
Title

Field of Application for:

Strebord 44 & 54 & Halspan
Optima & Prima 30 & 60 Based
Doorsets fitted with the BL7000
ECP-SS-MK2 Key Pad Handle
and Latch

For 30 & 60 minutes Fire
Resistance

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Prepared for:

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1 Foreword

This Field of Application report has been commissioned by Borg Locks UK Ltd. and relates to the fire resistance of 30 and 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, 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.

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 Falcon Strebord 44 & 54 and Halspan Optima & Prima 30 & 60 doorset designs when fitted with a Borg Locks BL7000 ECP–SS–MK2 key pad handle and latch, for 30 and 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.
- All dimensions detailed herein may be varied by $\pm 2\%$ except where minimum, maximum or a range of dimensions are given.

3 Test Data

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

Note:

- 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 from the following doorset configurations; latched, single acting, single doorset and latched and unlatched, single acting, double doorset.

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

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

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

It is therefore the opinion of Warringtonfire that the evidence cited in the following section, tested to both named standards referenced above can be utilised in this assessment which will conclude in terms of the fire resistance performance of the Strebord 44 & 54 and Halspan Optima & Prima 30 & 60 doorset designs fitted with BL7000 ECP–SS–MK2 key pad handle with tubular latch if tested in accordance with BS 476: Part 22: 1987.

3.1 Primary Test Evidence

3.1.1 Test Report Chilt/F13246 Doorset A

The referenced test report, the essential details of which are summarised below, is to be used to support the fire resistance of the Falcon Strebord 54 single doorset design incorporating Pyroplex FO8700 perimeter intumescent seals. The door is to be constructed in accordance with the requirements of the test report unless otherwise stated herein.

Date of Test:	20.Nov.2013
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. previously known as Chiltern International Fire Ltd. UKAS No. 1762
Sponsor:	Borg Locks (UK) Ltd.
Tested Product:	Latched, Single Acting, Single Leaf, Timber Doorset – LSASD.
Tested Orientation:	Opening in towards heating condition
Summary of Test Specimen:	<p>LEAF: Overall Size: 2135 (h) x 928 (w) x 54 (t). Core: Falcon Panel Products Ltd, Particleboard 54, 54 (t). Lipping: Sapele (746kg/m³), 6 (t) to vertical edges only.</p> <p>FRAME: Head & Jambs: Sapele (746kg/m³), 90 (d) x 32 (w), with 20 (d) x 12 (h) planted stop. Frame Fixing: 4No. 10 x 80 (l) steel screws per jamb. Fire Stopping: Mineral fibre 5-10 (w) x full depth capped with intumescent acrylic mastic on both faces, 20-30 (d).</p> <p>INTUMESCENT: Head & Jambs Frame Reveal: 2No. 15 (w) x 4 (t) Pyroplex Rigid Box Seals FO8700 fitted centrally 10 apart.</p> <p>HARDWARE: Hinges: 3No Royde & Tucker H101 lift off type hinges, 101 (h) x 32 (w) x 3 (t). Closer: 1No. Rutland TS3204 overhead type closer, 220 (w) x 59 (h). Latch/Keypad No. 1: 1No. Borg Locks key pad handle 7001 with tubular latch, 58 (h) x 20 (w) x 3 (t) latch forend, 60 (d) latch body & 70 (h) x 28 (w) x 1 (t) keep forend. Installed 1635 from the threshold of the leaf (Disengaged). Latch/Keypad No. 2: 1No. Borg Locks key pad handle 6000 with S509 tubular latch, 225 (h) x 22 (w) x 3 (t) latch forend, 160 (h) x 85 (d) x 14 (w) latch body & 180 (h) x 24 (w) x 1 (t) keep forend. Installed 1345 from the threshold of the leaf. (Disengaged). Latch/Keypad No. 3: 1No. Borg Locks key pad handle 5401 with tubular latch, 58 (h) x 30 (w) x 3 (t) latch forend, 60 (d) latch body & 70 (h) x 28 (w) x 1 (t) keep forend. Installed 1000 from the threshold of the leaf. (Engaged). Latch/Keypad No. 4: 1No. Borg Locks key pad handle 2501 with tubular latch, 58 (h) x 30 (w) x 3 (t) latch forend, 60 (d) latch body & 70 (h) x 28 (w) x 1 (t) keep forend. Installed 775 from the threshold of the leaf. (Disengaged).</p> <p>HARDWARE PROTECTION: Under Hinges: 2 (t) Interdens. Under Latch & Keep Forend & Encasing Latch Body: 1 (t) Interdens.</p>
Test Standard:	BS EN 1634-1:2008 & BS EN 1363-1:1999
Performance:	Integrity: 66 minutes Insulation: 65 minutes

3.1.2 Test Report Chilt/F13246 Doorset B

The referenced test report, the essential details of which are summarised below, is to be used to support the fire resistance of the Falcon Strebord 44 single doorset design incorporating Pyroplex FO8700 perimeter intumescent seals. The door is to be constructed in accordance with the requirements of the test report unless otherwise stated herein.

Date of Test:	20.Nov.2013
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. previously known as Chiltern International Fire Ltd. UKAS No. 1762
Sponsor:	Borg Locks (UK) Ltd.
Tested Product:	Latched, Single Acting, Single Leaf, Timber Doorset – LSASD.
Tested Orientation:	Opening in towards heating condition
Summary of Test Specimen:	<p>LEAF: Overall Size: 2135 (h) x 928 (w) x 44 (t). Core: Falcon Panel Products Ltd, Particleboard 44, 44 (t). Lipping: Sapele (746kg/m³), 6 (t) to vertical edges only.</p> <p>FRAME: Head & Jamb: European Redwood (578kg/m³), 90 (d) x 32 (w) with 20 (d) x 12 (t) planted stop. Frame Fixing: 4No. 10 x 80 (l) steel screws per jamb. Fire Stopping: Mineral fibre 5-10 (w) x full depth capped with intumescent acrylic mastic on both faces, 20-30 (d).</p> <p>INTUMESCENT: Head & Jamb Frame Reveal: 1No 15 (w) x 4 (t) Pyroplex FO8700 fitted centrally.</p> <p>HARDWARE: Hinges: 3No Royde & Tucker H101 lift off type hinges, 101 (h) x 32 (w) x 3 (t). Closer: 1No. Rutland TS3204 overhead type closer, 220 (w) x 59 (h). Latch/Keypad No. 1: 1No. Borg Locks key pad handle 7001 with tubular latch, 58 (h) x 20 (w) x 3 (t) latch forend, 60 (d) latch body & 70 (h) x 28 (w) x 1 (t) keep forend. Installed 1635 from the threshold of the leaf (Disengaged). Latch/Keypad No. 2: 1No. Borg Locks key pad handle 6000 with S509 tubular latch, 225 (h) x 22 (w) x 3 (t) latch forend, 160 (h) x 85 (d) x 14 (w) latch body & 180 (h) x 24 (w) x 1 (t) keep forend. Installed 1345 from the threshold of the leaf. (Disengaged). Latch/Keypad No. 3: 1No. Borg Locks key pad handle 5401 with tubular latch, 58 (h) x 30 (w) x 3 (t) latch forend, 60 (d) latch body & 70 (h) x 28 (w) x 1 (t) keep forend. Installed 1000 from the threshold of the leaf. (Engaged). Latch/Keypad No. 4: 1No. Borg Locks key pad handle 2501 with tubular latch, 58 (h) x 30 (w) x 3 (t) latch forend, 60 (d) latch body & 70 (h) x 28 (w) x 1 (t) keep forend. Installed 775 from the threshold of the leaf. (Disengaged).</p> <p>HARDWARE PROTECTION: Under Hinges: 2 (t) Interdens. Under Latch & Keep Forend & Encasing Latch Body: 1 (t) Interdens.</p>
Test Standard:	BS EN 1634-1:2008 & BS EN 1363-1:1999
Performance:	Integrity: 41 minutes Insulation: 39 minutes

3.1.3 Test Report BMT/FEP/F16050 AR1 Specimen A

The referenced test report, the essential details of which are summarised below, is to be used to support the fire resistance of the Halspan Optima 60 single doorset design incorporating Pyroplex FO8700 perimeter intumescent seals. The door is to be constructed in accordance with the requirements of the test report unless otherwise stated herein.

Date of Test:	10.May.2016
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. previously known as Exova Warringtonfire Ltd. UKAS No. 1762
Sponsor:	Halspan Ltd.
Tested Product:	Latched, Single Acting, Single Leaf, Timber Doorset – LSASD.
Tested Orientation:	Opening in towards heating condition
Summary of Test Specimen:	<p>LEAF: Overall Size: 2100 (h) x 900 (w) x 54 (t). Core: Halspan Optima 60, 3-layered Particleboard (620kg/m³ ±10%), 54 (t). Facings: Hardwood Veneer, 0.5 (t) Lipping: Sapele (640kg/m³), 10 (t) to vertical edges only.</p> <p>FRAME: Head & Jambs: Sapele (640kg/m³), 230 (d) x 44 (w), with 175 (d) x 12 (h) integral stop. Frame Fixing: 4No. 8Ø x 100 (l) steel screws per jamb. Fire Stopping: Rockwool mineral fibre 10-15 (w) x full depth capped with intumescent acrylic mastic on both faces.</p> <p>INTUMESCENT: Head & Jambs Frame Reveal: 2No. 15 (w) x 4 (t) Pyroplex Rigid Box Seals FO8700 fitted centrally 10 apart.</p> <p>ENVIRONMENTAL SEAL: Smoke Seal: Halspan triple fin SLS-TR1-100, 10 x 11 fitted to the upstand of the stop.</p> <p>HARDWARE: Hinges: 4No Halspan R60 bearing butt type hinge BOM-HIN-201, 101 (h) x 30 (w). Closer: 1No. Halspan R60 overhead type closer CLR-AGN-101, 250 (w) x 70 (h). Latch: 1No. Halspan R60 mortice latch BOM-LCK-104, 235 (h) x 24 (w) latch forend & 175 (h) x 22 (w) keep forend. Installed 1000 from the threshold of the leaf (Engaged).</p> <p>HARDWARE PROTECTION: Under Hinges: 1 (t) Intumescent Seals Ltd. Therm-A-Strip. Under Latch & Keep Forend & Encasing Latch Body: 1 (t) Halspan R60 lock protection kit SLS-PAD-109. Handle: Zoo Hardware aluminium lever type handle, 100 x 40.</p>
Test Standard:	BS 476: Part 20/22: 1987
Performance:	Integrity: 83 minutes Insulation: 83 minutes

3.1.4 Test Report BMT/FEP/F16050 AR1 Specimen B

The referenced test report, the essential details of which are summarised below, is to be used to support the fire resistance of the Halspan Optima 30 single doorset design incorporating Pyroplex FO8500 perimeter intumescent seals. The door is to be constructed in accordance with the requirements of the test report unless otherwise stated herein.

Date of Test:	10.May.2016
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. previously known as Exova Warringtonfire Ltd. UKAS No. 1762
Sponsor:	Halspan Ltd.
Tested Product:	Latched, Single Acting, Single Leaf, Timber Doorset – LSASD.
Tested Orientation:	Opening in towards heating condition
Summary of Test Specimen:	<p>LEAF: Overall Size: 2100 (h) x 900 (w) x 44 (t). Core: Halspan Optima 60, 3-layered Particleboard (620kg/m³ ±10%), 44 (t). Lipping: Sapele (640kg/m³), 10 (t) to top & vertical edges only.</p> <p>FRAME: Head & Jambs: Sapele (640kg/m³), 230 (d) x 44 (w), with 185 (d) x 10 (h) integral stop. Frame Fixing: 4No. 8Ø x 100 (l) steel screws per jamb. Fire Stopping: Rockwool mineral fibre 10-15 (w) x full depth capped with intumescent acrylic mastic on both faces.</p> <p>INTUMESCENT: Head & Jambs Frame Reveal: 1No. 10 (w) x 4 (t) Pyroplex Rigid Box Seals FO8500 fitted centrally.</p> <p>ENVIROMENTAL SEAL: Smoke Seal: Halspan triple fin SLS-TR1-100, 10 x 11 fitted to the upstand of the stop.</p> <p>HARDWARE: Hinges: 4No Halspan R30 bearing butt type hinge HIN-BSS-104, 101 (h) x 30 (w). Closer: 1No. Halspan R30 overhead type closer CLR-AGN-100, 250 (w) x 70 (h). Latch: 1No. Halspan R60 mortice latch LCK-BBS-100, 235 (h) x 24 (w) latch forend & 175 (h) x 22 (w) keep forend. Installed 1000 from the threshold of the leaf (Engaged). Handle: Zoo Hardware aluminium lever type handle, 100 x 40.</p>
Test Standard:	BS 476: Part 20/22: 1987
Performance:	Integrity: 47 minutes Insulation: 47 minutes

3.1.5 Test Report Chilt/RF08088

The referenced test report, the essential details of which are summarised below, is to be used to support the fire resistance of the Falcon Strebord 44 double doorset design incorporating Pyroplex FO8500 and FO8700 perimeter intumescent seals. The door is to be constructed in accordance with the requirements of the test report unless otherwise stated herein.

Date of Test:	4.July.2008
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. previously known as Chiltern International Fire Ltd. UKAS No. 1762
Sponsor:	Pyroplex Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf, Timber Doorset – ULSADD.
Tested Orientation:	Opening in towards heating condition
Summary of Test Specimen:	<p>LEAF: Overall Size: 2440 (h) x 915/915 (w) x 44 (t). Core: Falcon Strebord 44, 3-layered Particleboard (630 - 640kg/m³), 44 (t). Lipping: Sapele (640kg/m³), 8 (t) vertical edges only.</p> <p>FRAME: Head & Jambs: European Redwood (510kg/m³), 70 (d) x 32 (w), with 25 (d) x 10 (h) stop. Frame Fixing: 3No. 100 (l) steel screws per jamb. Fire Stopping: Pyroplex Intumescent Acrylic sealant, 5-10 (w) x 10-15 (d) on both faces.</p> <p>INTUMESCENT: Head & Jambs Frame Reveal: 1No. 15 (w) x 4 (t) Pyroplex Rigid Box Seals FO8700 fitted centrally. Meeting Edge: 2No. 10 (w) x 4 (t) Pyroplex Rigid Box Seals FO8500 fitted centrally 10 apart in the leaf housing the latch body.</p> <p>HARDWARE: Hinges: 3No. Royde & Tucker high load 105 lift off hinge, 100 (h) x 35 (w). Closer: 1No. Dorma Door Controls Ltd. TS71 overhead type closer, 232 (w) x 68 (h) per door leaf. Latch: 1No. Standard tubular mortice latch, 57 (h) x 26 (w) latch forend. Installed 1440 from the threshold of the leaf (Disengaged). Handle: Aluminium lever type handle, 102 x 41.</p> <p>HARDWARE PROTECTION: Behind Hinges Blades: 1 (t) Interdens. Under Latched & Keep Forend: 1 (t) Interdens.</p>
Test Standard:	BS 476: Part 22: 1987
Performance:	Integrity: 44 minutes Insulation: 44 minutes

3.1.6 Test Report Chilt/RF13082

The referenced test report, the essential details of which are summarised below, is to be used to support the fire resistance of the Falcon Strebord 54 double doorset design incorporating Pyroplex TF8723 and FO8700 perimeter intumescent seals. The door is to be constructed in accordance with the requirements of the test report unless otherwise stated herein.

Date of Test:	1.May.2013
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. previously known as BMTRADA Ltd. UKAS No. 1762
Sponsor:	Falcon Panel Products Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf, Timber Doorset – ULSADD.
Tested Orientation:	Opening in towards heating condition
Summary of Test Specimen:	<p>LEAF: Overall Size: 2130 (h) x 935/935 (w) x 54 (t). Core: Falcon Strebord 54, 3-layered Particleboard (600kg/m³), 54 (t). Lipping: Sapele (640kg/m³), 10 (t) vertical edges only.</p> <p>FRAME: Head & Jambs Frame Reveal: Angouma (450kg/m³), 70 (d) x 32 (w), with 15 (d) x 12 (h) stop. Frame Fixing: 4No. 80 (l) steel screws per jamb. Fire Stopping: Tightly packed rock mineral fibre full depth capped with intumescent acrylic mastic, 5-10 (w) x 10-15 (d) on one side only.</p> <p>INTUMESCENT: Head & Jambs Frame Reveal: 2No. 15 (w) x 4 (t) Pyroplex Rigid Box Seals TF8723 & FO8700 fitted centrally 10 apart. Meeting Edge: 2No. 15 (w) x 4 (t) Pyroplex Rigid Box Seals TF8723 & FO8700 fitted centrally 10 apart.</p> <p>HARDWARE: Hinges: 3No. Royde & Tucker high load 101 lift off hinge, 101 (h) x 35 (w) x 3 (t). Closer: 1No. Rutland TS 3204 overhead type closer, 220 (w) x 59 (h) per door leaf. Latch: 1No. Zoo tubular mortice latch, 57 (h) x 26 (w) latch forend & Ø20 case size. Installed 1000 from the threshold of the leaf (Disengaged). Handle: Aluminium lever type handle, 101 x 41.</p> <p>HARDWARE PROTECTION: Behind Hinges Blades: 2 (t) Interdens. Under Latched & Keep Forend: 2 (t) Intumescent Seals Ltd. Therm-A-Line.</p>
Test Standard:	BS 476: Part 20/22: 1987
Performance:	Integrity: 60 minutes Insulation: 60 minutes

3.1.7 Test Report WF372220 AR1

The referenced test report, the essential details of which are summarised below, is to be used to support the fire resistance of the Halspan Optima 30 double doorset design incorporating Pyroplex T08500 and FO8700 perimeter intumescent seals. The door is to be constructed in accordance with the requirements of the test report unless otherwise stated herein.

Date of Test:	28.Sep.2016
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. previously known as Exova Warringtonfire Ltd. UKAS No. 1762
Sponsor:	Halspan Ltd.
Tested Product:	Latched, Single Acting, Double Leaf, Timber Doorset – LSADD.
Tested Orientation:	Opening in towards heating condition
Summary of Test Specimen:	<p>LEAF: Overall Size: 2404 (h) x 984/984 (w) x 44 (t). Core: Halspan Optima 30, 3-layered Particleboard (620kg/m³ ± 10%), 44 (t). Lipping: Mahogany (600kg/m³), 10 (t) fitted to all edges.</p> <p>FRAME: Head & Jambs: Mahogany (600kg/m³), 158 (d) x 42 (w), with 50 (d) x 18 (h) stop. Frame Fixing: 4No. 80 (l) steel screws per jamb. Fire Stopping: Tightly packed rock mineral wool full depth capped with intumescent acrylic mastic, 5-10 (w) x 10 (d) on exposed face only.</p> <p>INTUMESCENT: Leaf Head & Jambs: 1No. 15 (w) x 4 (t) Pyroplex Rigid Box Seals FO8700 fitted centrally. Meeting Edge: 2No. 10 (w) x 4 (t) Pyroplex Rigid Box Seals FO8500 fitted centrally 8 apart.</p> <p>HARDWARE: Hinges: 4No. Devon bearing butt type hinge Ref: 89.338.86, 101 (h) x 30 (w). Closer: 1No. Devon overhead type closer Ref: 86.214.86 FC, 275 (w) x 70 (h) per door leaf. Latch: 1No. Devon steel mortice lock/latch Ref: 88.601.86, 235 (h) x 25 (w) latch forend & 170 (h) x 25 (w) keep size. Installed 1075 from the threshold of the leaf (Engaged). Handle: Lever type handle and lock escutcheon Ref: FE 54-133.6, Ø52 rose size. Flush Bolts: Devon Ref: 94.156.61, 205 (h) x 20 (w) forend size & 20 x 38 keep size.</p> <p>HARDWARE PROTECTION: Under Latched Forend: 1 (t) Interdens. Encasing Flush Bolt Body & Under Keep: 2 (t) Intumescent Seals Ltd. Therm-A-Strip.</p>
Test Standard:	BS 476: Part 20/22: 1987
Performance:	Integrity: 42 minutes Insulation: 42 minutes

3.1.8 Test Report WF372226 AR1

The referenced test report, the essential details of which are summarised below, is to be used to support the fire resistance of the Halspan Optima 60 double doorset design incorporating Pyroplex FO8700 perimeter intumescent seals. The door is to be constructed in accordance with the requirements of the test report unless otherwise stated herein.

Date of Test:	29.Sep.2016
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. previously known as Exova Warringtonfire Ltd. UKAS No. 1762
Sponsor:	Halspan Ltd.
Tested Product:	Latched, Single Acting, Double Leaf, Timber Doorset – LSADD.
Tested Orientation:	Opening in towards heating condition
Summary of Test Specimen:	<p>LEAF: Overall Size: 2388 (h) x 1054/1054 (w) x 54 (t). Core: Halspan Optima 60, 3-layered Particleboard (620kg/m³ ± 10%), 54 (t). Lipping: Mahogany (600kg/m³), 10 (t) fitted to all edges.</p> <p>FRAME: Head & Jambs: Mahogany (600kg/m³), 168 (d) x 42 (w), with 50 (d) x 18 (h) stop. Frame Fixing: 4No. 80 (l) steel screws per jamb. Fire Stopping: Tightly packed rock mineral wool full depth capped with intumescent acrylic mastic, 5-10 (w) x 10 (d) on exposed face only.</p> <p>INTUMESCENT: Leaf Head & Jambs: 2No. 15 (w) x 4 (t) Pyroplex Rigid Box Seals FO8700 fitted centrally 8 apart. Meeting Edge: 2No. 15 (w) x 4 (t) Pyroplex Rigid Box Seals FO8700 fitted centrally 8 apart in the leaf housing the latch body.</p> <p>HARDWARE: Hinges: 4No. Devon bearing butt type hinge Ref: 89.338.86, 102 (h) x 30 (w). Closer: 1No. Devon overhead type closer Ref: 86.214.86 FC, 275 (w) x 70 (h) per door leaf. Latch: 1No. Devon steel mortice lock/latch Ref: 88.601.86, 235 (h) x 25 (w) latch forend & 170 (h) x 24 (w) keep size. Installed 1075 from the threshold of the leaf (Engaged). Handle: Lever type handle and lock escutcheon Ref: FE 54-133.6, Ø52 rose size. Flush Bolts: Devon Ref: 94.156.61, 203 (h) x 19 (w) forend size & 20 x 38 keep size.</p> <p>HARDWARE PROTECTION: Under Hinge Blades: 1 (t) Interdens. Encasing Latch Body & Under Latch & Keep Forend: 1 (t) Interdens. Encasing Flush Bolt Body & Under Keep: 1 (t) Interdens.</p>
Test Standard:	BS 476: Part 20/22: 1987
Performance:	Integrity: 62 minutes Insulation: 62 minutes

3.1.9 Test Report Chilt/RF07140 Revision B Specimen A

The referenced test report, the essential details of which are summarised below, is to be used to support the fire resistance of Yeoman Shield edge protectors using Lorient Polyproducts Ltd. LP1504 Type 617 perimeter intumescent seals for 30 minutes fire resistance performance. The door is to be constructed in accordance with the requirements of the test report unless otherwise stated herein.

Date of Test:	26.Nov.2007
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. previously known as Chiltern International Fire Ltd. UKAS No. 1762
Sponsor:	Lorient Polyproducts Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf, Timber Doorset – ULSADD.
Tested Orientation:	Opening in towards heating condition
Summary of Test Specimen:	<p>LEAF: Overall Size: 2040 (h) x 850/323 (w) x 44 (t). Core: Halspan Prima 30, 3-layered Particleboard, 44 (t). Edge Protectors: 2 (t) Yeoman Shield outer strip with 50 (l) legs formed around a 44 (w) x 9 (t) toughened PVCu insert. Fixed using 50 (l) screws at 200 centres & PVA adhesive to the vertical door leaf edges.</p> <p>FRAME: Head & Jambs: European Redwood (510kg/m³), 70 (d) x 32 (w), with 16 (d) x 12 (h) stop. Frame Fixing: 3No. 80 (l) steel screws per jamb. Fire Stopping: Lorient Polyproducts Ltd. intumescent acrylic mastic, 5-10 (w) x 10-15 (d) on both faces.</p> <p>INTUMESCENT: Frame Reveal Head: 1No. 15 (w) x 4 (t) Lorient Polyproducts Ltd. LP1504 Type 617 fitted centrally. Leaf Jambs: 1No. 15 (w) x 4 (t) Lorient Polyproducts Ltd. LP1504 Type 617 fitted centrally within edge protector.</p> <p>HARDWARE: Hinges: 3No. Royde & Tucker H105 Hi load lift off hinges, 100 (h) x 35 (w). Closer: 1No. Dorma Door Controls Ltd. TS73 surface mounted overhead type closer, 233 (w) x 60 (h) per door leaf. Latch: 1No. E *s Easi-T latch, 125 (h) x 25 (w) latch forend. Installed 1076 from the threshold of the leaf (Disengaged). Handle: Aluminium lever type handle, 103 (h) x 40 (w) size. Door Bolts: Carpenters Supply Co chrome plated surface mounted bolts Ref: 143C, 75 x 25 size fitted to the leaf not housing the latch body.</p> <p>HARDWARE PROTECTION: Under Hinge Blades: 1 (t) MAP. Encasing Latch Body & Under Latch & Keep Forend: 1 (t) MAP.</p>
Test Standard:	BS 476: Part 22: 1987
Performance:	Integrity: 44 minutes Insulation: 44 minutes

3.1.10 Test Report Chilt/RF07141 Revision B Specimen B

The referenced test report, the essential details of which are summarised below, is to be used to support the fire resistance of Yeoman Shield edge protectors using Lorient Polyproducts Ltd. LP1504 & LP2004 Type 617 perimeter intumescent seals for 60 minutes fire resistance performance. The door is to be constructed in accordance with the requirements of the test report unless otherwise stated herein.

Date of Test:	27.Nov.2007
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. previously known as Chiltern International Fire Ltd. UKAS No. 1762
Sponsor:	Lorient Polyproducts Ltd.
Tested Product:	Unlatched, Single Acting, Double Leaf, Timber Doorset – ULSADD.
Tested Orientation:	Opening in towards heating condition
Summary of Test Specimen:	<p>LEAF: Overall Size: 2045 (h) x 850/323 (w) x 54 (t). Core: Halspan Prima 60, 3-layered Particleboard, 54 (t). Edge Protectors: 2 (t) Yeoman Shield outer strip with 50 (l) legs formed around a 54 (w) x 9 (t) toughened PVCu insert. Fixed using 50 (l) screws at 200 centres & PVA adhesive to the vertical door leaf edges. Lipping: 10 (t) Sapele to horizontal edges fixed using PVA adhesive.</p> <p>FRAME: Head & Jambs: Sapele (640kg/m³), 70 (d) x 32 (w), with 16 (d) x 12 (h) stop. Frame Fixing: 3No. 100 (l) steel screws per jamb. Fire Stopping: Lorient Polyproducts Ltd. intumescent acrylic mastic, 5-10 (w) x 10-15 (d) on both faces.</p> <p>INTUMESCENT: Frame Reveal Head: 1No. 20 (w) x 4 (t) Lorient Polyproducts Ltd. LP2004 Type 617 fitted centrally. Leaf Jambs: 1No. 15 (w) x 4 (t) Lorient Polyproducts Ltd. LP1504 Type 617 fitted centrally within edge protector.</p> <p>HARDWARE: Hinges: 3No. Royde & Tucker H105 Hi load lift off hinges, 100 (h) x 35 (w). Closer: 1No. Dorma Door Controls Ltd. TS73 surface mounted overhead type closer, 233 (w) x 60 (h) per door leaf. Latch: 1No. E *s Easi-T latch, 125 (h) x 25 (w) latch forend. Installed 1074 from the threshold of the leaf (Disengaged). Handle: Aluminium lever type handle, 103 (h) x 40 (w) size. Door Bolts: Carpenters Supply Co chrome plated surface mounted bolts Ref: 143C, 75 x 25 size fitted to the leaf not housing the latch body.</p> <p>HARDWARE PROTECTION: Under Hinge Blades: 1 (t) MAP. Encasing Latch Body & Under Latch & Keep Forend: 1 (t) MAP.</p>
Test Standard:	BS 476: Part 22: 1987
Performance:	Integrity: 67 minutes Insulation: 67 minutes

3.1.11 Test Report LOR1524

The referenced test report, the essential details of which are summarised below, is to be used to support the fire resistance of Yeoman Shield edge protectors using Lorient Polyproducts Ltd. LP1504 & LP2004 Type 617 perimeter intumescent seals for 60 minutes fire resistance performance. The door is to be constructed in accordance with the requirements of the test report unless otherwise stated herein.

A double leaf doorset with both leaves constructed from 54mm thick Halspan Optima blanks, fitted with 2 hinges per leaf and unlatched were tested orientated with the leaves opening towards the furnace. The results of this test were obtained with flush bolts fitted to the top and bottom of one leaf edge, fitted interrupting the Yeoman Shield/Lorient PVCu door edge protectors on one leaf; the bolts were engaged for the duration of the test.

When tested generally in accordance with the requirements of BS 476: Part 22: 1987, the specimen achieved the following performance.

Performance:	Integrity: 68 minutes
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Failure occurred at the top hanging corner of one leaf, no failures were observed relating to the edge protectors or at flush-bolt locations.

Note: Test LOR1524 was not undertaken at a UKAS accredited laboratory, however, a suitably qualified member of staff from Warringtonfire attended the test, examined the test sample prior to testing, recorded observations during the test and carried out a calibration check of the thermocouple data logging system using our UKAS accredited calibration checker. The test data is utilised herein as secondary data permitting the assessment of flush bolts as tested only.

4 Technical Specification

4.1 General

The technical specification for the proposed door assemblies is given in the following sections and is based on the test evidence for the door designs, summarised in section 3.

4.2 Intended Use

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

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

4.3 Door Leaf

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

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

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

4.3.1 Leaf Option 1 – Falcon Strebord 44 – 44mm thick

The door designs can include:

1. Various hardware options
2. Decorative facings
3. Edge protectors

4.3.2 Leaf Option 2 – Falcon Strebord 54 – 54mm thick

The door designs can include:

1. Various hardware options
2. Decorative facings
3. Edge protectors

4.3.3 Leaf Option 3 – Halspan Optima 30 – 44mm thick

The door designs can include:

1. Various hardware options
2. Decorative facings
3. Edge protectors

4.3.4 Leaf Option 4 – Halspan Optima 60 – 54mm thick

The door designs can include:

1. Various hardware options
2. Decorative facings
3. Edge protectors

4.3.5 Leaf Option 5 – Halspan Prima 30 – 44mm thick

The door designs can include:

1. Various hardware options
2. Decorative facings
3. Edge protectors

4.3.6 Leaf Option 6 – Halspan Prima 60 – 54mm thick

The door designs can include:

1. Various hardware options
2. Decorative facings
3. Edge protectors

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 Option 1 – Softwood/Hardwood Timber – Door Option 1

The construction of the door frames is softwood or hardwood with minimum frame dimensions. For further information on the specification and construction of the door frames see section 6.

4.4.2 Frame Option 2 – Hardwood – Door Options 1, 2, 3, 4, 5 & 6

The construction of the door frames is hardwood with minimum frame dimensions. For further information on the specification and construction of the door frames see section 6.

4.5 Doorset Configurations & Maximum Leaf Sizes

4.5.1 General

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

1. The margin of over performance above 30 or 60 minutes integrity for the design
2. The characteristics exhibited during test and
3. The doorset configuration tested

The evaluation of the permitted configuration included in this field of application is based on the configuration tested. The principle is that the more components included in testing, for example, double door leaves and a flush 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 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.
2. A test on an unlatched doorset is more onerous than a test on a latched doorset as the leading edge is unrestrained and will deflect more in fire test conditions

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



Unequal leaf double doorsets are covered by this assessment with no restriction on the smaller leaf dimensions providing it does not exceed the relevant leaf size envelope and is not smaller in width than 300mm.

For equal double doorsets both leaves must comply with the door leaf envelope size limitations.

4.5.2 Configuration

The table below shows the permitted configuration for the Falcon Strebord 44 & 54 & Halspan Optima & Prima 30 & 60 doorset designs, with the abbreviation and full description of each configuration.

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

Doorset Configurations		
Depiction	Abbreviation	Description
	LSASD	Latched Single Acting Single Doorset
	LSADD	Latched Single Acting Double Doorset

4.5.3 Orientation

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

4.5.4 Envelopes for each Configurations

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

A table of essential hardware is given in section 9.3 for the 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 option, perimeter intumescent used and frame option. These elements are not automatically interchangeable. The following sections present the envelopes for the 6 leaf options and 2 frame options. 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 LSADD
- for each configuration, leaf option, frame option and intumescent specification is considered separately and a unique envelope of permitted leaf sizes is presented based on the configuration, leaf option, frame option and intumescent and the envelope is directly linked to a unique test.

Summary of Permitted Configuration for Leaf Option 1 & Frame Option 1

Permitted Configuration with frame option 1 with leaf option 1 (Strebord 44)			
		Configuration	
		LSASD	LSADD
Frame	Option 1 – Softwood/Hardwood frame*	Yes	Yes

* See Section 6 for specific limitations with respect to the framing options

Summary of Permitted Configuration for Leaf Option 1, 2, 3, 4, 5 & 6 & Frame Option 2

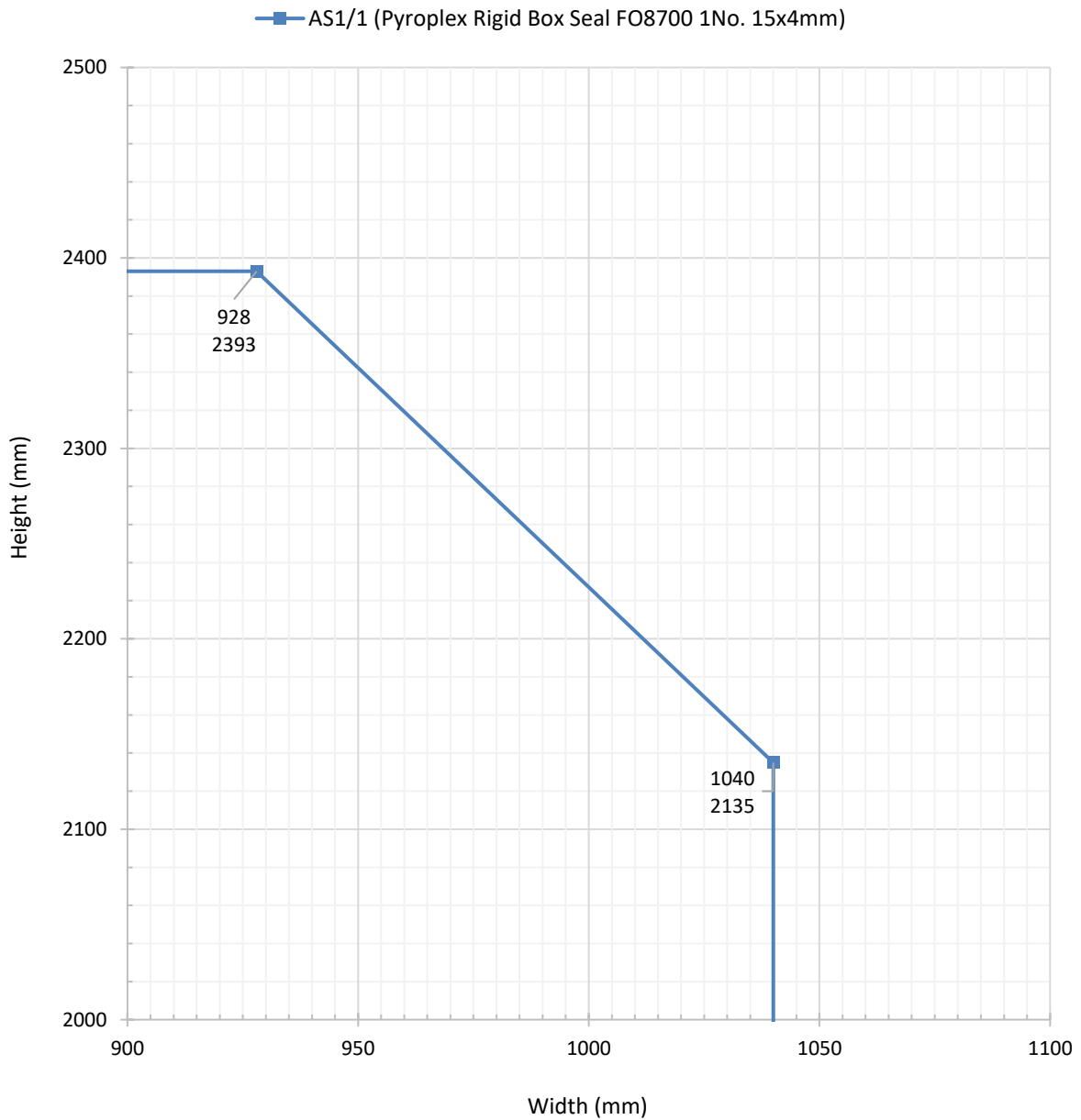
Permitted Configuration with frame option 2 with leaf options 1, 2, 3, 4, 5 & 6 (Strebord 44 & 54 & Halspan Optima & Prima 30 & 60)			
		Configuration	
		LSASD	LSADD
Frame	Option 2 – Hardwood frame*	Yes	Yes

* See Section 6 for specific limitations with respect to the framing options

4.5.5 LSASD Configuration: Leaf Sizes & Intumescent Specification for 30 Minutes Integrity Performance

Doorset created from Leaf option 1 with frame option 1 – Pyroplex Rigid Box Seal FO8700

LSASD
Leaf Option 1 - Strebord 44
& Frame Option 1 - Softwood/Hardwood
Perimeter Intumescent Seals - Pyroplex Rigid Box Seal FO8700
(1No. 15x4mm)

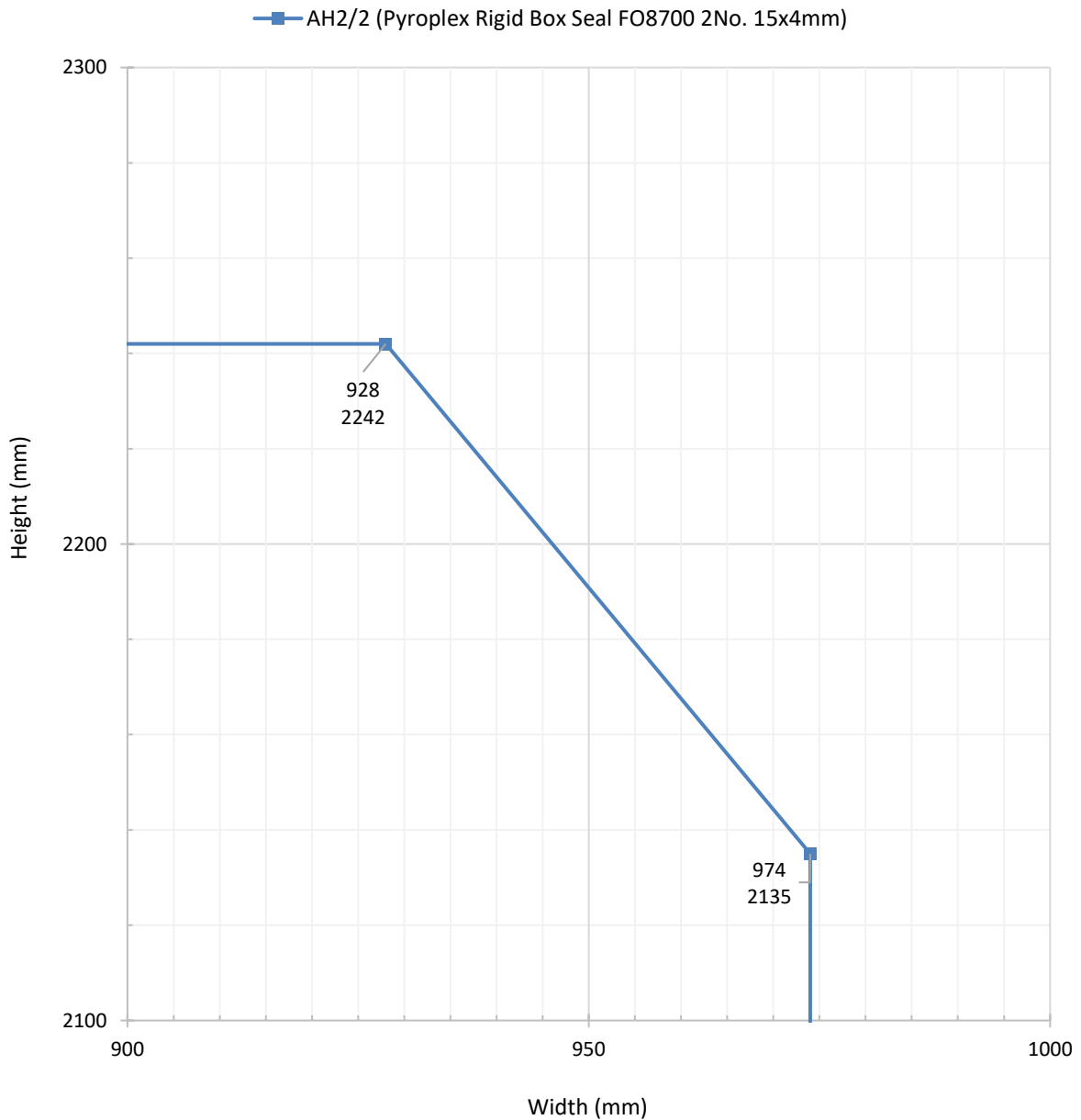


Intumescent Specification for LSASD Leaf Option 1 (Strebord 44) with Frame Option 1 (Softwood/Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS1/1 (Chilt/RF13246 Specimen B)	Rigid Box Seal FO8700	Pyroplex Ltd	Head & Jambs: 1No. seal fitted centrally in frame reveal or door leaf edges.

4.5.6 LSASD Configuration: Leaf Sizes & Intumescent Specification for 60 Minutes Integrity Performance

Doorset created from Leaf option 2 with frame option 2 – Pyroplex Rigid Box Seal F08700 F08700

LSASD
Leaf Option 2 - Strebord 54
& Frame Option 2 - Hardwood
Perimeter Intumescent Seals - Pyroplex Rigid Box Seal F08700
(2No. 15x4mm)



Intumescent Specification for LSASD Leaf Option 2 (Strebord 54) with Frame Option 2 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH2/2 (Chilt/RF13246 Specimen A)	Rigid Box Seal FO8700	Pyroplex Ltd	Head & Jambs: 2No. seals fitted centrally 10mm apart in frame reveal or door leaf edges.

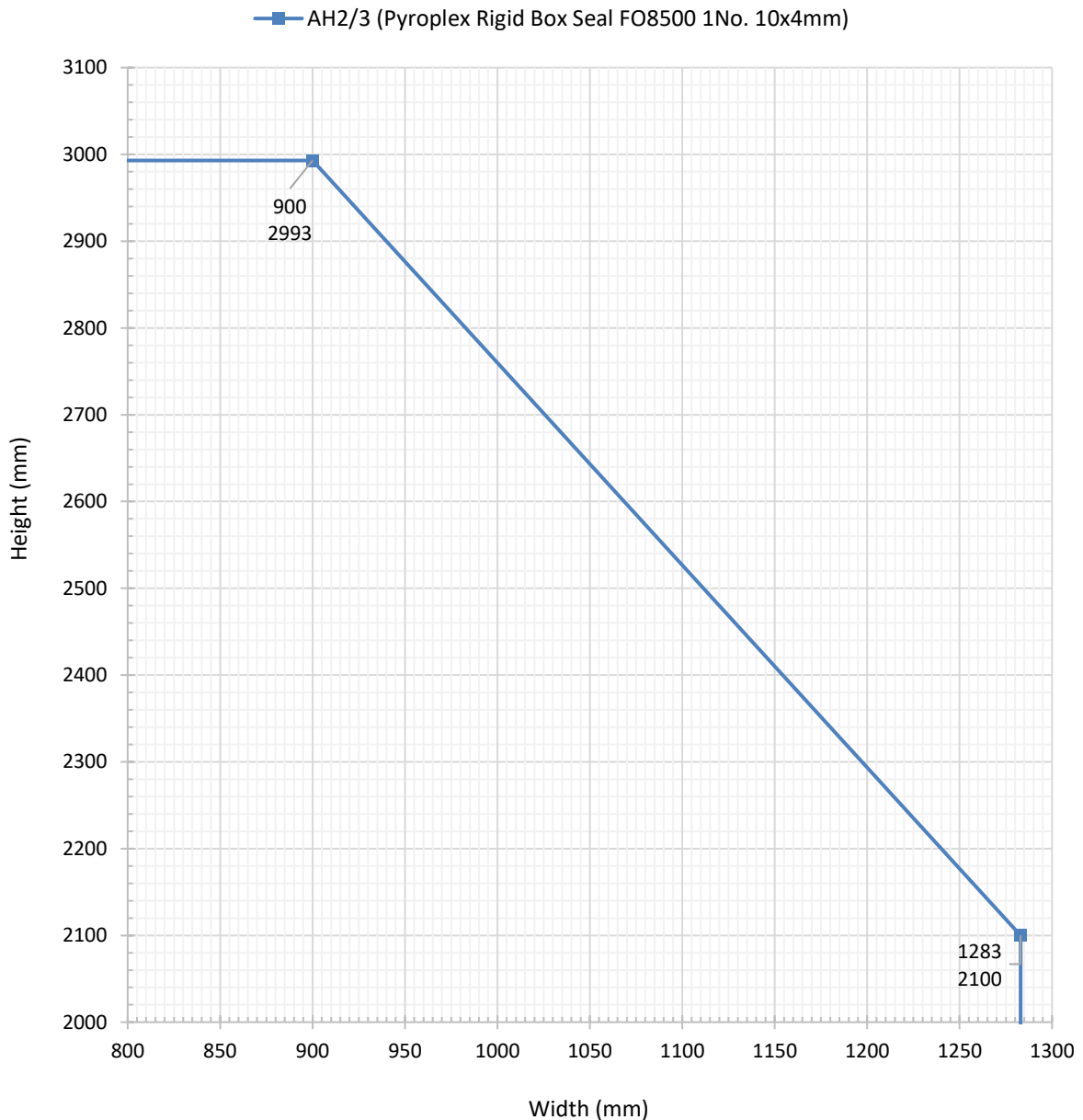
4.5.7 LSASD Configuration: Leaf Sizes & Intumescent Specification for 30 Minutes Integrity Performance

Doorset created from Leaf option 3 & 5 with frame option 2 – Pyroplex Rigid Box Seal FO8500 F08500

LSASD

Leaf Option 3 & 5 - Halspan Optima & Prima 30
& Frame Option 2 - Hardwood

Perimeter Intumescent Seals - Pyroplex Rigid Box Seal FO8500
(1No. 10x4mm)

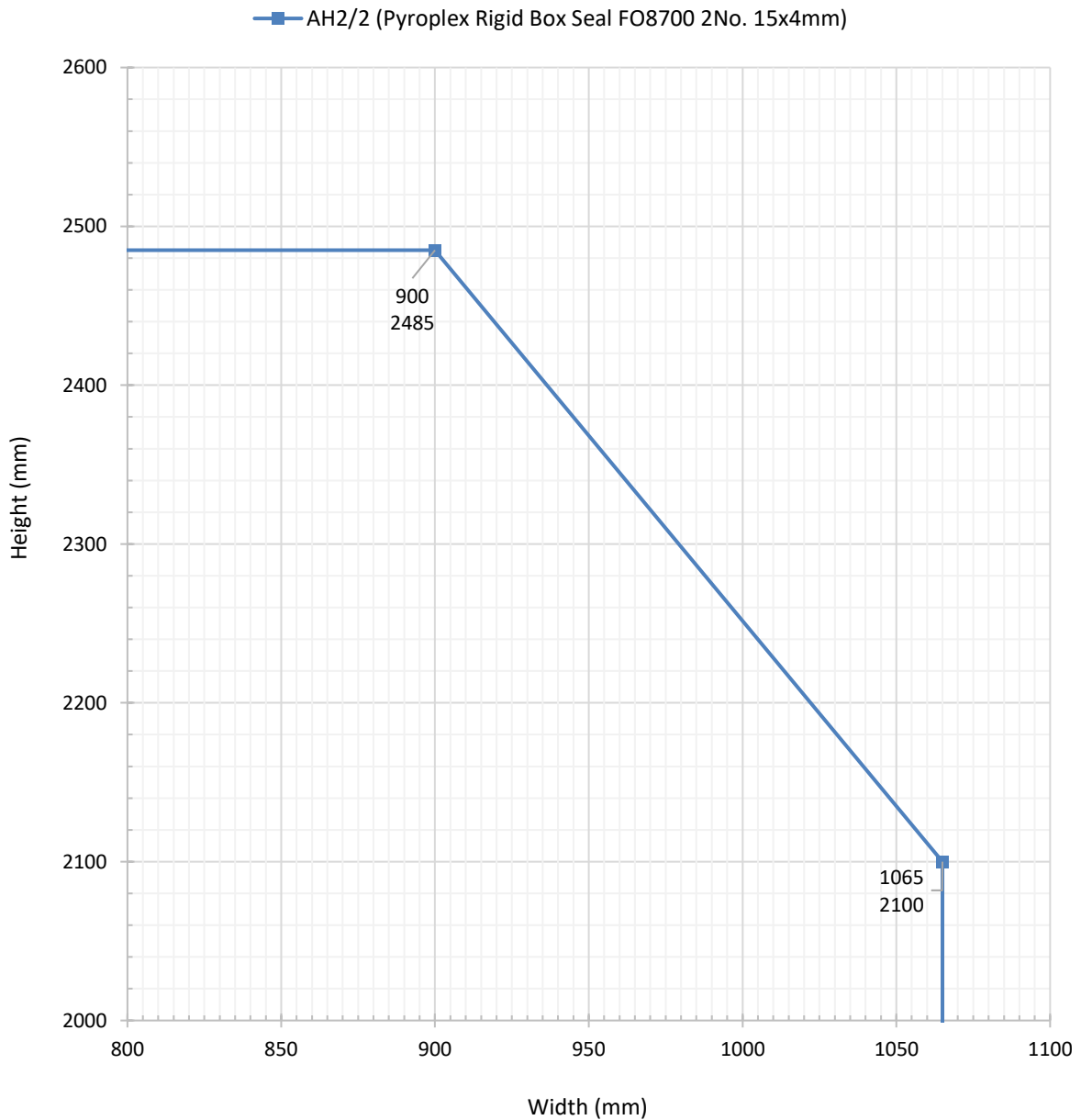


Intumescent Specification for LSASD Leaf Option 3 & 5 (Halspan Optima & Prima 30) with Frame Option 2 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH2/3 (BMT/FEP/F16050 AR1Specimen B)	Rigid Box Seal FO8500	Pyroplex Ltd	Head & Jambs: 1No. seal fitted centrally in the frame reveal or door leaf edges.

4.5.8 LSASD Configuration: Leaf Sizes & Intumescent Specification for 60 Minutes Integrity Performance

Doorset created from Leaf option 4 & 6 with frame option 2 – Pyroplex Rigid Box Seal F08700

LSASD
Leaf Option 3 & 5 - Halspan Optima & Prima 60
& Frame Option 2 - Hardwood
Perimeter Intumescent Seals - Pyroplex Rigid Box Seal F08700
(2No. 15x4mm)



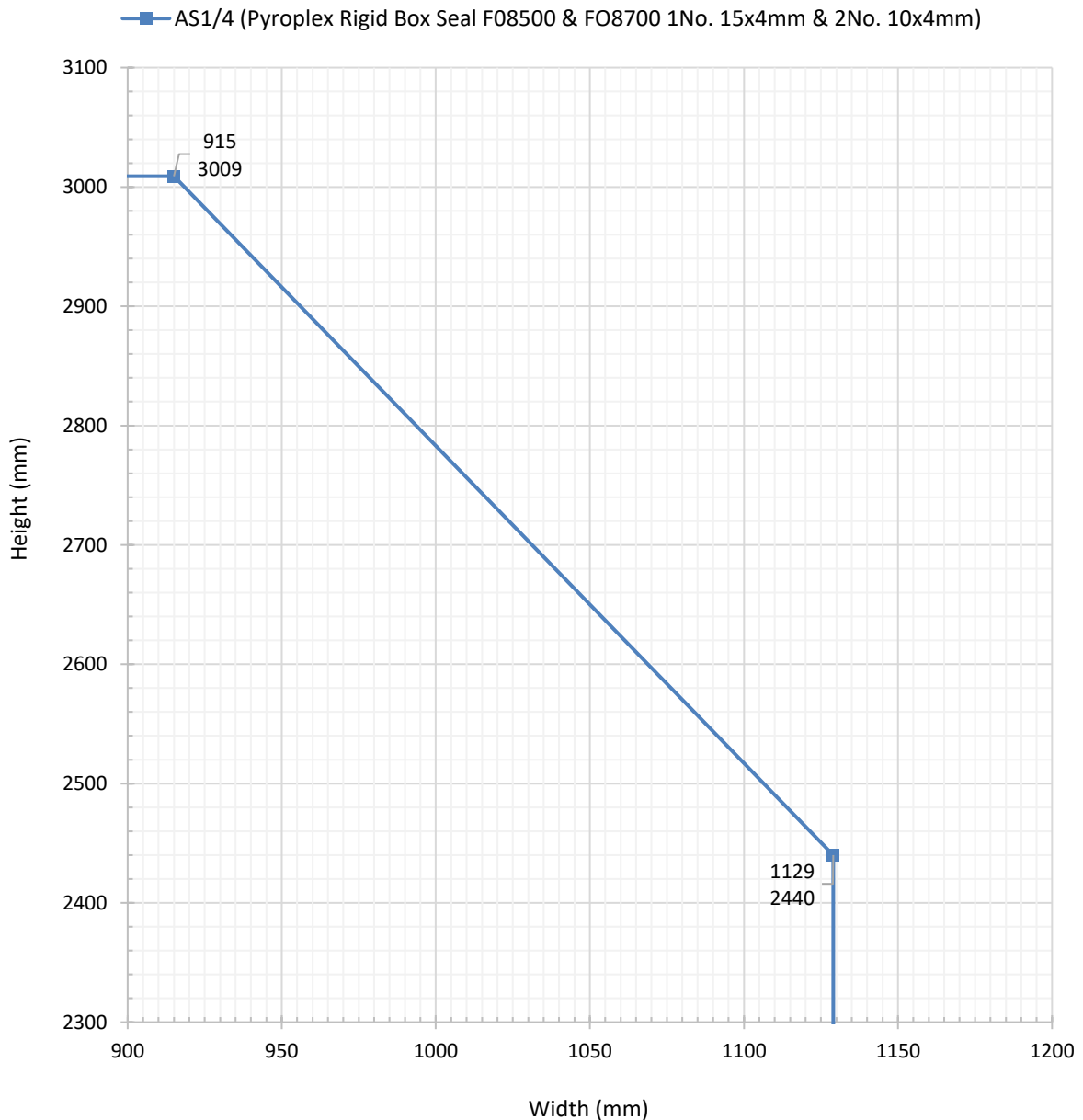
Intumescent Specification for LSASD Leaf Option 4 & 6 (Halspan Optima & Prima 60) with Frame Option 2 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH2/2 (BMT/FEP/F16050 AR1Specimen A)	Rigid Box Seal FO8500	Pyroplex Ltd	Head & Jambs: 2No. seals fitted centrally 10mm apart in frame reveal or door leaf edges.

4.5.9 LSADD Configuration: Leaf Sizes & Intumescent Specification for 30 Minutes Integrity Performance

Doorset created from Leaf option 1 with frame option 1 – Pyroplex Rigid Box Seal FO8500 & FO8700

LSADD

Leaf Option 1 - Strebord 44
& Frame Option 1 - Softwood/Hardwood
Perimeter Intumescent Seals - Pyroplex Rigid Box Seal FO8500
& FO8700 (1No. 15x4mm & 2No. 10x4mm)



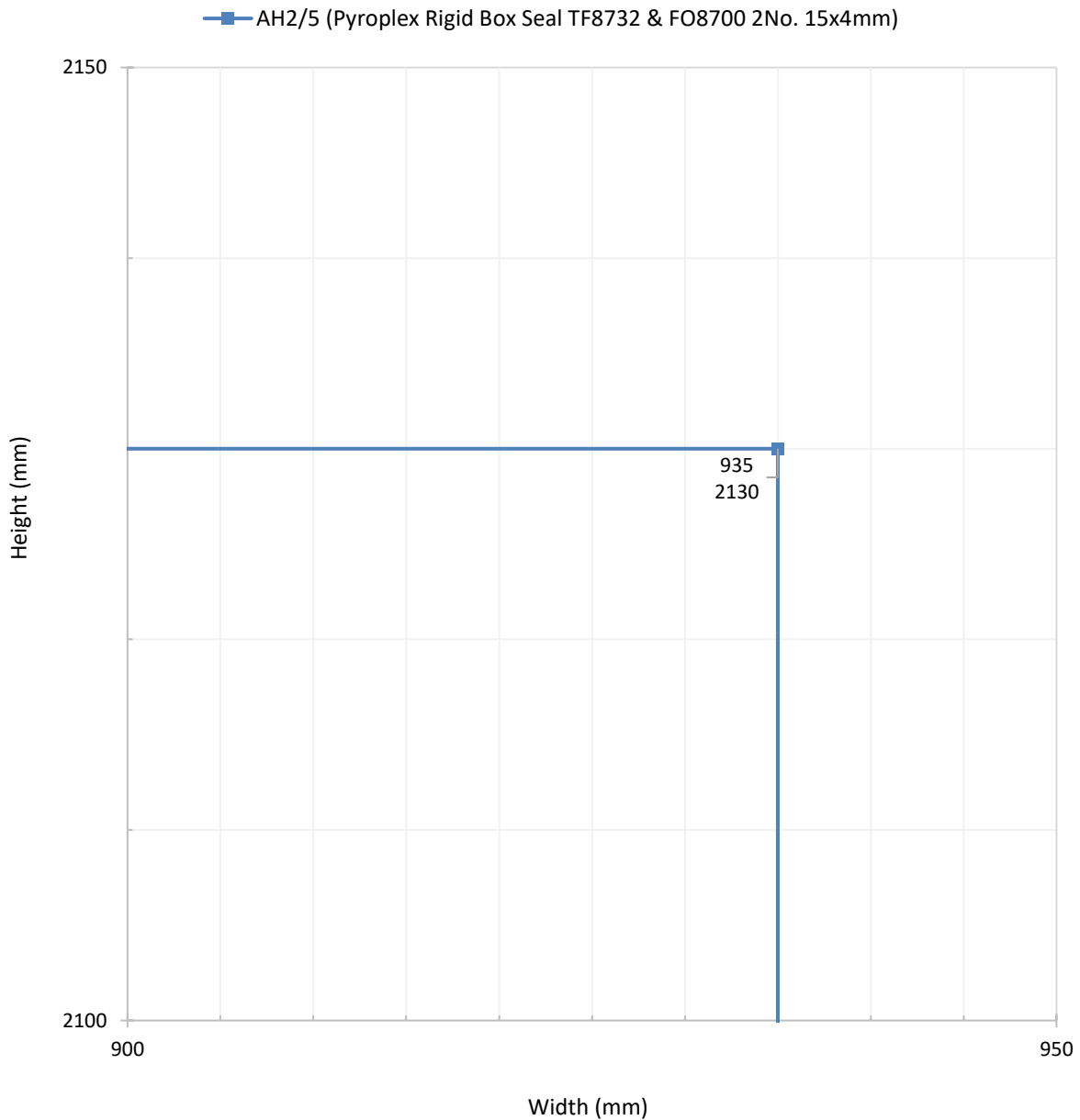
Intumescent Specification for LSADD Leaf Option 1 (Strebord 44) with Frame Option 1 (Softwood/Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS1/4 (Chilt/RF08088)	Rigid Box Seal FO8500 & FO8700	Pyroplex Ltd	Head & Jambs: 1No. FO8700 seal fitted centrally in frame reveal or door leaf edges. Meeting Edge: 2No. FO8500 seals fitted centrally 10mm apart in the leaf edge housing the latch body.

4.5.10 LSADD Configuration: Leaf Sizes & Intumescent Specification for 60 Minutes Integrity Performance

Doorset created from Leaf option 2 with frame option 2 – Pyroplex Rigid Box Seal TF8732 & F08700

LSADD

Leaf Option 2 - Strebord 54
& Frame Option 2 - Hardwood
Perimeter Intumescent Seals - Pyroplex Rigid Box Seal TF8732
& FO8700 (2No. 15x4mm)



Intumescent Specification for LSADD Leaf Option 2 (Strebord 54) with Frame Option 2 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH2/5 (Chilt/RF13082)	Rigid Box Seal FO8700 & TF8732	Pyroplex Ltd	Head & Jambs: 1No.TF8723 & 1No. FO8700 seal fitted centrally 10mm apart in frame reveal or door leaf edges. Meeting Edge: 1No.TF8723 & 1No. FO8700 seal fitted centrally 10mm apart in the leaf edge housing the latch body.

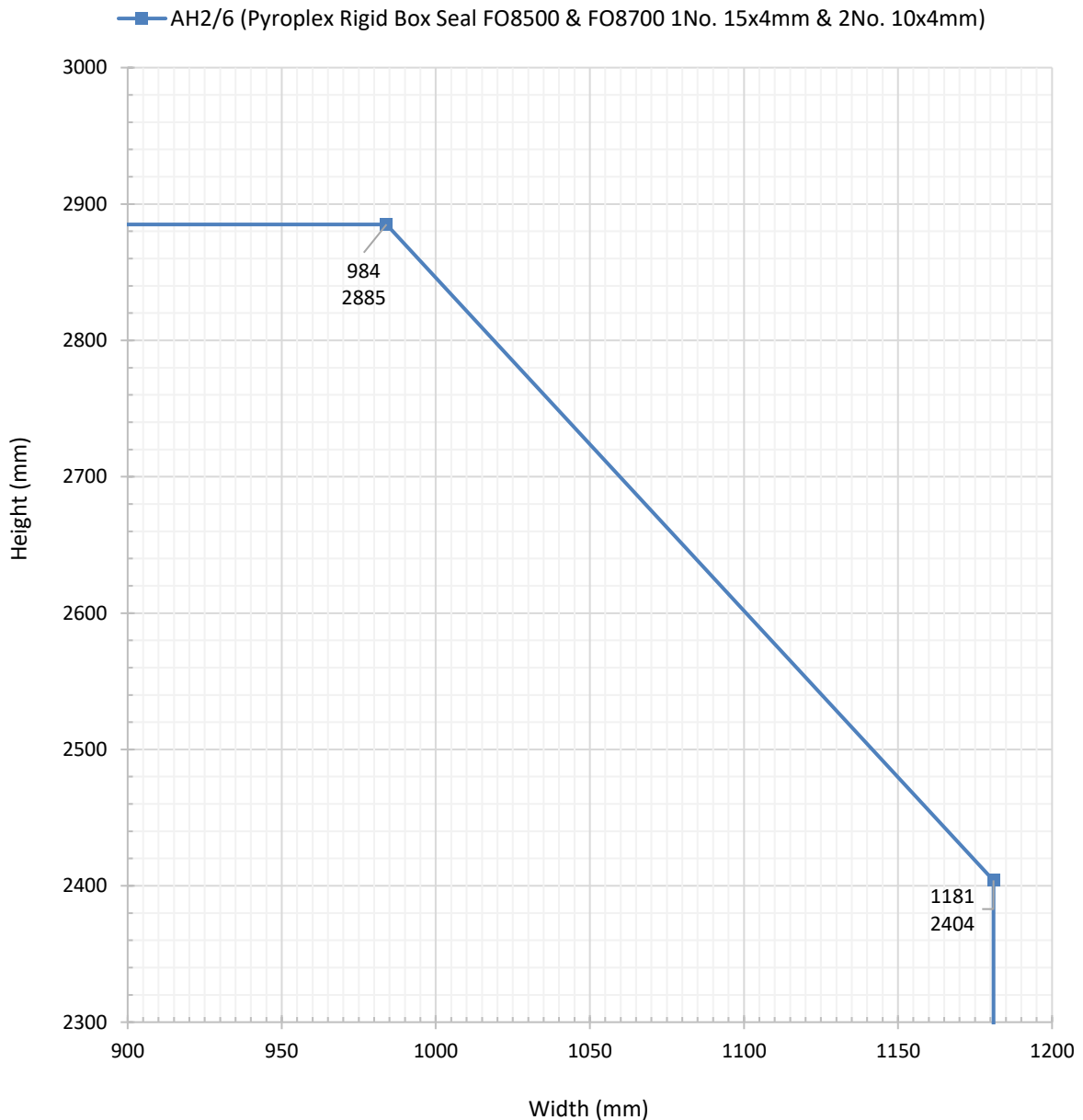
4.5.11 LSADD Configuration: Leaf Sizes & Intumescent Specification for 30 Minutes Integrity Performance

Doorset created from Leaf option 3 & 5 with frame option 2 – Pyroplex Rigid Box Seal FO8500 & FO8700

LSADD

Leaf Option 3 & 5 - Halspan Optima & Prima 30
& Frame Option 2 - Hardwood

Perimeter Intumescent Seals - Pyroplex Rigid Box Seal FO8500
& FO8700 (1No. 15x4mm & 2No. 10x4mm)



Intumescent Specification for LSADD Leaf Option 3 & 5 (Halspan Optima & Prima 30) with Frame Option 2 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH2/6 (WF372220 AR1)	Rigid Box Seal FO8500 & FO8700	Pyroplex Ltd	Head & Jambs: 1No. FO8700 seal fitted centrally in the frame reveal or door leaf edges. Meeting Edge: 2No. FO8500 seals fitted centrally 8mm apart in the leaf edge housing the latch body.

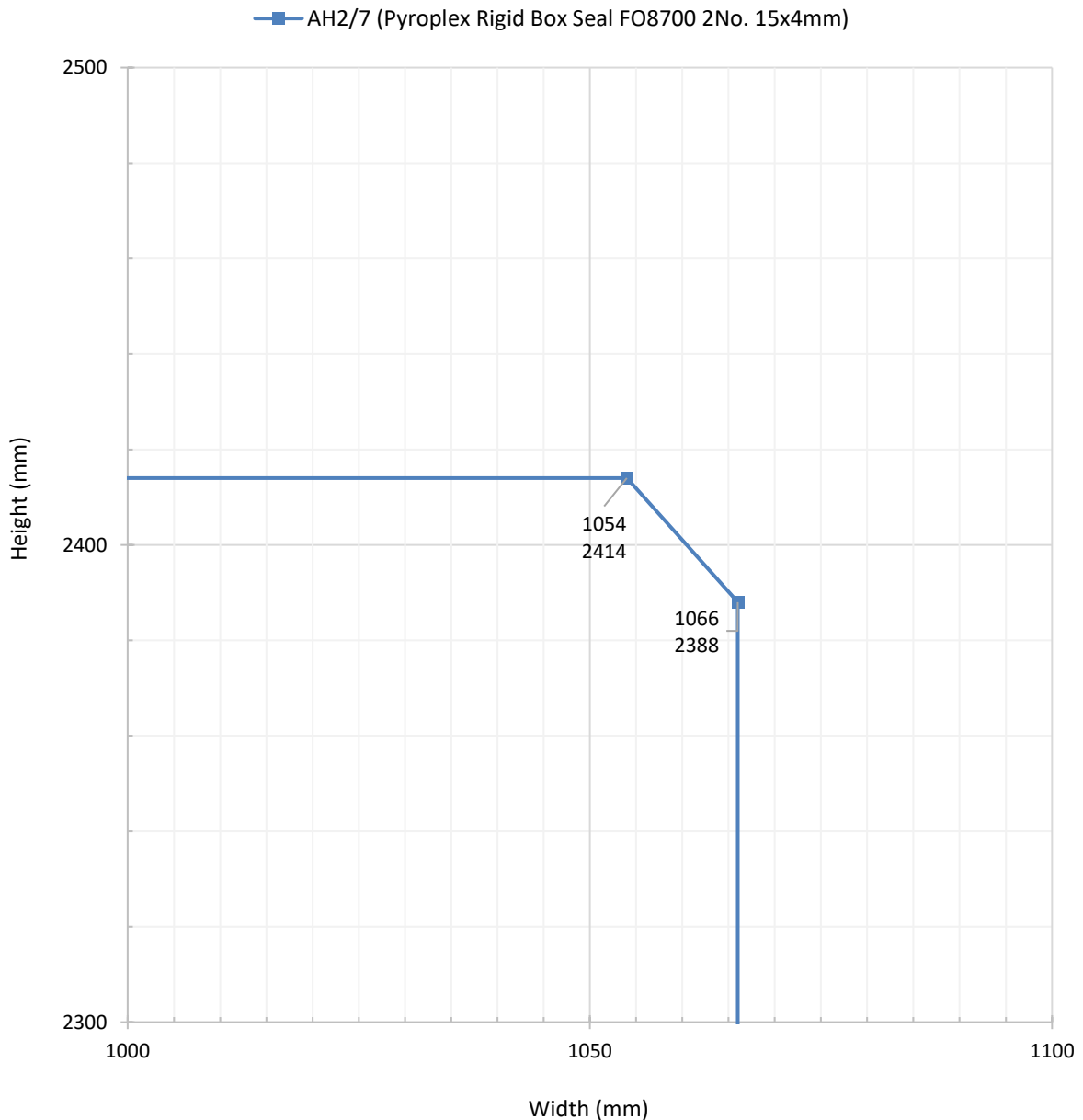
4.5.12 LSADD Configuration: Leaf Sizes & Intumescent Specification for 60 Minutes Integrity Performance

Doorset created from Leaf option 4 & 6 with frame option 2 – Pyroplex Rigid Box Seal FO8700

LSADD

Leaf Option 3 & 5 - Halspan Optima & Prima 60
& Frame Option 2 - Hardwood

Perimeter Intumescent Seals - Pyroplex Rigid Box Seal FO8700
(2No. 15x4mm)



Intumescent Specification for LSADD Leaf Option 4 & 6 (Halspan Optima & Prima 60) with Frame Option 2 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH2/7 (WF372226 AR1)	Rigid Box Seal FO8700	Pyroplex Ltd	Head & Jambs: 2No. seals fitted centrally 8mm apart in frame reveal or door leaf edges. Meeting Edge: 2No. seals fitted centrally 8mm apart in the leaf edge housing the latch body.

4.5.13 Edge Protector Maximum Leaf Sizes

See section 5.5 for the maximum leaf sizes associated with the inclusion of edge protectors.

5 General Description of Leaf Construction

5.1 Leaf Core Construction

The six leaf options detailed below are approved by this assessment.

5.1.1 Leaf Option 1 – (Strebord 44) – 44mm thick

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

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	3 layered particleboard	44 thick	510-650

The leaf must be lipped as specified in section 5.4.

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

The minimum leaf thickness after finishes applied is 44mm.

5.1.2 Leaf Option 2 – (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	3 layered particleboard	54 thick	510-650

The leaf must be lipped as specified in section 5.4.

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

The minimum leaf thickness after finishes applied is 54mm.

5.1.3 Leaf Option 3 – (Halspan Optima 30) – 44mm thick

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

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	3-layered particleboard	44 thick	620 ± 10%

The leaf must be lipped as specified in section 5.4.

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

The minimum leaf thickness after finishes applied is 44mm.

5.1.4 Leaf Option 4 – (Halspan Optima 60) – 54mm thick

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

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	3-layered particleboard	54 thick	620 ± 10%

The leaf must be lipped as specified in section 5.4.

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

The minimum leaf thickness after finishes applied is 54mm.

5.1.5 Leaf Option 5 – (Halspan Prima 30) – 44mm thick

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

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	3-layered particleboard	44 thick	630 ± 10%

The leaf must be lipped as specified in section 5.4.

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

The minimum leaf thickness after finishes applied is 44mm.

5.1.6 Leaf Option 6 – (Halspan Prima 60) – 54mm thick

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

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	3-layered particleboard	54 thick	630 ± 10%

The leaf must be lipped as specified in section 5.4.

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

The minimum leaf thickness after finishes applied is 54mm.

5.2 Comparison of Door Core Designs

The Strebord and Halspan doorset designs covered in this field of application report have all been seen to achieve the desired fire resistance period required herein and achieving overrun performance, as summarised in section 3 of this report. The door designs are of the same thickness for each fire resistance period and of the same basic construction (GDC). The doorset designs are therefore considered comparable.

Test reports BMT/FEP/F16050 AR1, WF372220 AR1 and WF372226 AR1 have been included in this field of application report to demonstrate the fire resistance performance of the Halspan Optima 30 and 60 minute doorset designs. The physical properties and respective average densities of these products differs slightly from the Halspan Prima 30 and 60 doorset designs also covered by this field of application report, see section 5.1 for doorset constructions. The technical attribution of Prima and Optima over the years has demonstrated that the products performance in fire is positively comparable.

Therefore, in regard to base line data and generic performance of the Optima doorset designs tested in report BMT/FEP/F16050 AR1, WF372220 AR1 and WF372226 AR1, coupled with years of comparable laboratory test results, it is possible to transfer product characteristics between the Halspan 30 and 60, Prima and Optima doorset designs.

5.3 Leaf Size Adjustment During Manufacturing – all Leaf Options

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

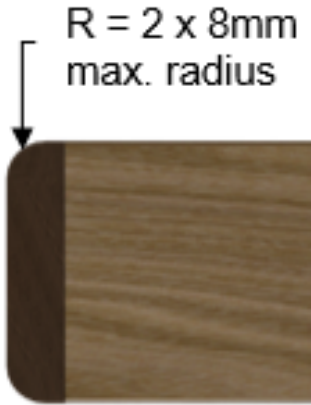
Pre-Machining Leaf Size Adjustment Specification	
Element	Reduction
Leaf	The size of the leaf may be reduced in height or width without restriction for manufacturing purposes, providing the finished leaf is lipped in accordance with section 5.4
Timber Lipping	The timber lipping thickness can be reduced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

5.4 Timber Lipping

5.4.1 Leaf Option 1 & 2 – Strebord 44 & 54

The testing documented in section 3.1 on Strebord 44 and 54 doorset designs was undertaken using a range of 6-10mm thick lippings applied to the vertical edges only using Sapele timber at a density of 640-746kg/m³. The lippings were applied using PU adhesive.

On the above basis, Falcon Strebord 44 and 54 door blanks (leaf options 1 & 2) must be lipped with the following specification;

Timber Lipping Specification for Strebord 44 & 54 door blanks		
Material	Size (mm)	Min Density (kg/m ³)
Hardwood (not Beech <i>fagus</i> species for leaf options 2 - Strebord 54)	Flat = 6 – 10 thick with a maximum of 2mm profiling permitted at corners of lipping (see 	640

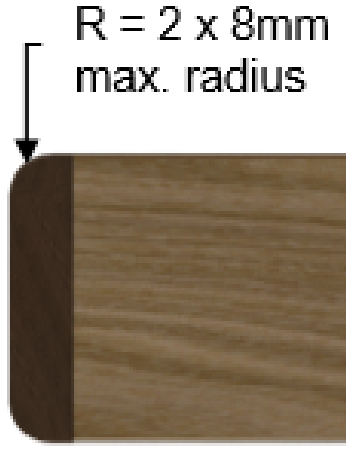
Notes:

1. All lippings are to be the same thickness as the door core plus the decorative facings. This means the lippings are always exposed.
2. Overpanels separated from the leaf heads with a transom do not need to be lipped.
3. Single doorsets with or without transomed overpanels only require lipping on the vertical edges but may be additionally lipped on the top and bottom edges if required.
4. A 2.5° chamfer is permitted to the lipping at the leading edge of leaf providing the door gaps meet the requirements of section 10.7.
5. Lippings must be bonded with PU adhesive. Adhesive may be hand applied or may be applied using an edgebander. With either method it must be ensured that sufficient glue is applied to across the entire surface area between the 2No substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed, for either installation application.
6. See section 5.5 for edge protection requirements.

5.4.2 Leaf Option 3, 4, 5 & 6

The testing documented in section 3.1 on Halspan Optima and Prima 30 and 60 doorset designs was undertaken using 10mm thick lippings applied to the vertical edges only, top and vertical edges or all 4 edges using either Sapele timber at a density of 640kg/m³ or Mahogany at a density of 600kg/m³. The lippings were applied using UF or PU adhesive.

On the above basis, Halspan Optima & Prima 30 & 60 door blanks (leaf options 3, 4, 5 & 6) must be lipped with the following specification;

Timber Lipping Specification for Halspan Optima & Prima 30 & 60 door blanks		
Material	Size (mm)	Min Density (kg/m ³)
Hardwood (not Beech <i>fagus</i> species for leaf options 4 & 6 – Halspan Optima & Prima 60)	Flat = 10 – 15 thick with a maximum of 2mm profiling permitted at corners of lipping 	640

Notes:

1. All lippings are to be the same thickness as the door core plus the decorative facings. This means the lippings are always exposed.
2. Overpanels separated from the leaf heads with a transom do not need to be lipped.
3. Halspan Optima & Prima 60 (leaf options 4 & 6) single doorset designs with or without transomed overpanels only require lipping on the vertical edges.
4. Halspan Optima & Prima 30 (leaf options 3 & 5) single doorset designs with or without transomed overpanels only require lipping on the top and vertical edges.
5. All double doorset designs require lipping to all 4 edges of the door leaf.
6. All door leaf options may additionally be lipped on all 4 edges if required.
7. A 2.5o chamfer is permitted to the lipping at the leading edge of the leaf providing the door gaps meet the requirements of section 10.7.
8. Lippings must be bonded with UF or PU adhesive. Adhesive may be hand applied or may be applied using an edgebander. With either method it must be ensured that sufficient glue is applied to across the entire surface area between the 2No substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed, for either installation application.
9. See section 5.5 for edge protection requirements.

5.5 Yeoman Shield/Lorient PVCu Door Edge Protectors

The Yeoman Shield/Lorient PVCu door edge protectors were successfully tested installed to a 44mm thick Halspan Prima and 54mm thick Halspan Prima doorset design in reports Chilt/RF07141 Revision B specimen A and Chilt/RF07141 Revision B specimen B. The testing conducted demonstrates that the Yeoman Shield/Lorient PVCu door edge protectors installed onto the vertical edges of the two above mentioned door designs exceeded the minimum anticipated integrity performance durations of 30 and 60 minutes.

Using the justification given in section 5.1 of this report, Warringtonfire opine that the Yeoman Shield/Lorient PVCu door edge protectors can be installed to all the doorset designs covered in this report without significantly effect the doorsets fire resistance performance.

Test report LOR1524 has been included to demonstrate the ability of the Yeoman Shield/Lorient PVCu door edge protectors to be installed in combination with flush bolts installed into the meeting edge.

The edge protectors must be installed as tested unless specified below.

Using the margin of over performance and the characteristics of the product exhibited during test, the following requirements are acceptable.

- Yeoman Shield/Lorient PVCu door edge protectors may only be fitted to the vertical edges of doorsets; it is permitted to fit the edgeguards to one or both vertical edges
- where edge protectors are fitted to the meeting edges of a double doorset, they must be fitted to both meeting edges.

For 30 minute application the following perimeter intumescent must be used;

		Make/type	Size (mm)	Location
Door edges	Head	None fitted	-	-
	Vertical edges	Lorient Polyproducts Ltd LP1504 Type 617	15 x 4	Centrally fitted in the Yeoman Shield / Lorient PVCu door edge protector
Frame reveal	Head	Lorient Polyproducts Ltd LP1504 Type 617	15 x 4	Centrally fitted in the frame reveal
	Jambs	None fitted	-	-

For FD30 applications where leaves exceed 2250mm high, the intumescent seal size at the head junction must be increased from 15 x 4mm to a minimum of 20 x 4mm.

For 60 minute application the following perimeter intumescent must be used;

		Make/type	Size (mm)	Location
Door edges	Head	None fitted	-	-
	Vertical edges	Lorient Polyproducts Ltd LP2004 Type 617	20 x 4	Centrally fitted in the Yeoman Shield/Lorient PVCu door edge protector
Frame reveal	Head	2No Lorient Polyproducts Ltd LP1504 Type 617	15 x 4	Centrally fitted in the frame reveal spaced 10mm apart
	Jambs	None fitted	-	-

Lippings must be installed to comply with section 5.4 of this report. Lippings must be square (rebated edges are not permitted) with no profiling at the corners permitted, contain no intumescent materials and provide a tight fit against the rear of the Yeoman Shield/Lorient PVCu door edge protectors.

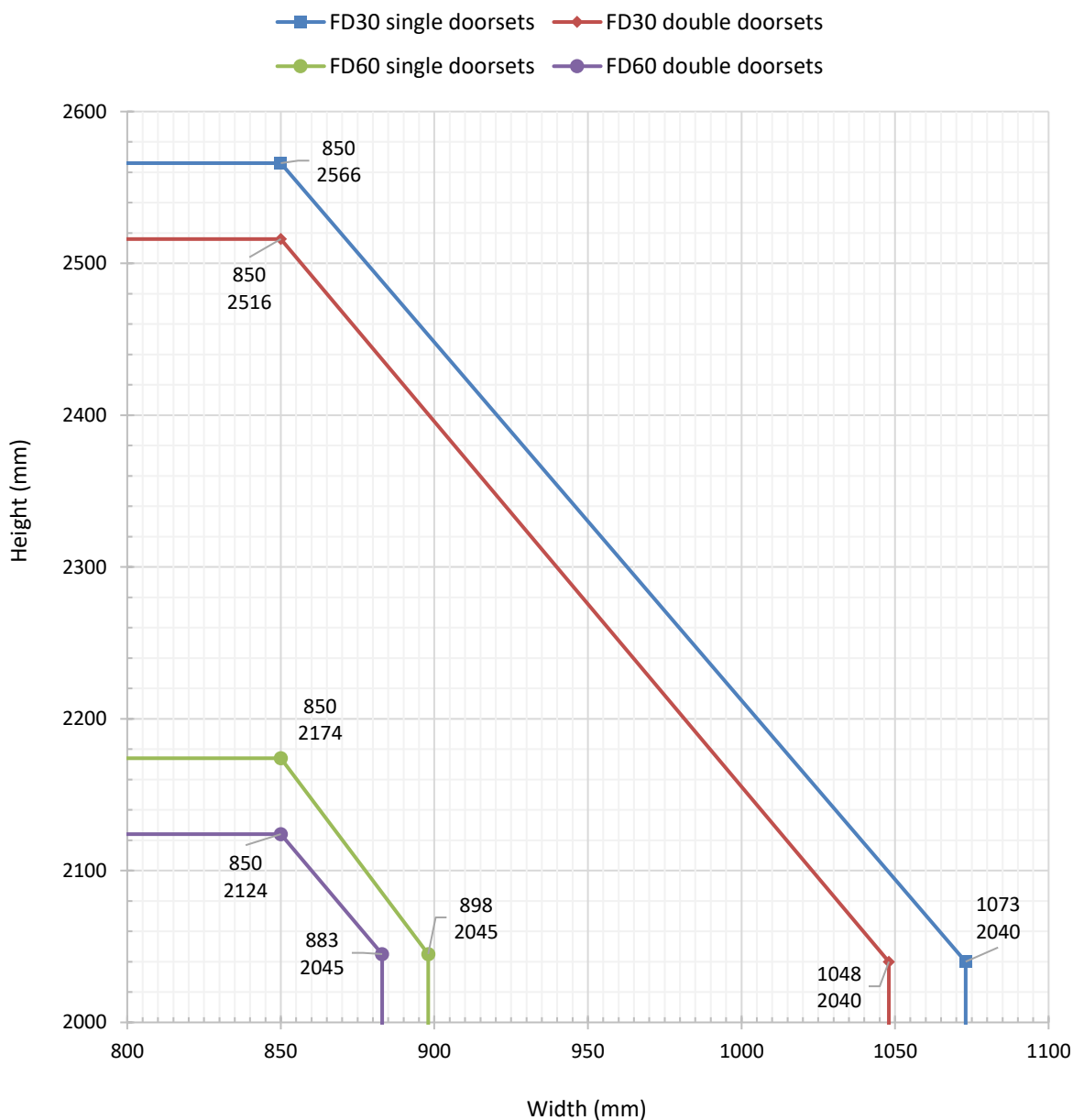
The following fixing specification must be used for fitting Yeoman Shield/Lorient PVCu door edge protectors.

Fixing	Size (mm)	Location
Steel wood screws	No 6-8 x ≥ 50 long	A fixing no more than 150mm from the top and bottom of the edge protector and at 200mm maximum centres in between
Adhesive	PVA	Fixing the PVC elements to the door leaf

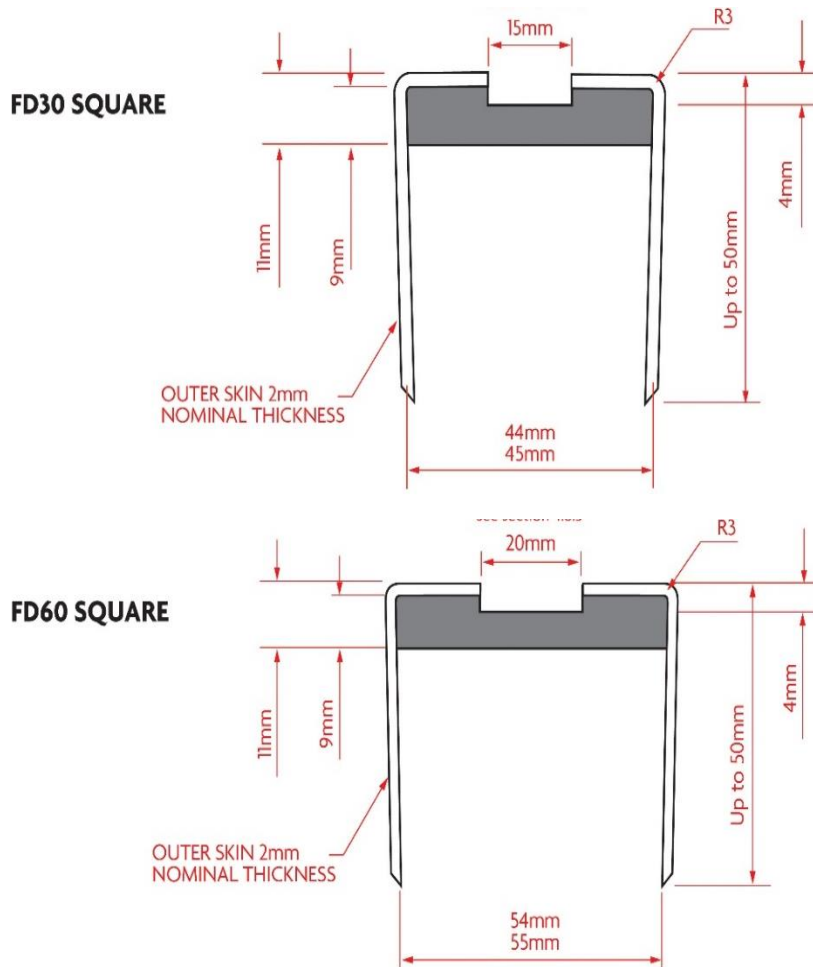
The following is the leaf size range assessed for use with Yeoman Shield/Lorient PVCu door edge protectors.

Rating	Configuration	Height (mm)	Width (mm)
FD30	Single doorsets	2040	1073
		2566	850
	Double doorsets	2040	1048
		2516	850
FD60	Single doorsets	2045	898
		2174	850
	Double doorsets	2045	883
		2124	850

Yeoman Shield/Lorient PVCu Door Edge Protectors
 Leaf Option 1, 2, 3, 4, 5 & 6 - Halspan Optima & Prima 30 & 60
 & Falcon Strebord 44 & 54
 Perimeter Intumescent Seals - Lorient Polyproducts Ltd
 LP1504 & Ltd LP2004 Type 617



The Yeoman Shield/Lorient PVCu door edge protectors must be constructed and installed to the specification tested, as depicted below.



5.6 Decorative & Protective Facings – all Leaf Options

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

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

Decorative & Protective Facing Specification	
Facing Material	Maximum Permitted Thickness (mm)
Paint	0.2
Timber veneers	2
Plastic laminates	2
PVC	2
Cellulosic and non-metallic foils	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 for leaf options 1, 3 & 5 must remain at 44mm after finishing has been applied. The minimum overall leaf thickness for leaf options 2, 4 & 6 must remain at 54mm after finishing has been applied.
3. Materials must not return around leaf edges.
4. Materials must not conceal intumescent strips.
5. Decorative finishes listed above may be painted within the limits for paint finish, above.

6 Door Frame Construction

6.1 Details for Frame Option 1

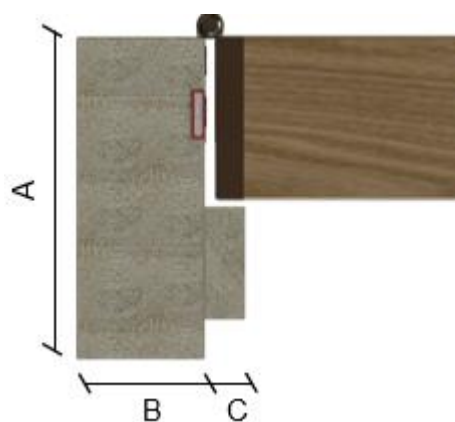
The door frame details below are the minimum size and density which have been successfully tested in report Chilt/RF13246 doorset B and Chilt/RF08088 and assessed by this report. The frame must be constructed to meet the following specification.

Frame specification				
Frame Option	Material	Minimum section size (mm)	Minimum density (kg/m ³)	Acceptable leaf option
1	Softwood/Hardwood:	Frame: 70 (d) x 32 (w) (excluding stop) Stop: 12 (w) (integral or planted on)	510 ¹	Leaf Option 1

1. Warringtonfire has permitted the use of softwood or hardwood frames with a minimum density of 510kg/m³ for door option 1 which was successfully tested in report Chilt/RF08088. The frame tested in report Chilt/RF13246 doorset B consisted of European Redwood with a density of 578kg/m³. In both cases considerable overrun was achieved. Softwood frames with a minimum density of 510/kg/m³ is a typical specification used to achieve 30 minutes fire resistance performance and has been successfully tested as a double doorset configuration as mentioned above. Therefore, it's use is considered acceptable for single doorset configurations for option 1 in this field of application report.

6.1.1 Standard frame detail

The diagram below shows detail of the standard frame construction.



A: Frame depth = 70mm minimum

B: Frame width = 32mm minimum

C: Stop width = 12mm minimum

6.2 Details for Frame Option 2

The door frame details below are the minimum size and density which have been successfully tested in report BMT/FEP/R16050 AR1, Chilt/RF13246 doorset A, Chilt/RF13082, WF372220 AR1 and WF372226 AR1 and assessed by this report. The frame must be constructed to meet the following specification.

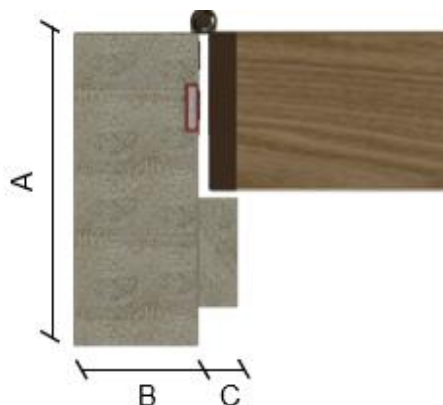
Frame specification				
Frame option	Material	Minimum section size (mm)	Minimum density (kg/m ³)	Acceptable leaf options
2	<p>Hardwood:</p> <p>The use of Beech (<i>Fagus species</i>) is NOT permitted for 60 minute applications</p>	<p>Frame: 70 (d) x 32² (w) (excluding stop)</p> <p>Stop: 12³ (w) (integral or planted on)</p>	640 ¹	Leaf Options 1, 2, 3, 4, 5 & 6

Notes:

1. Warringtonfire has permitted the use of hardwood frames with a minimum density of 640kg/m³ for door option 2 which was proven in a range of primary test evidence listed in section 3.1 of this report. A Sapele frame with a minimum density of 746kg/m³ was used in test report Chilt/RF13246. Hardwood frames with a minimum density of 640kg/m³ is a typical specification used to achieve 60 minutes fire resistance performance and has been successfully tested in a range of tests as mentioned above. Therefore, its use is considered acceptable for double doorset configurations for option 2 in this field of application report.
2. The frame minimum width for door options 3 and 5 (Halspan Optima & Prima 30 single doorsets) must be 34mm as successfully tested in report BMT/FEP/R16050 AR1. The frame minimum width for door options 3, 4, 5 and 6 (Halspan Optima & Prima 30 and 60 double doorsets) must be 42mm as successfully tested in report WF372220 AR1 and WF372226 AR1.
3. Double doorset configurations for leaf options 3, 4, 5 and 6 (Halspan Optima & Prima 30 and 60) must incorporate a stop with a minimum height of 18mm.

6.2.1 Standard frame detail

The diagrams below shows detail of the standard 30 and 60 minute frame constructions.

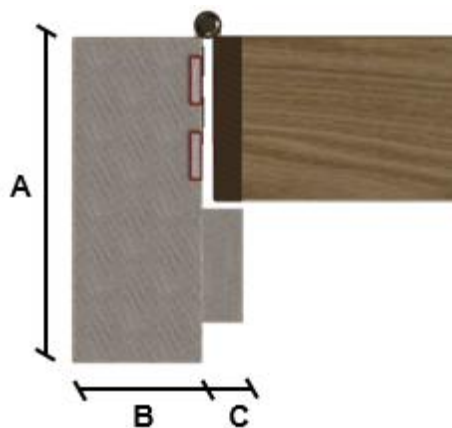


For single leaf options 3 & 5 (30 minutes)

A: Frame depth = 70mm minimum

B: Frame width = 34mm minimum

C: Stop width = 12 minimum

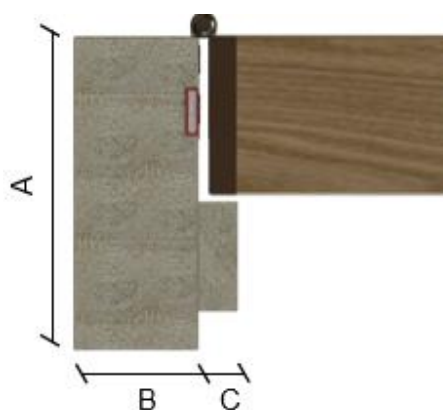


For single leaf options 1, 2, 4 & 6 and double leaf options 1 & 2

A: Frame depth = 70mm minimum

B: Frame width = 32mm minimum

C: Stop width = 12mm minimum



For double leaf options 3, 4, 5 & 6

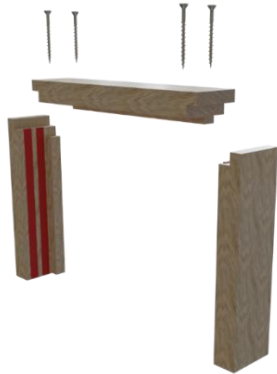
A: Frame depth = 70mm minimum

B: Frame width = 42mm minimum

C: Stop width = 18 minimum

6.3 Door Frame Joints

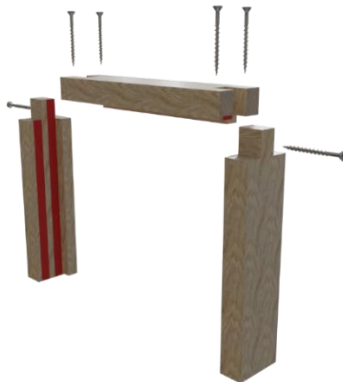
Below are depictions of the door framing joints that are deemed acceptable. Please note that the drawings are provided as general illustrations of each type of door frame joint; actual construction in terms of intumescent seal location and material, etc. must be as the text within this document specifies.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



Double Rebated Joint



Mitre Joint



Mortice & Tenon Joint



Butt Joint



Trenched or Half Lapped Joint

Approved door frame jointing options

7 Transomed Overpanels

7.1 Framed on all edges (transomed)

Transomed solid overpanels framed on all edges have not been tested. However it is the opinion of Warringtonfire that a doorset with a 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. Therefore, the framed solid panel design given in the following section is acceptable.

- Transomed overpanels of the same construction as the door leaf may be used when separated by a transom. In this application they are not required to be lipped on any specified edges. The overpanel must be fully contained within the door frame (see following diagram).
- A transom is required to separate the leaf head from the overpanel and must be constructed from hardwood with a minimum density of 640kg/m^3 and a minimum section size of 44mm thick x 70mm deep (the use of Beech (*Fagus species*) is not permitted for 60 minute applications).
- Transom joints must utilise one of the following methods: mortice and tenon joints or butt joints (see section 6.3). Either method requires joints to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws. Butt joints must be additionally bonded with urea formaldehyde.
- Joints are required to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws.
- Transomed overpanels must be fixed screwing through the rear of the frame with steel screws passing at least 30mm into the centre line of the overpanel. Fixings must be no more than 100mm from each corner and a maximum of 250mm centres in between
- See diagrams below of a typical 30 and 60 minute transomed overpanel application. The diagrams are only examples and the requirements given within this field of application report takes precedence.



30 minute transomed overpanel design



60 minute transomed overpanel design

7.1.1.1 Fitted in square edge frame sections

The intumescent seals specified for the jambs or door leaf edge in section 4 must also be fitted to all four edges of the panel. The seals may be fitted either in the panel edges or alternatively in the frame reveals.

Maximum panel dimensions are given as below:

Assembly Element		Height (mm)	Width (mm)
Overpanel	Single Doorsets	2000	Overall doorset width

The overall maximum permitted height of the door leaf and transomed overpanel in combination is 4m.

8 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	As included in manufacture by the door blank manufacture
Timber lipping & decorative facings for Falcon Strebord 44 & 54 doorset designs	PU
Timber lipping & decorative facings for Halspan Optima & Prima 30 & 60 doorset designs	UF or PU
Edge Protectors	PVA

9 Hardware

9.1 General

The following section details the permitted scope and constraints for fitting hardware to these door designs. 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

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 Borg Locks UK Ltd.
- As a result of the CERTIFIRE approval of the item of hardware
- Based on generic guidance or UKCA/CE marking but final approval will be with another approving body.

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.

9.2 Intumescent to Hardware

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

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

Hardware Intumescent Specification		
Item	Location	Product/Manufacturer
Hinges	For leaf option 1	1. 1mm thick Interdens
	For leaf option 2	1. 2mm thick Interdens
	For leaf option 3 & 5	Not required <i>Can be fitted with intumescent behind the hinge blades matching the specification given for leaf options 4 & 6 below if required.¹</i>
	For leaf option 4 & 6	1. 1mm thick Therm-A-Strip – Intumescent Seals Ltd. 2. 2mm thick Interdens
Lock/latches	Encasing latch body & under latch & keep forend – single doorset configurations	1. 1mm thick Interdens
	Encasing latch body & under latch & keep forend – double doorset configurations	1. 2mm thick Interdens 2. 2mm thick Intumescent Seals Ltd. Therm-A-Line
Flush Bolts	Encasing flush bolt body & under keep forend	1. 2mm thick Intumescent Seals Ltd. Therm-A-Strip



Example of hinge protection detail



Example of lock & latch protection detail

Note:

It is the opinion of Warringtonfire that the additional protection will not detract from the fire resistance performance under test conditions.

9.3 Essential Hardware

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

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

9.4 Latches & Locks

9.4.1 Single Point Engagement

These items are suitable in the following applications only:

Leaf options: 1, 2, 3, 4, 5 & 6

Frame options: 1 & 2

Configurations: LSASD & LSADD

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

Element	Manufacturer & Product Reference
Locks & latches	<ol style="list-style-type: none"> 1. Brass mortice latch S509 2. Tubular latch 3. Zoo tubular steel mortice latch 4. Devon steel mortice lock/latch Ref: 88.601.86 5. E *S Easi-T latch

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

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 9.2
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 $\geq 800^{\circ}\text{C}$

Notes:

1. In all instances the location of the handle must be between 800 – 1400mm from the threshold.

2. If a small tubular mortice latch with a maximum forend dimension of 65mm high x 32mm wide x 4mm thick and a maximum backset of 60mm deep is installed, the location of the handle can be installed at a maximum height of 1635mm from the threshold as tested in report Chilt/RF13246.
3. The Strebord 44 and 54 double doorset designs where tested with a small mortice latch in test reports Chilt/RF08088 and Chilt/RF13082. The specimen in test report Chilt/RF08088 achieved 14 minutes overrun and the specimen in test report Chilt/RF13082 had no failures associated with the latch position with the test terminating at 69 minutes. The Strebord door blank designs are of the same basic construction and thickness as the Halspan door blank designs which have been successfully tested with larger morticed out latch designs. Therefore, it is the opinion of Warringtonfire that the Strebord 44 and 54 double doorset designs can be installed with morticed latches of the sizes given in the table above.

9.4.2 Borg Locks (UK) BL7000 ECP MK2 Key Pad Handle

The BL7001 key pad handle, made of stainless steel, was successfully tested installed onto both doorsets within test report Chilt/RF13246. The key pad with installed with a steel tubular mortice latch with a forend measuring 58mm high x 30mm wide x 3mm thick and a 60mm backset which was installed 1635mm from the door leaf threshold in the closing edge of a Strebord 44 and Strebord 54 doorset. Both doorsets were also successfully tested with a similar key pad handle design incorporating a S509 mortice latch with a forend measuring 225mm high x 22mm wide x 3mm thick and a latch body of 160mm high x 85mm deep x 14mm wide. There were no failures associated with the latch or handle for the 30 minute doorset with the test terminating at 46 minutes. There was no failures associated with the latch or handle for the 60 minute doorset with the test terminating at 69 minutes. Both doorsets where fitted with 1mm thick Interdens encasing the latch body and behind the latch forend and keep.

The above positive test results indicate the Falcon Strebord 44 and 54 doorset designs are capable of providing 30 or 60 minute fire resistance performance when installed with a keypad and morticed latch whilst achieving overrun in integrity performance in both cases. See point 3 in section 9.4.1. above for further justification on the acceptability of Strebord double doorset configurations.

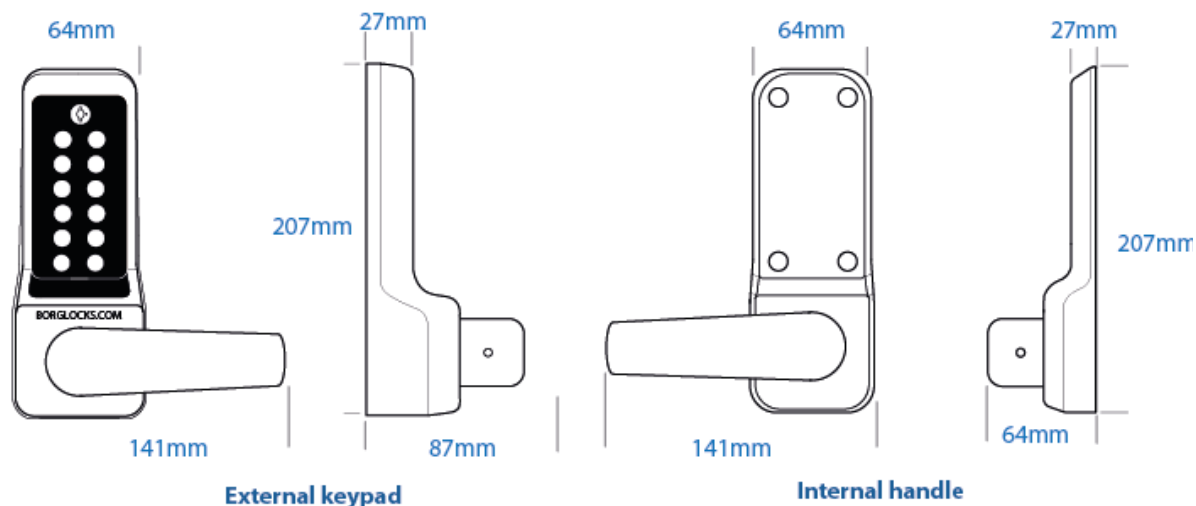
The Halspan Optima 30 and 60 doorset designs were successfully tested with a mortice latch with a forend measuring 235mm high x 24mm wide. There was no failures associated with the latch for the 30 and 60 minute doorset designs and in all cases achieving significant overrun.

The above results indicate that the Halspan Optima doorset designs are capable of incorporating a mortice latch larger than that tested in report Chilt/RF13246. The BL7000 ECP MK2 keypad handle is surface mounted and would require no additional material to be routed out of the doorset to accept it. Moreover, the Halspan Optima doorset designs covered in this field of application report are seen as comparable to the Strebord doorset designs for the reasons given in section 5.2. Furthermore, in all cases the hardware intumescent protection successfully tested with the morticed latch and keypad must be maintained. Considering the above, it is the opinion of Warringtonfire that installing the key pad handle onto the Halspan doorset designs would not significantly affect the fire resistance performance of the doorset and is therefore acceptable.

The BL7000 ECP MK2 keypad handle was not tested but is of a similar size and design as the 7001 keypad successfully tested in report Chilt/RF13246. Considering this, it is the opinion of Warringtonfire that installing the BL7000 ECP MK2 keypad handle onto the doorset designs covered herein would not significantly affect the fire resistance performance of the doorset and is therefore acceptable.

The key pad handle must be installed complying with the following requirements;

- Permitted with all the leaf options listed in section 5.1.
- Permitted in Latched, Single Acting, Single and Double Leaf configurations.
- Maximum 1No key pad handle per leaf face and 1No latch per doorset.
- Must be installed at the latch position, see section 9.4.1. for location requirements.
- No intumescent is required behind the key pad.
- The latch must be installed with intumescent protection complying with section 9.2.
- The drawings below show the key pad handle design.



Diagrams and pictures of the BL7000 ECP-SS-MK2 key pad handle

9.5 Butt Hinges

These items are suitable in the following applications only:

Leaf options: 1, 2, 3, 4, 5 & 6

Frame options: 1 & 2

Configurations: LSASD & LSADD

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

Element	Manufacturer & Product Reference
Hinges	<ul style="list-style-type: none"> Royde and Tucker H101 lift off hinges Royde and Tucker high load 105 lift off hinge Halspan BOM-HIN-201 bearing butt hinges Devon bearing butt type hinge Ref: 86.338.86

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

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

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

Element	Specification		
Hinge positions:	Top	100 –180mm from the head to top of hinge	
	If 3 hinges are required:	2 nd	Minimum 200mm from top hinge or centrally fitted between top and bottom hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
	If 4 hinges are required:	Top	100-180mm from the head to top of hinge
		2 nd & 3 rd	Equispaced between top and bottom or 2 nd hinge 200mm from top hinge and 3 rd hinge equally spaced between 2 nd and bottom hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
Intumescent protection:	See section 9.2		

Note:

For Strebord doorset designs (Door Options 1 & 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.

For Halspan doorset designs (Door Options 3, 4, 5 & 6), leaves less than 2100mm (h) must be hung on a minimum of 3 hinges. Leaves greater or equal 2100mm (h) must be hung on 4 hinges.

9.6 Doorset Self Closing

Doorset automatic self-closing can be provided by:

- Overhead face fixed closers

Automatic doorset self-closing devices such as concealed overhead, jamb mounted, transom mounted, and offset pivots used with floor springs are not considered acceptable in this field of application report.

9.6.1 Overhead Face Fixed Closer

These items are suitable in the following applications only:

Leaf options: 1, 2, 3, 4, 5 & 6

Frame options: 1 & 2

Configurations: LSASD & LSADD

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

Element	Manufacturer & Product Reference
Overhead face-fixed closers	<ul style="list-style-type: none">• Rutland TS3204 overhead type closer.• Halspan overhead type closer CLR-AGN-100• Dorm Door Controls Ltd. TS71 overhead type closer• Devon overhead closer Ref: 86.214.86 FC

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

- CERTIFIRE approved overhead face-fixed closers for 30 minute fire resistance applications on 44mm thick timber door and timber frames.
- CERTIFIRE approved overhead face-fixed closers for 60 minute fire resistance applications on 54mm thick timber door and timber frames.

Note:

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

9.7 Flush Bolts

These items are suitable in the following applications only:

Leaf options: 1, 2, 3, 4, 5 & 6

Frame options: 1 & 2

Configurations: LSADD

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:

- 211mm long x 20mm deep x 20mm wide.

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 9.2. Alternatively, the hardware manufacturers tested gaskets may be used.



Flush bolt installation and intumescent protection

9.8 Non-Essential Hardware

9.8.1 Push Plates & Kick Plates

Leaf options: 1, 2, 3, 4, 5 & 6

Frame options: 1 & 2

Configurations: LSASD & LSADD

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.

9.8.2 Environmental Seals

These items are suitable in the following applications only:

Leaf options: 1, 2, 3, 4, 5 & 6

Frame options: 1 & 2

Configurations: LSASD & LSADD

The Halspan triple fin SLS-TR1-100 environmental seal was been successfully tested as part of the Halspan Optima doorset designs in report BMT/FEP/F16050 AR1.

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

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

10 Installation


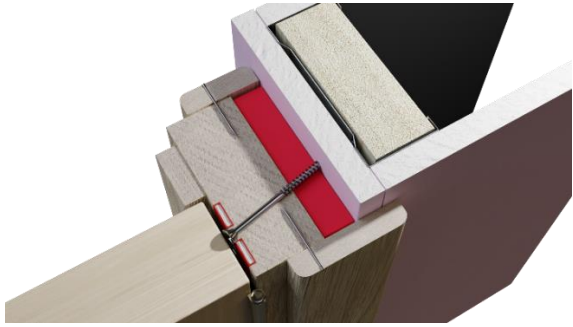

10.1 General

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

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

10.2 Door Frame Installation

The following figures indicate the acceptable door frame installations. Please note that the firestopping element is provided in the below 3D models as a generic red coloured seal. For further clarification of the approved firestopping systems see section 10.3.

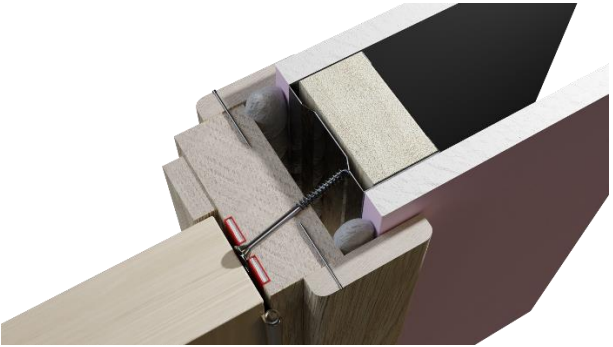
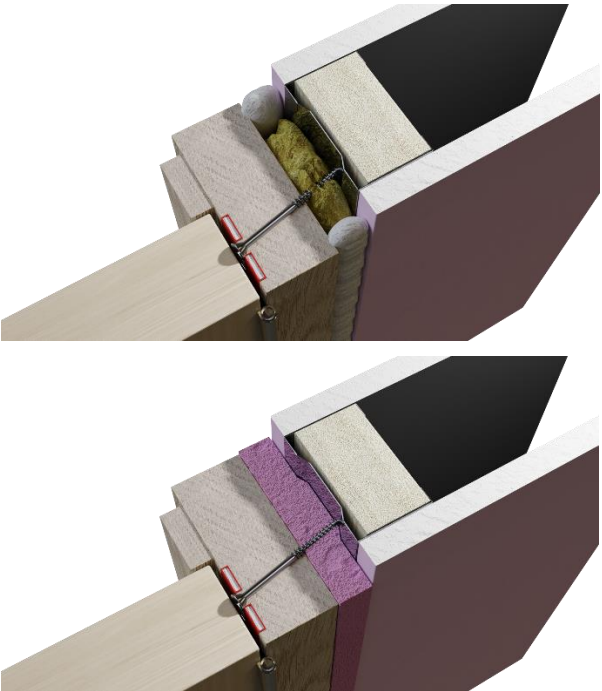
Permitted Installations	
	<p>Instances where the door frame and the wall of the same depth such that architraves are fitted flush to both faces. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see door frame section. Architraves requirements are documented in the firestopping section of this report.</p>
	<p>Instances where the wall thickness is greater than the door frame depth. In this scenario timber architraves of minimum 18mm thick must be fitted to both faces, fitted with a minimum 15mm overlap to the door gap, other than when the architrave abuts the wall.</p>
	<p>Split frames are permitted providing that both frame sections are secured to the wall in accordance with section 10.5. Furthermore, the main frame section (from which the door is hung) must be constructed to at least the minimum door frame section size (width and depth) as per the requirements noted in this report – see door frame section. The extension piece must be constructed using the same timber species as the main frame section.</p>

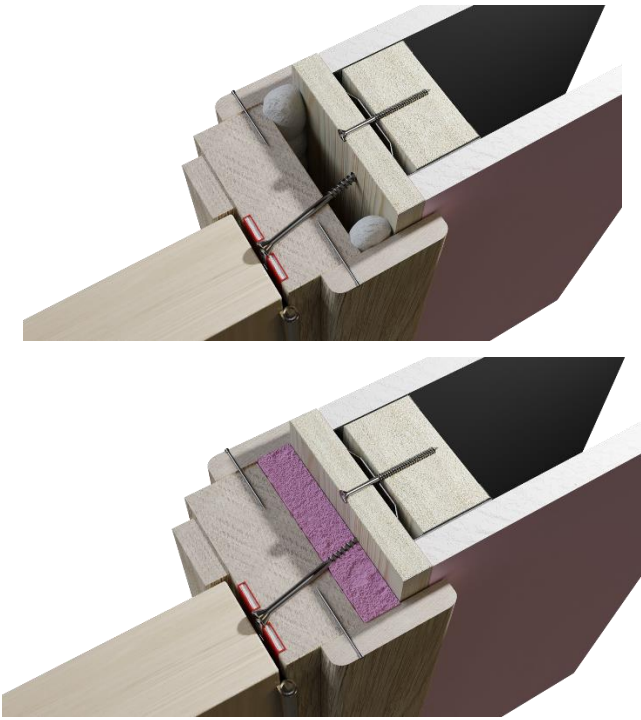
Note:

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

10.3 Firestopping

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

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

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

Note:

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

10.4 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.

10.5 Wall Types, Structural Opening & Fixity

10.5.1 Wall Types

The following wall types are approved for this doorset design:

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

Wall types a & b above must have supporting fire resistance test evidence which demonstrates that it is capable of staying in place and intact for a minimum of 30 or 60 minutes respectively supporting a doorset designs.

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.

10.5.2 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.

10.5.3 Fixity

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

For single leaf doorset designs, the frame jambs only are to be fixed to the supporting construction using steel fixings at 600mm maximum centres and maximum of 150mm from corner. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm. It is not necessary to fix the frame head, although packers must be inserted.

For double doorset configurations or doorsets incorporating a transomed overpanel, 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.

10.6 Post Production (Onsite) Leaf Size Adjustment

The Falcon Strebord 44 & 54 and Halspan Optima & Prima 30 & 60 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

10.7 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 from the door frame by more than 1mm.
Threshold	8mm between bottom of leaf and top of floor covering. This is the maximum tolerance for fire resistance only.

11 Insulation Performance

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

Insulation Performance Criteria		
Type		Details
Fully insulating	Frame Option 1 & 2	Leaf Options 1, 2, 3, 4, 5 & 6

12 Conclusion

If Falcon Strebord 44, Halspan Optima 30 and Halspan Prima 30 doorsets constructed in accordance with the specification documented in this field of application were to be tested in accordance with BS 476: Part 22: 1987, it is our opinion that they would provide a minimum of 30 minutes integrity and insulation (subject to section 11).


If Falcon Strebord 54, Halspan Optima 60 and Halspan Prima 60 doorsets constructed in accordance with the specification documented in this field of application were to be tested in accordance with BS 476: Part 22: 1987, it is our opinion that they would provide a minimum of 60 minutes integrity and insulation (subject to section 11).

13 Declaration by the Applicant

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

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

Signed:



Name:

JOHN HYSLOP

Position:

Managing Director

Date:

25/10/22

For and on behalf of: Borg Locks UK Ltd.

14 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.

15 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 13 duly signed by the applicant.

Position:	Assessor	Reviewer
Signature:		
Name:	*Liam Dunk	*Andrew Winning
Title:	Senior Product Assessor	Senior Product Assessor

* For and on behalf of Warringtonfire

Appendix A: Revisions

Rev.	WF Ref.	Date	Description