tolerance Specification	
Location	Dimension
Door edge gaps	A minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud of each other or from the door frame by more than 1mm.
Bottom of the Leaf These are the maximum tolerances for fire resistance only.	An 8mm gap between bottom of leaf and top of floor covering. The following specific gap requirement, as detailed in section 7.7, takes precedence: Where a timber threshold is installed – 3.5mm between the bottom of the leaf and top of the timber threshold.

12 Insulation Performance

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

Insulation Performance Criteria		
Type		Details
Partially insulating		Doorsets incorporating up to 20% of non-insulating glazing
Fully insulating	Timber frames	Unglazed doorsets or doorsets including 60-minute insulating glazing (if approved)
	Steel frames	Unglazed doorsets or doorsets including 60-minute insulating glazing (if approved)

13 Conclusion

If Strebord® 54 doorsets design, 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 12).

14 Declaration by the Applicant

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

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

Signed: Signed by: 6C3251A35814487...

Name: Josh Clare

Position: Technical Manager

Date: 31-Jan-2025

For and on behalf of: Falcon Timber Limited

15 Limitations

The following limitations apply to this assessment:

1) This field of application addresses itself solely to the elements and subjects discussed and do not cover any other criteria or modifications. All other details not specifically referred to should remain as tested or assessed.
2) This field of application report is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available to Warringtonfire, the assessment will be unconditionally withdrawn, and the applicant will be notified in writing. Similarly, the assessment evaluation is invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence.
3) This field of application has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.
4) Opinions and interpretation expressed herein are outside the scope of UKAS accreditation.
5) This field of application relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions, against the ISO 834 time/temperature curve that is stipulated in the standard this assessment concludes to. It does not purport to be a complete specification ensuring fitness for purpose and long-term serviceability. It is the responsibility of the client to ensure that the element conforms to recognised good practice in all other respects and that, with the incorporation of the guidance given in this field of application, the element is suitable for its intended purpose.
6) This field of application report represents our opinion as to the performance likely to be demonstrated on a test in accordance with BS 476: Part 22: 1987, on the basis of the test evidence referred to in this report. We express no opinion as to whether that evidence, and/or this field of application would be regarded by any Building Control authorities or any other third parties as sufficient for that or any other purpose.
7) This report may only be reproduced in full. Extracts or abridgements of reports shall not be published without permission of Warringtonfire. All work and services carried out by Warringtonfire Testing and Certification Limited are subject to, and conducted in accordance with, the Standard Terms and Conditions of Warringtonfire Testing and Certification Limited, which are available at https://www.element.com/terms/terms-and-conditions or upon request.
8) The version/revision stated on the front of this Field of Application supersedes all previous versions/revisions and must be used to manufacture doorsets from the stated validity date on this front cover. Previous revisions of the Field of Application cannot be used once an updated Field of Application has been issued under a new revision.

16 Validity

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

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

* For and on behalf of Warringtonfire

Appendix A: Revisions

Rev.	BM TRADA Ref.	Date	Description
A	A07067	25.04.07	5 year revalidation and update.
A	A07080	10.05.07	Inclusion of evidence from RF07035 – ISL seals.
B	A08041	02.05.08	5 year revalidation and update into new format. Inclusion of data from RF04002 (steel frames), RF06028 (hardware). Data sheet revised in terms of intumescent seal type and size.
C	A08205	03.10.08	5 year revalidation and update. Inclusion of data from RF08088 (Pyroplex door edge seals), WF148053 and WF146521 (air transfer grilles), WF 155385 Issue 2 (Pyroplex glazing system 30095) and RF08051 (Unilin mill) and RF08161 (Linex mill).
D	A09233	21.12.09	Addition of Nordform steel frame data contained in RF09076, grooves based on IF09145, extension of single door heights based on RF09140 and re-instatement of Type 617 seals, coverage for MDF frames based on RF10011, additional glass types.
E	A13097	12.04.13	Edit to Pyroglaze 60 glazing system diagram to remove pin fixing option.
F	A13156	12.07.13	Addition of CS Group edge protectors and post-formed Acrovyn based on RF11061. Addition of Pilkington Pyroclear based on RF12077. Addition of Pilkington Pyrostop based on RF05035. Addition of AGC Flat Glass Pyrobel based on RF05126. Addition of CGI Pyroguard based on RF11171 and RF12068. Inclusion of Angouma timber for door frames based on RF13056 and RF13082. Included the option to fit the Safehinge™ product. Increased the maximum single leaf dimensions based on RF13111. Addition of Norsound hardware gaskets based on IF13014. Addition of Norsound Universal glazing systems based on IF13061. Addition of Norsound Vision glass based on Chilt/A12161.
G	F14006	03.02.14	Increased glazing apertures and options and increased leaf sizes based on RF13242.
H	F15077	03.07.15	Addition of Streframe glazing beads based on PF14029, a multi-point lock based on PF14233, a flush pull handle based on PF14168 Rev. A, STS glazing system based on PF15035, a Sealmaster drop seal 2712S based on CFR1405071. Also, clarification provided on leaf thickness calibration, amount of lipping trim and screw fixings for hinges.
I	WF 436808	22.12.2020	The assessment has been written into the latest Warringtonfire format and revalidated for a further 6 months based on a review of the evidence contained in Appendix A. The use of beech (Fagus species) has been removed as a hardwood option

J	WF 506240	12.07.2021	Review and revalidation of assessment for an additional 1 year validity. Assessment has included updates to the scope for Pyroguard EW60 (11mm) and Pyroshield 2 glass by aligning the glass and glazing systems permitted with the relevant Certifire certificates
K	WF 520759	1.07.2022	Review and revalidation of assessment for an additional 7months validity. The assessment has been updated with additional test evidence to justify specific scope within the assessment (e.g. Strelip engineered hardwood lippings, air transfer grilles and concealed closers). The timber quality requirements have been updated throughout and the configuration scope and section has been clarified (double acting flush overpanels have been removed). Other items that have been removed are CS Edge protectors and encapsulation and Safehinge. The option for installing glazing into solid overpanels has also been removed from this assessment. The use of MDF and steel frames with overpanels has been clarified. Hardware specification for steel frame doorsets has been clarified. The direction of fire risk when fitting the Vistamatic unit has been included in a new section for orientation with respect to fire risk. The assessment has been reviewed and updated as an interim assessment while a larger review takes place with additional test evidence and scope.
L	WF529449	26/04/2024	5 year revalidation and review, including additional test data The following reports have been referenced in the revised document to extend the scope of the field of application, refer to section 3 for summarised details. WF435986 (Doorset B), CFR2109152, CFR2109081, WF518622 (Doorset A), WF417777, CFR2112211, WF523041, CFR2201122, CFR2104282, WF414533, WF386959 & CFR2211162 Glazing and screen section adjusted to new format. Added Items • Certifire Certificated Glass & Glazing Systems • Pyroguard 2 Advance Glasses • Pyrobelite 7 Glass • STS Glazing System – ST105GT(3) & ST302 liner • STS Glazing System – ST104GT & ST302 liner • Access Panels and EZYJamb Framing added • Thresholds with upstands added • IntaStop Edge Protectors • Electronic Hardware Section • Sealed Tight Solutions STS DIN60 lock kit Removed Items: • Nordform Steel Frames • Strebord Steel Frames • Smoke Control Section
M	WF543914	03/05/2024	Revised to include PVA adhesive for facings (Section 9).
N	WF547265	31/01/2025	5 year revalidation and review, including additional test data

			The following reports have been referenced in the revised document to extend the scope of the field of application, refer to section 3 for summarised details. WF525485 Doorset A Reworking of the Panic Hardware section to include: • Arrone AR515-PK Digilock • Arrone AR200S/10-SP Lever Handle • Arrone AR8805 External Locking Attachment • Arrone AR882 Panic Latch • Arrone AR885 Outside Access Device • Additional notes for allowance of Certifire approved panic hardware Addition of Arrone AR8990-60 3D concealed hinge Maglock section updated Removal of Streframe (as Frame Type 2), reworking of the frame numbering within the report for the remaining four frame options. Removal of Streframe glazing beads Addition of T – Shaped lippings based on fire test WF430460