
Title

Field of Application for:
The Sentry Range of Doorsets
Using Prolite Door Blanks in
Timber Based Door Frames

For 30 minutes Fire Resistance

Report No.:

Chilt/A04030 Revision E

Issue Date:

31st October 2023

Valid Until:

31st October 2028

Job Reference:

WF529297

Prepared for:

**Jiangsu Sainty Bancom Wood
T/A Sainty-Sentry**
Tower B,
21st Software Avenue,
Nanjing City

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1 Foreword

This Field of application report has been commissioned by Jiangsu Sainty Bancom Wood Co. Ltd, T/A Sentry International and relates to the fire resistance of 30 minute fire resisting doorset designs.

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

This Field of Application (scope) uses established empirical methods of extrapolation and experience of fire testing similar doorsets, in order to extend the scope of application by determining the limits for the designs based on the tested constructions and performances obtained. The scope is an evaluation of the potential fire resistance performance if the variations specified herein were to be tested in accordance with BS 476-22: 1987.

This scope document cannot be used as supporting documentation for either a UKCA or CE marking application, nor can the conclusion be used to establish a formal classification against EN13501-2.

This Field of Application has been written using appropriate test evidence generated at UKAS accredited laboratories¹, to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturers stated door design and is summarised in section 3.

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

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

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

¹ Test evidence from overseas laboratories outside UKAS accreditation has also been considered as supporting evidence for the design tested in both directions. No other assessment has been made beyond this when considering the use of this test evidence.

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

2 Proposal

It is proposed to consider the fire resistance performance of the Sentry Prolite doorset designs, for 30 minutes fire resistance integrity performance (and where appropriate insulation performance), if the doorset designs were to be tested to the requirements of BS 476-22: 1987, *Methods for determination of the fire resistance of non-loadbearing elements of construction*.

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

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

2.1 Assumptions

- All densities referred to in this document are based upon an assumed moisture content of 10-12%.
- It is assumed that unless otherwise documented in the field of application sections of this report, the doorset subject to this report will be constructed in accordance with the test evidence referred to herein.
- For components created using solid timber sections referred to in this assessment, it is assumed that, for all timbers, they will be of a quality deemed to meet or exceed class J30 as specified in BS EN 942: 2007, subject to adequate repairs, other than glazing beads which must meet a minimum class J10. Note that areas under intumescent seals/gaskets are not considered to be concealed faces and defects must be repaired.
- Where timber is referred to within this document it is assumed that the timber element is made from a continuous solid piece, unless specifically detailed otherwise.
- All dimensions detailed herein may be varied by $\pm 2\%$ except where minimum, maximum or a range of dimensions are given.

3 Test Data

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

Note:

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

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

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

3.1 Primary Test Evidence

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

3.1.1 Test Report WF403032 Doorset B

The referenced test report, the essential details of which are summarised below, is primary data for the Type A door design being considered for assessment in this report. This test supports latched and unlatched single leaf, single acting glazed doorsets, hung in softwood frames with steel lift off hinges, a mortise lock and 6mm Pyroshield GWPP glass.

Date of test	9 th November 2018	
Identification of test body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762	
Sponsor:	Jiangsu Sainty Bancom Wood Co.Ltd	
Tested Product:	An unlatched, single acting, single leaf, timber based flush doorset with glazing. The doorsets were referenced Doorset A and Doorset B but only Doorset B is the subject of this report.	
Summary of test specimen:	<p>Door leaf dimensions: 2135 (h) x 920 (w) x 45 (t).</p> <p>The leaf comprised a core of 3 layers of 12 (t) <i>Albasia falcata</i> lamels laid in alternating horizontal and vertical directions with a 36 (t) x 32 (w) beech top rail and faced on each side with 4 (t) plywood with a 0.5 (t) beech veneer. The leaves were lipped with 6 (t) sapele to all four sides and hung in a 70 (d) x 32 (w) Redwood frame on 3 No. steel, lift off hinges. 15 x 4 PVC encased Pyroplex rigid box Seal Pile intumescent seals were centrally fitted into the frame reveal of the head and jambs and a 35 x 14 Norseal NOR810 aluminium drop seal was fitted to the bottom edge of the leaf. A Rutland TS3204 surface mounted overhead closer was fitted to the head of the leaf on the exposed face and an E*S Eurospec tubular steel latch was fitted to the doorset but disengaged.</p> <p>The leaf was fitted with a glazed aperture 870 (h) x 715 (w) incorporating 6 (t) Pilkington Pyroshield 2 GWPP glass glazed with Lorient Polyproducts Ltd 36/6 Plus and LG1512 Plus glazing system, fixed with sapele hardwood beads, 20 (h) x 21 (d), including a 5 x 5 bolection return, retained with 4Ø x 40 long steel screws, 50 from each corner and at 115 centres.</p> <p>The leaf was oriented to open towards the furnace and was unlatched for the duration of the test.</p>	
Test Standard:	BS 476 Part 22:1987	
Performance	Doorset B	Integrity: 42 minutes Insulation: 0 minutes ¹

¹ In accordance with section 8.6.1 of BS 476 Part 22:1987, the specimen was not evaluated for insulation.

3.1.2 Test Report RF04016

The referenced test report, the essential details of which are summarised below, is primary data for the Type B door design being considered for assessment in this report. This test supports latched and unlatched single and double, single acting glazed and unglazed doorsets, hung in softwood and hardwood frames with steel lift off hinges, overhead surface mounted closer, a mortise lock, aluminium handles and 6mm Pyroshield GWPP glass.

Date of test	19 th February 2004	
Identification of test body:	Chiltern International Fire Ltd, now trading as Warringtonfire Testing and Certification Ltd. UKAS No. 1762	
Sponsor:	CIPTA UK Ltd.	
Tested Product:	An unlatched, single acting, double leaf, timber based flush doorset with glazing, referenced doorset A and an unlatched single acting, single leaf flush doorset, referenced doorset B.	
Summary of test specimen:	<p>Doorset A leaf dimensions: 2110 (h) x 852/300 (w) x 43 (t). Doorset B leaf dimensions: 2415 (h) x 1210 (w) x 43 (t).</p> <p>The leaves comprised a core of 3 layers of 12 (t) <i>Falcataria (Albasia falcata)</i> lamels laid in alternating horizontal and vertical directions with 1No 36 (t) x 22 (w) and 1No 36 (t) x 38 (w) hardwood top rails, a 36 (t) x 23 (w) hardwood stile to the hanging edge, and faced on each side with 3.5 (t) WBP hardwood plywood. The leaves were lipped with 8 (t) sapele to the vertical edges only. Doorset A was hung in a 70 (d) x 32 (w) European redwood frame and doorset B was hung in a 70 (d) x 32 (w) sapele frame. Both doorsets were hung on 3 No. Royde and Tucker steel, lift off hinges. 15 x 4 PVC encased Therm-A-Seal intumescent seals were centrally fitted into the frame reveal of the head and jambs and the right meeting edge of doorsets A. A Dorma TS73V surface mounted overhead closer was fitted to the head of the leaf on the exposed face and a tubular mortise latch was fitted to the doorset but disengaged.</p> <p>The right leaf of doorset A was fitted with a glazed aperture 700 (h) x 650 (w) incorporating 6 (t) Pilkington Pyroshield GWPP glass glazed with nominally 2 (t) Sealmaster Fireglaze, and fixed with sapele hardwood beads, 20 (h) x 21.5 (d), including a 5 x 5 bolection return and 13° chamfer, retained with 50 long steel pins, 45 from each corner and at 100 centres.</p> <p>The leaves were oriented to open towards the furnace and were both unlatched for the duration of the test.</p>	
Test Standard:	BS 476 Part 22:1987	
Performance	Doorset A	Integrity: 37 minutes Insulation: 37 minutes ¹
	Doorset B	Integrity: 44 minutes ² Insulation: 44 minutes ²

¹ In accordance with section 8.6.1 of BS 476 Part 22:1987, the specimen was not evaluated for insulation.

² Failure had not occurred on termination of the test.

3.1.3 Test Report 01059B

The referenced test report, the essential details of which are summarised below, is primary data for the Type B door design being considered for assessment in this report. This test supports a Type B variation incorporating thicker facings and a thinner core for latched and unlatched single leaf, single acting glazed doorsets, hung in MDF frames with steel lift off hinges and a tubular mortise latch.

Date of test	16 th July 2001
Identification of test body:	Chiltern International Fire Ltd, now trading as Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Williamson Associates
Tested Product:	An unlatched, single acting, single leaf, timber based flush doorset with glazing.
Summary of test specimen:	<p>Door leaf dimensions: 2135 (h) x 915 (w) x 45 (t).</p> <p>The leaf was identified as a Sentry Superlite construction with a 34 (t) core and 5.5 (t) ply facings, lipped with 6 (t) sapele to all four sides, and hung in a 125 (d) x 25 (w) SAM MDF primed frame, on 3 No. Royde and Tucker lift off hinges. Intumescent Seals Ltd 20 x 4 PVC encased Therm-A-Seal intumescent seals were centrally fitted into the frame reveal of the head and jambs. A Dorma TS73V surface mounted overhead closer was fitted to the head of the leaf on the exposed face and a Henderson Hardware Ltd tubular mortise latch was fitted to the doorset but disengaged. Aluminium lever handles were fitted appropriate to the latch.</p> <p>The leaf was fitted with a glazed aperture 704 (h) x 604 (w) incorporating 6 (t) Pilkington Pyroshield GWPP glass glazed with nominally 2 (t) Sealmaster Fireglaze, and fixed with sapele hardwood beads, 26 (h) x 27 (d), including a 10 x 6 bolection return and 24° chamfer, retained with 50 long steel pins at 100 centres.</p> <p>The leaf was oriented to open towards the furnace and was unlatched for the duration of the test.</p>
Test Standard:	BS 476 Part 22:1987
Performance	Integrity: 35 minutes Insulation: 35 minutes ¹

¹ In accordance with section 7.6.1 of BS 476 Part 22:1987, the glazing was not evaluated for insulation.

3.1.4 Test Report WF513928 Revision A

The referenced test report, the essential details of which are summarised below, is primary data for the Type A door design being considered for assessment in this report. This test supports latched single and double leaf, single acting doorsets, hung in softwood frames with steel hinges, an overhead closer, a mortise latch, handles and eye viewer.

Date of test	7 th April 2022	
Identification of test body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762	
Sponsor:	Jiangsu Sainty Bancom Wood Co. Ltd	
Tested Product:	An unlatched, single acting, double leaf and a latched, single acting, single leaf, timber based flush doorsets.	
Summary of test specimen:	<p>Doorset A Door leaf dimensions: 2040 (h) x 936/468 (w) x 44 (t). Doorset B Door leaf dimensions: 2040 (h) x 923 (w) x 44 (t).</p> <p>Doorset A: The leaf comprised a core of 3 layers of 12 (t) <i>Albasia falcata</i> lamels laid in alternating horizontal and vertical directions with a 36 (t) x 32 (w) Pine top rail and faced on each side with 3.4 (t) plywood with a 0.6 (t) poplar veneer. The leaves were lipped with 8 (t) Poplar to all four sides and hung in a 100 (d) x 30 (w) Redwood frame on 4 No. steel Howdens Eclipse hinges. 15 x 4 LP1504 PVC encased Lorient intumescent seals were centrally fitted into the frame reveal of the head and jambs and meeting edge. A Howdens Eclipse surface mounted overhead closer, Assa Abloy Union BS5 mortice sashlock (disengaged) and Hoppe AR200 lever handle.</p> <p>Doorset B: The leaf comprised a core of 3 layers of 12 (t) <i>Albasia falcata</i> lamels laid in alternating horizontal and vertical directions with a 36 (t) x 32 (w) Pine top rail and faced on each side with 3.4 (t) plywood with a 0.6 (t) poplar veneer. The leaves were lipped with 8 (t) Poplar to all four sides and hung in a 100 (d) x 30 (w) Redwood frame on 4 No. steel Howdens Eclipse hinges. 15 x 4 AR1504 FO Astroflame intumescent seals were centrally fitted into the frame reveal of the head and jambs and meeting edge. A Howdens Eclipse surface mounted overhead closer, Assa Abloy Union BS5 mortice sashlock (engaged), Hoppe AR200 lever handle and Assa Abloy Union eye viewer.</p> <p>The leaf was oriented to open towards the furnace for both specimens and was latched for the duration of the test.</p>	
Test Standard:	BS 476 Part 22:1987	
Performance	Doorset A	Integrity: 42 minutes Insulation: 42 minutes
	Doorset B	Integrity: 43 minutes ¹ Insulation: N/A minutes ²

¹ No failures of integrity or insulation had occurred when the test was terminated at 31 minutes at the request of the sponsor.

² Due to equipment failure it was not possible to give an insulation rating.

3.1.5 Test Report 181212006SHF-001 and 181212006SHF-002

The referenced test reports, the essential details of which are summarised below, are primary data for the Type A door design being considered for assessment in this report. This test supports latched, single leaf, unglazed doorsets, hung in hardwood frames with steel hinges, and a mortise lock, tested opening towards and away from the furnace conditions.

Date of test	30 th January 2019	
Identification of test body:	Intertek testing Services Shenshen Ltd, Shanghai, China IAS accreditation No. TL-394	
Sponsor:	Jiangsu Sainty Bancom Wood Co. Ltd	
Tested Product:	Latched, single acting, single leaf, timber based flush doorsets, referenced Doorset A and Doorset B	
Summary of test specimen:	<p>Both door leaf dimensions: 2135 (h) x 915 (w) x 44 (t).</p> <p>Both leaves comprised a core of 3 layers of 12 (t) <i>Albasia</i> blockboard lamels laid in alternating horizontal and vertical directions with a 36 (t) x 32 (w) beech top rail, and faced on each side with 4 (t) plywood. The leaves were lipped with 8 (t) Meranti to all four sides and hung in a beech frame on 3 No. stainless steel, bearing butt hinges. 15 x 4 PVC encased Pyroplex intumescent seals were centrally fitted into the frame reveal of the head and jambs. An SS5572-01A mortise lock with latch and deadbolt was fitted to both doorsets.</p> <p>The left hand doorset was oriented to open out from the furnace; the right hand doorset was oriented to open towards the furnace. Both leaves were latched for the duration of the test.</p>	
Test Standard:	EN 1634-1:2014	
Performance	Doorset A	Integrity: 31 minutes ¹ Insulation: 31 minutes ¹
	Doorset B	Integrity: 31 minutes ¹ Insulation: 31 minutes ¹

¹ No failures of integrity or insulation had occurred when the test was terminated at 31 minutes at the request of the sponsor.

3.1.6 Test Report WF504600 Issue 2 Doorset A

The referenced test report, the essential details of which are summarised below, is primary data for the Type A door design using Frame Option 5 being considered for assessment in this report. This test supports a Jeldwen European Pine frame design for latched, single leaf, single acting doorsets.

Date of test	8 th June 2023
Identification of test body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Frisco UK Sales Ltd.
Tested Product:	A latched, single acting, single leaf, timber based flush doorset.
Summary of test specimen:	<p>Door leaf dimensions: 1978 (h) x 838 (w) x 45 (t).</p> <p>The leaf was identified as a Sentry DXF0046 construction with a 3no layer x 12mm (t) tri laminated lamel core with 34 (t) with 36 (w) x 32 (d) softwood top rail and 4 (t) ply facings, lipped with 8 (t) sapele to all four sides, and hung in a 56 (w) x 66 (t) Jeldwen European Pine frame, on 3 No. Frisco UK Sales Ltd. 14852 hinges. Lorient Polyproducts Ltd. 20 x 4 LP2004 intumescent seals were centrally fitted into the frame reveal of the head and jambs. A Frisco UK Sales Ltd. 28932 surface mounted overhead closer was fitted to the head of the leaf on the exposed face and a Frisco UK Sales Ltd. 70271 tubular mortise latch was fitted to the doorset. Frisco UK Sales Ltd, 39914 aluminium lever handles were fitted appropriate to the latch.</p> <p>The leaf was oriented to open towards the furnace and was latched for the duration of the test.</p>
Test Standard:	BS EN1634-1:2014+A1:2018
Performance	Integrity: 42 minutes Insulation: 42 minutes

3.1.7 Certifire Certificate CF219

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the use of the Assa Abloy Ltd. Firemaster letterplates for the proposed door assemblies, as detailed in section 5 of this report.

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

The Assa Abloy Ltd. Firemaster letterplates are approved on the basis of:

- a) Initial type testing.
- b) A design appraisal against TS32.
- c) Certification of quality management system to ISO 9001: 2008.
- d) Inspection and surveillance of factory production control.

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

Validity period	Issued:	7th October 2002
	Revised:	27th March 2020
	Valid to:	26th March 2025
Identification of certification body:	Warringtonfire Certification	
Sponsor:	Assa Abloy Ltd. School Street, Willienhall, West Midlands, WV13 3PW	
Certified Product:	Firemaster letterplates	
Technical Schedule:	TS32 – The contribution of letterplates and their accessories to fire resisting and smoke control doorsets with metallic or no-metallic leaves	
Summary of certification:	The contribution to the fire resistance of Firemaster letterplates for use with door assemblies consisting of timber faced and edged leaves with timber, cellulosic or mineral cores in timber, metal or composite frames having fire resistances of 30 minutes integrity and/or insulation as defined in BS 476: Part 22 or BS EN 1634-1 as applicable, depending on letterplate assembly (NB: the basis of the approval is outlined in the referenced certificate)	
Test Standard:	BS EN 476: Part 22: 1987 or BS EN 1634-1	

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 – Type A – 44mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings

4.3.2 Leaf Option 2 – Type B – 44mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings

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 or Hardwood Timber – for Leaf Options 1 & 2 (Pyroplex & Therm-A-Seal perimeter intumescent seals)

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 7.

4.4.2 Frame Option 2 – Hardwood – for use with Leaf Option 2 (extended leaf size)

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 7.

4.4.3 Frame Option 3 – MDF – for Leaf Option 2 (single doorsets only)

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 7.

4.4.4 Frame Option 4 – Softwood or Hardwood Timber – for Leaf Option 1 (Lorient & Astroflame perimeter intumescent seals)

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 7.

4.4.5 Frame Option 5 – Finger Jointed Softwood or Hardwood Timber (Jeldwen DFR1051 Design) – for Leaf Option 1 (Lorient perimeter intumescent seals)

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

4.5 Doorset Configurations & Maximum Leaf Sizes

4.5.1 General

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

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

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

1. A test on a double doorset is more onerous than a test on a single doorset
2. A test on 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
3. A doorset with transomed overpanel is considered to perform comparably to a similar doorset without an overpanel. This is because the transom structurally separates the overpanel from the doorset.

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





Doorsets with reduced height and width dimensions from those tested are deemed to be less onerous. Therefore, doors with dimensions less than those given in the leaf size envelopes

(for the relevant intumescent specification) in the following sections are covered and may be manufactured.

4.5.2 Configuration

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

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

Doorset Configurations		
Depiction	Abbreviation	Description
	LSASD	Latched Single Acting Single Doorset
	ULSASD	Unlatched Single Acting Single Doorset
	LSADD	Latched Single Acting Double Doorset
	ULSADD	Unlatched Single Acting Double Doorset

4.5.3 Orientation

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

Test references 181212006SHF-001 and 181212006SHF-002 were undertaken with the same doorset design tested in both directions, opening in towards the furnace heating conditions and out away from the heating conditions. Both doorsets achieved 31 minutes integrity performance, with no failures occurring and the test terminating at 31 minutes. This shows positive evidence of the doorset design covered herein achieving the desired fire resistance period when tested in both directions.

4.5.4 Envelopes for each Configurations

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

Unequal leaf double doorsets are covered by this assessment 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.

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

4.5.4.1 General Note on Intumescent Seals

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

4.5.4.2 Explanation for following sections

The performance of a doorset in terms of configuration and size is dependent on the leaf option, perimeter intumescent used and frame option. These elements are not automatically interchangeable. The following sections present the envelopes for the 2 leaf options and 5 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 ULSADD
- for each configuration, each leaf option is considered separately
- for each configuration and leaf option, each frame option is considered separately
- 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 (Sentry Prolite Type A & B) blank/each Leaf & Frame Option

Permitted Configurations with frame options 1, 4 & 5 with leaf option 1 (Sentry Prolite Type A)					
		Configuration			
		LSASD	ULSASD	LSADD	ULSADD
Frame	1 – Softwood or hardwood frame*	Yes	Yes	No	No
	4 – Softwood or hardwood frame*	Yes	Yes	Yes	Yes
	5 – Finger jointed softwood or hardwood frame*	Yes	No	No	No

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

Permitted Configurations with frame options 1, 2 & 3 with leaf option 2 (Sentry Prolite Type B)					
		Configuration			
		LSASD	ULSASD	LSADD	ULSADD
Frame	1 – Softwood or hardwood frame*	Yes	Yes	Yes	Yes
	2 – Hardwood frame*	Yes	Yes	No	No
	3 – MDF frame*	Yes	Yes	No	No

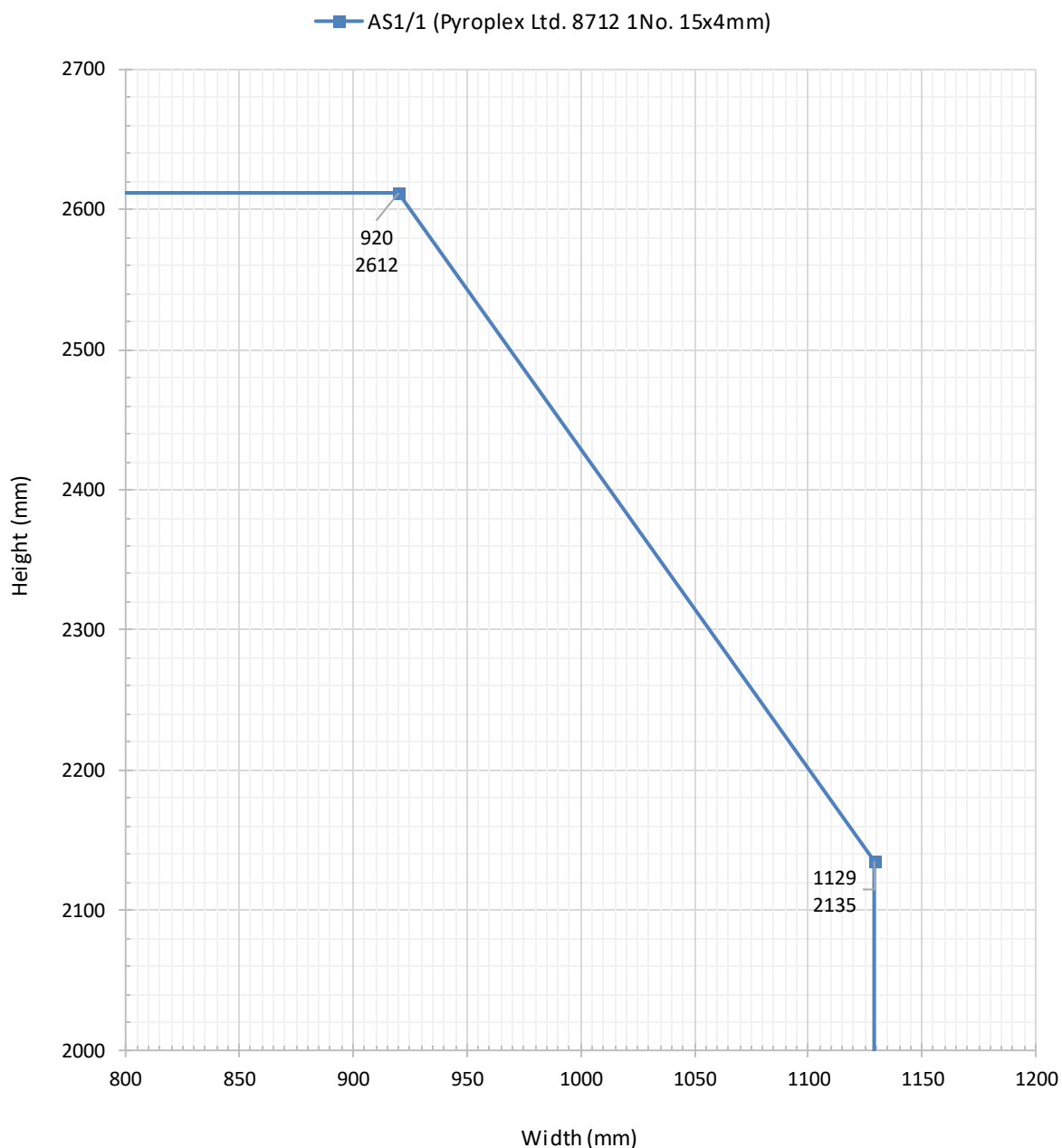
* See Section 7 for specific limitations with respect to the framing types

4.5.5 LSASD Configuration: Leaf Sizes & Intumescent Specification

Doorset created from Leaf option 1 with frame option 1

LSASD

Leaf Option 1 - Sentry Prolite (Type A)
Frame Option 1 (Softwood or Hardwood)
(Pyroplex Ltd. 8712 1No. 15x4mm)



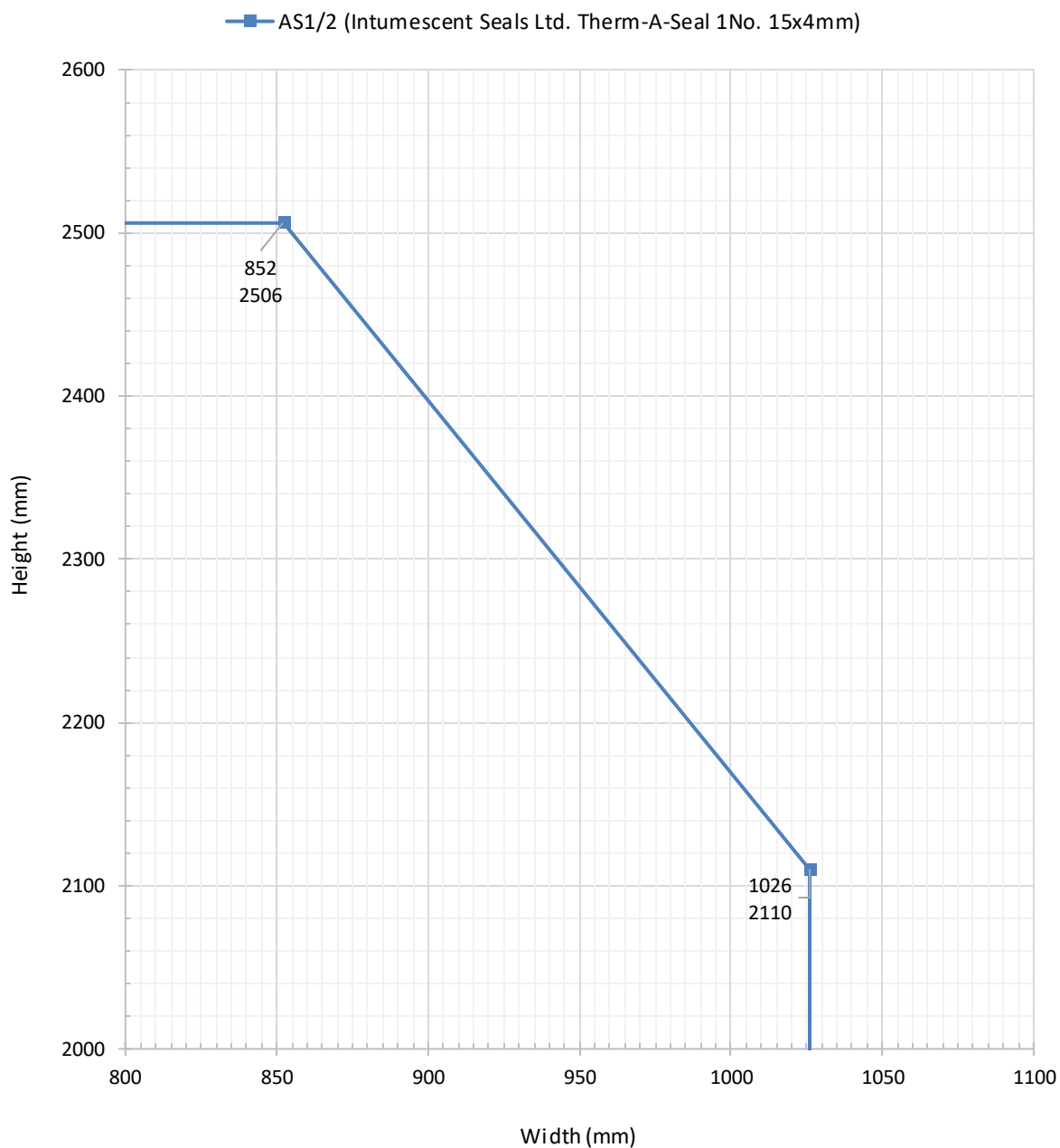
Intumescent Specification for LSASD Leaf Option 1 (Sentry Prolite Type A) with Frame Option 1 (Softwood or Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS1/1 (WF403032 Doorset B)	8712	Pyroplex Ltd	Head & Jamb: 1No. 15x4mm seal fitted centrally in frame reveal or leaf edges ¹

¹ For leaves over 2400mm high, or over 1050mm wide the intumescent strip must be substituted for a 1No. 20x4mm.

Doorset created from Leaf option 2 with frame option 1

LSASD

Leaf Option 2 - Sentry Prolite (Type B)
Frame Option 1 (Softwood or Hardwood)
(Intumescent Seals Ltd. Therm-A-Seal 1No. 15x4mm)



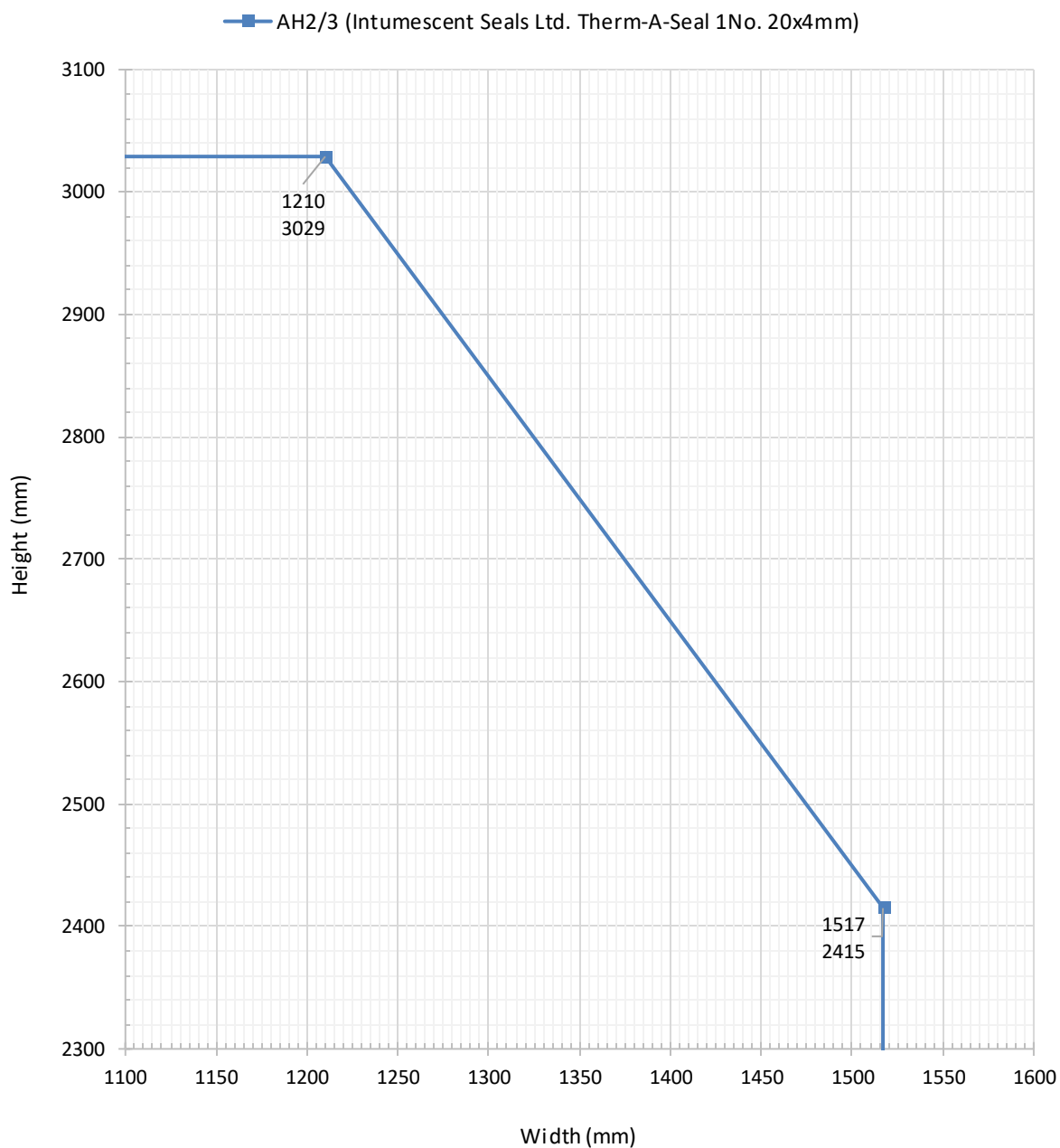
Intumescent Specification for LSASD Leaf Option 2 (Sentry Prolite Type B) with Frame Option 1 (Softwood or Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS1/2 (RF04016 Doorset A)	Therm-A-Seal	Intumescent Seals Ltd	Head & Jambs: 1No. 15x4mm seal fitted centrally in frame reveal or leaf edges ¹

¹ For leaves over 2250mm high the intumescent strip must be substituted for a 1No. 20x4mm.

Doorset created from Leaf option 2 with frame option 2

LSASD

Leaf Option 2 - Sentry Prolite (Type B)
Frame Option 2 (Hardwood)
(Intumescent Seals Ltd. Therm-A-Seal 1No. 20x4mm)



Intumescent Specification for LSASD Leaf Option 2 (Sentry Prolite Type B) with Frame Option 2 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH2/3 (RF04016 Doorset B)	Therm-A-Seal	Intumescent Seals Ltd	Head & Jambs: 1No. 20x4mm seal fitted centrally in frame reveal or leaf edges¹

¹ For leaves over 2650mm high, or over 1350mm wide the intumescent strip must be substituted for a 1No. 25x4mm.

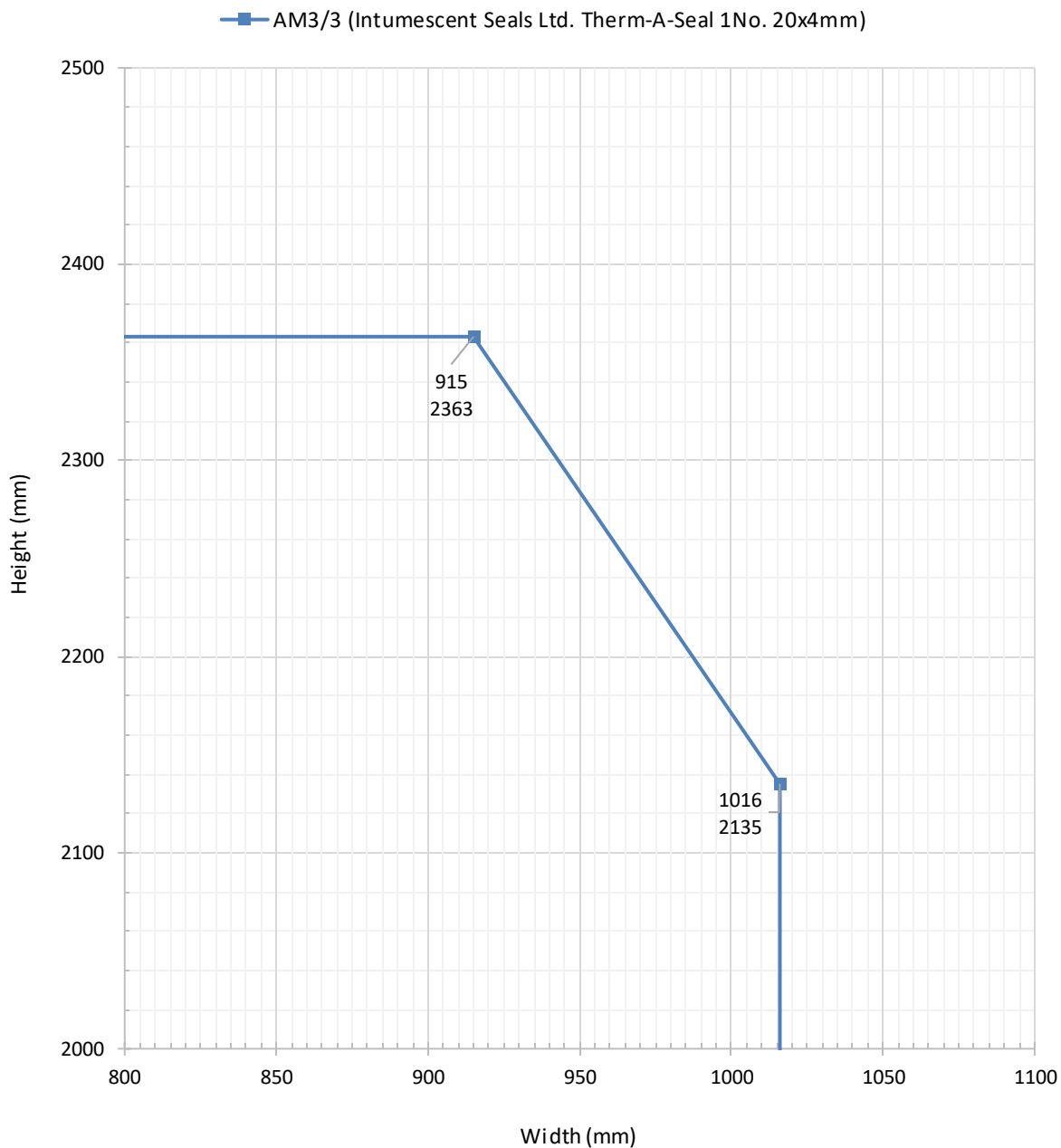
Doorset created from Leaf option 2 with frame option 3

LSASD

Leaf Option 2 - Sentry Prolite (Type B)

Frame Option 3 (MDF)

(Intumescent Seals Ltd. Therm-A-Seal 1No. 20x4mm)



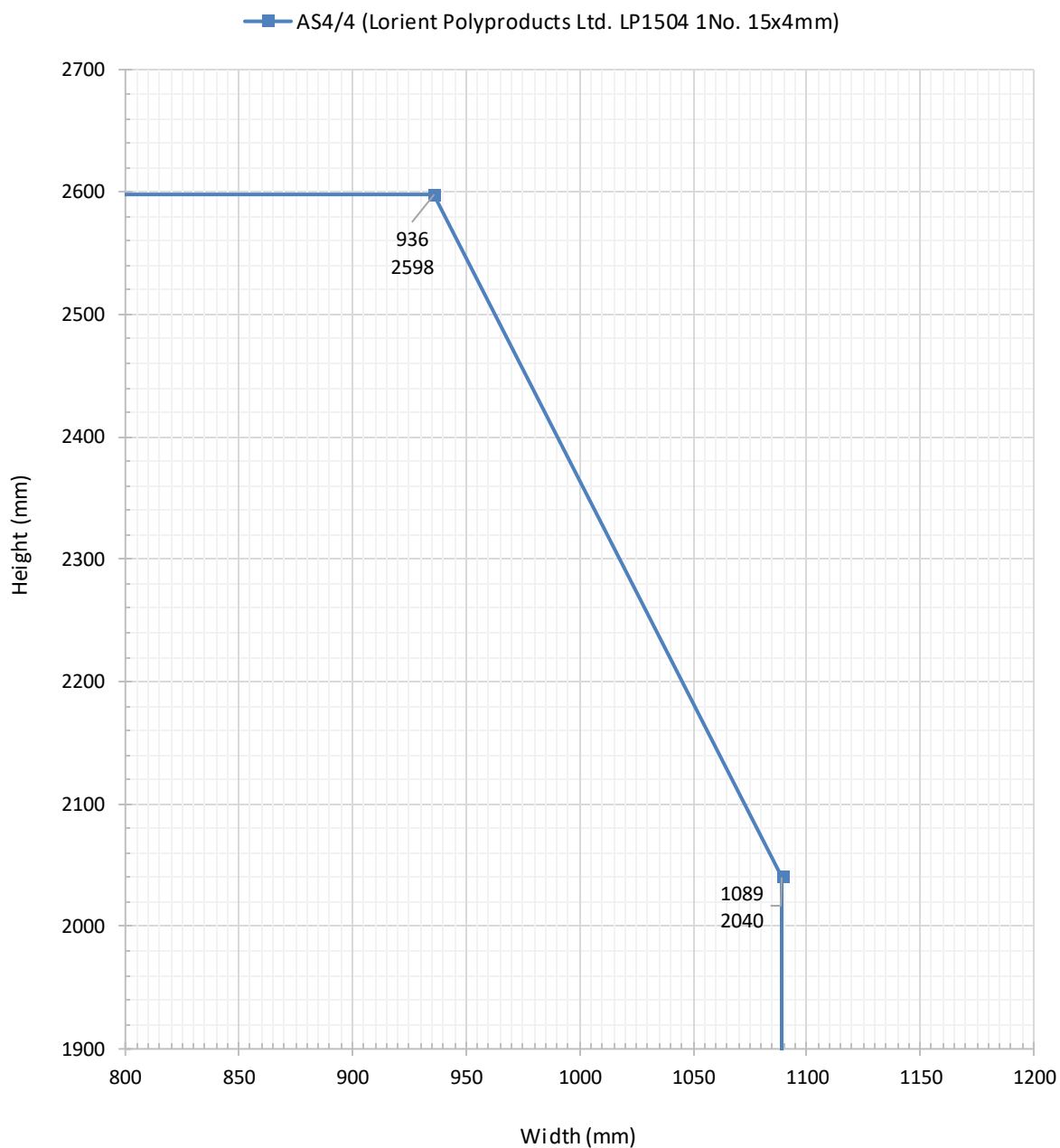
Intumescent Specification for LSASD Leaf Option 2 (Sentry Prolite Type B) with Frame Option 3 (MDF)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AM3/3 (RF01059B)	Therm-A-Seal	Intumescent Seals Ltd	Head & Jambs: 1No. 20x4mm seal fitted centrally in frame reveal or leaf edges ¹

¹ For leaves over 2250mm high the intumescent strip must be substituted for a 1No. 25x4mm.

Doorset created from Leaf option 1 with frame option 4

LSASD

Leaf Option 1 - Sentry Prolite (Type A)
Frame Option 4 (Softwood or Hardwood)
(Lorient Polyproducts Ltd. LP1504 1No. 15x4mm)



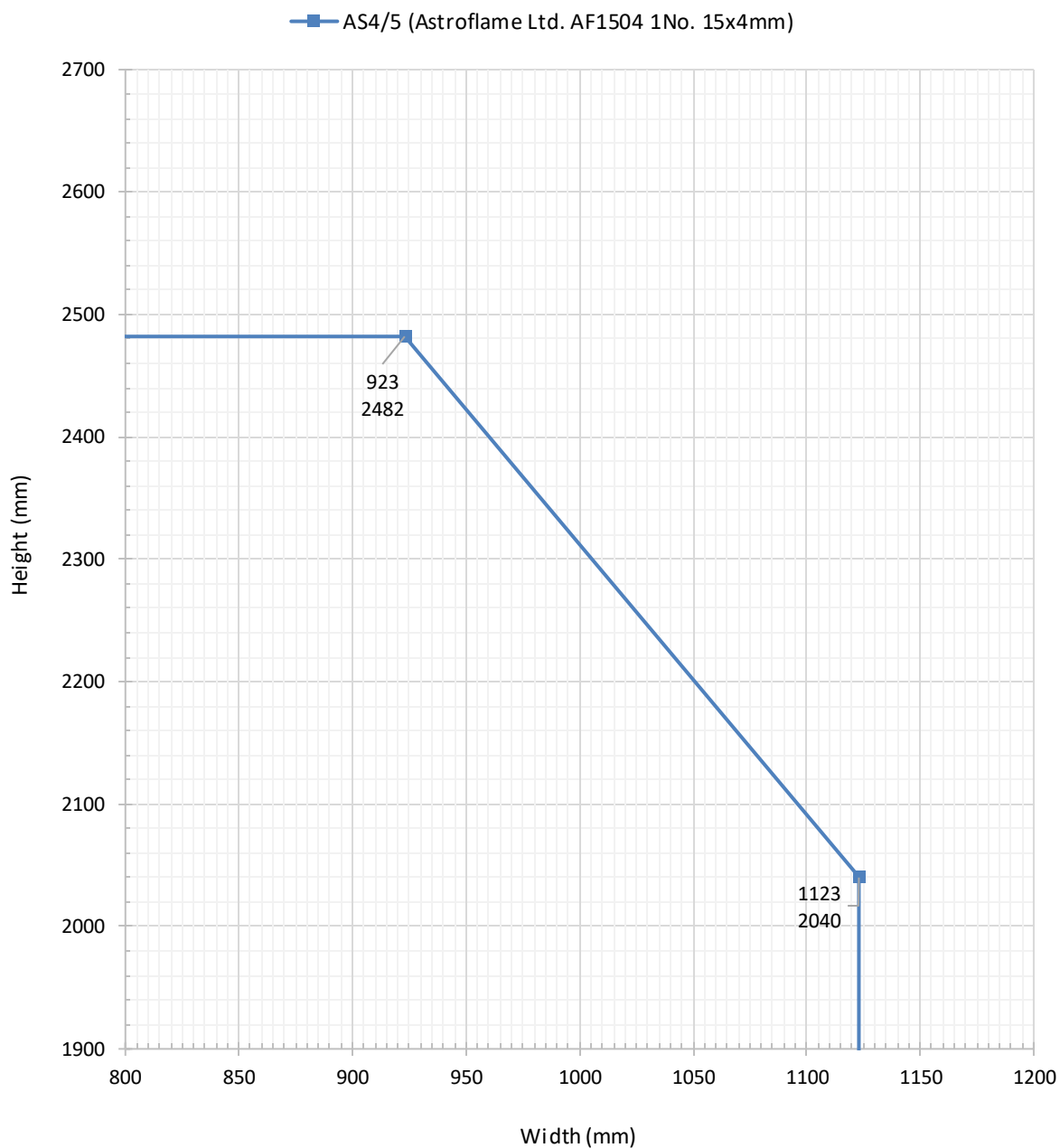
Intumescent Specification for LSASD Leaf Option 1 (Sentry Prolite Type A) with Frame Option 4 (Softwood or Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS4/4 (WF513928 Doorset A)	LP1504	Lorient Polyproducts Ltd	Head & Jamb: 1No. 15x4mm seal fitted centrally in frame reveal or leaf edges ¹

¹ For leaves over 2400mm high, or over 1050mm wide the intumescent strip must be substituted for a 1No. 20x4mm.

Doorset created from Leaf option 1 with frame option 4

LSASD

Leaf Option 1 - Sentry Prolite (Type A)
Frame Option 4 (Softwood or Hardwood)
(Astroflame Ltd. AF1504 1No. 15x4mm)



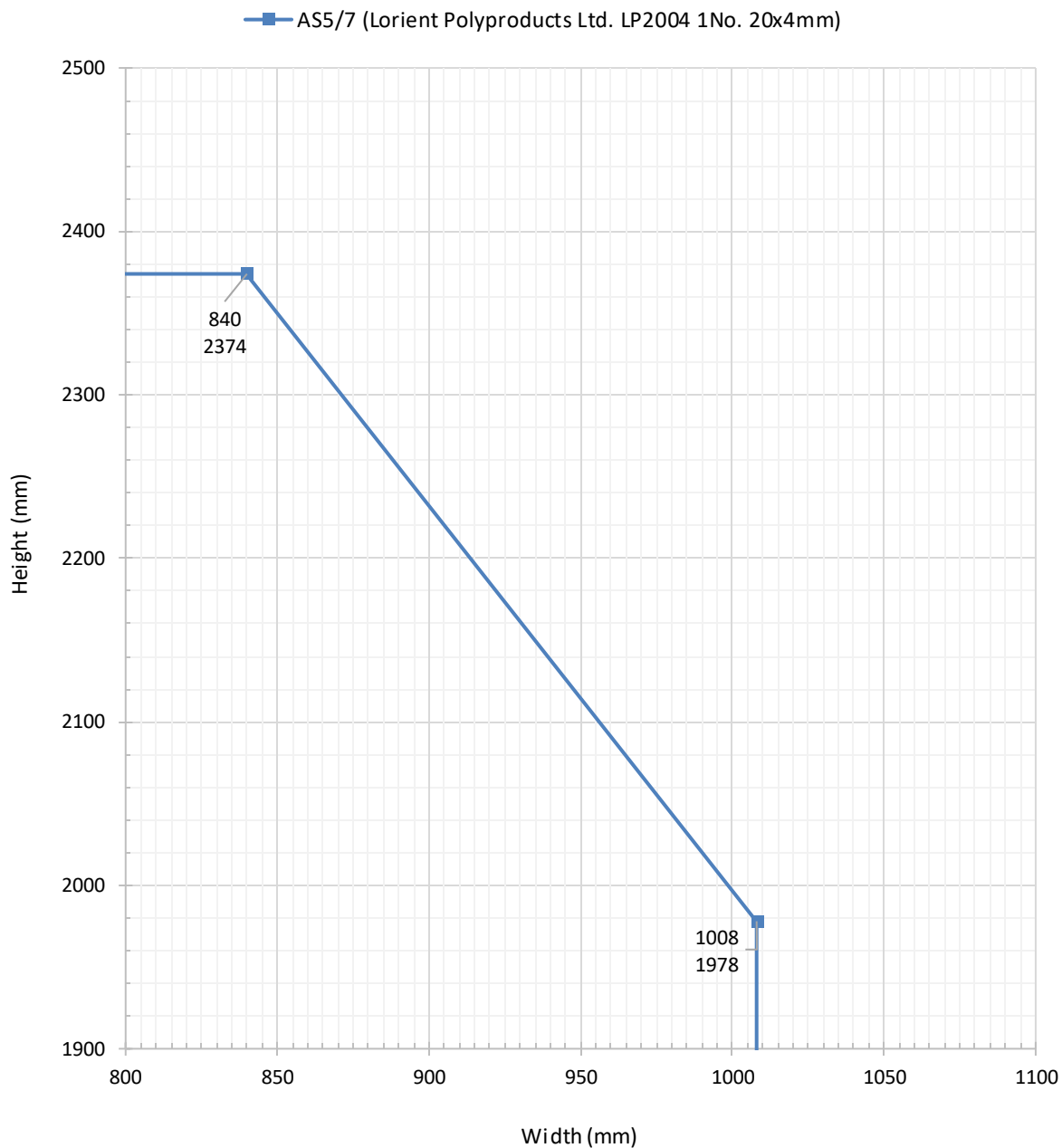
Intumescent Specification for LSASD Leaf Option 1 (Sentry Prolite Type A) with Frame Option 4 (Softwood or Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS4/4 (WF513928 Doorset B)	AF1504	Astroflame Ltd	Head & Jambs: 1No. 15x4mm seal fitted centrally in frame reveal or leaf edges¹

¹ For leaves over 2400mm high, or over 1050mm wide the intumescent strip must be substituted for a 1No. 20x4mm.

Doorset created from Leaf option 1 with frame option 5

LSASD

Leaf Option 1 - Sentry Prolite (Type A)
Frame Option 5 (Finger Jointed Softwood or Hardwood)
(Lorient Polyproducts Ltd. LP2004 1No. 20x4mm)



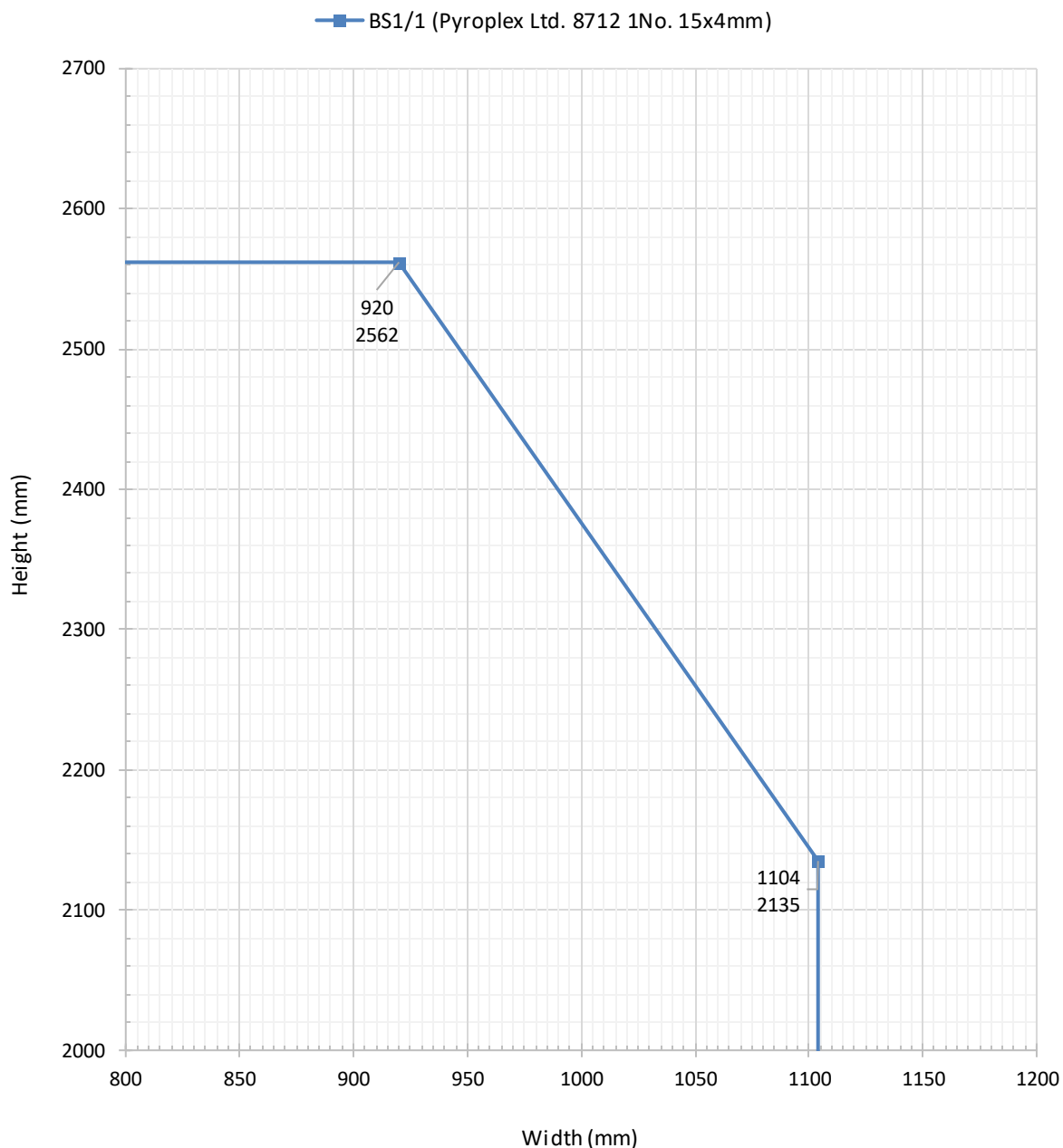
Intumescent Specification for LSASD Leaf Option 1 (Sentry Prolite Type A) with Frame Option 5 (Finger Jointed Softwood or Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS5/7 (WF504600 Doorset A)	LP2004	Lorient Polyproducts Ltd	Head & Jambs: 1No. 20x4mm seal fitted centrally in frame reveal or leaf edges

4.5.6 ULSASD Configuration: Leaf Sizes & Intumescent Specification

Doorset created from Leaf option 1 with frame option 1

ULSASD

Leaf Option 1 - Sentry Prolite (Type A)
Frame Option 1 (Softwood or Hardwood)
(Pyroplex Ltd. 8712 1No. 15x4mm)



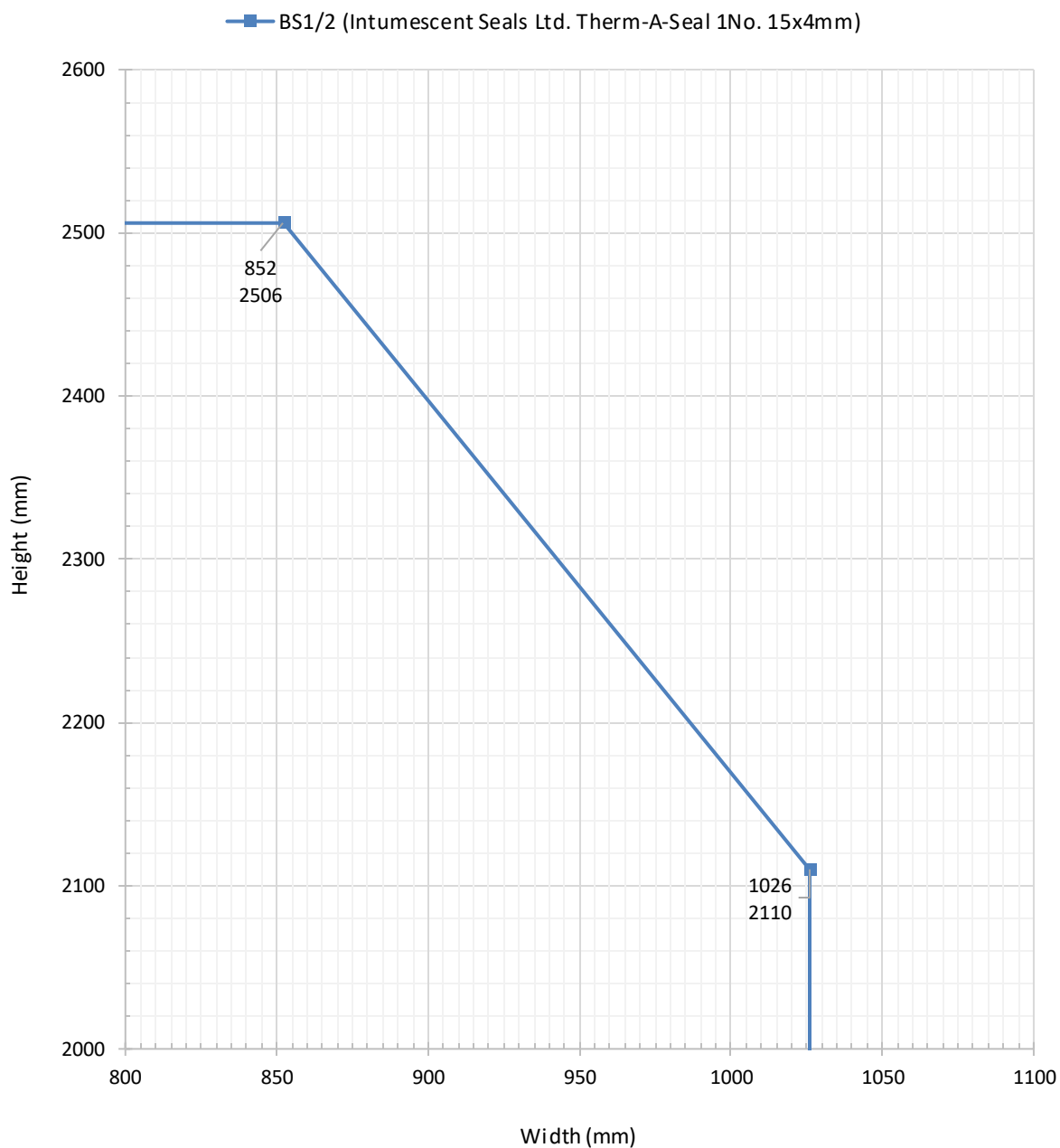
Intumescent Specification for ULSASD Leaf Option 1 (Sentry Prolite Type A) with Frame Option 1 (Softwood or Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BS1/1 (WF403032 Doorset B)	8712	Pyroplex Ltd	Head & Jamb: 1No. 15x4mm seal fitted centrally in frame reveal or leaf edges ¹

¹ For leaves over 2400mm high, or over 1050mm wide the intumescent strip must be substituted for a 1No. 20x4mm.

Doorset created from Leaf option 2 with frame option 1

ULSASD

Leaf Option 2 - Sentry Prolite (Type B)
Frame Option 1 (Softwood or Hardwood)
(Intumescent Seals Ltd. Therm-A-Seal 1No. 15x4mm)



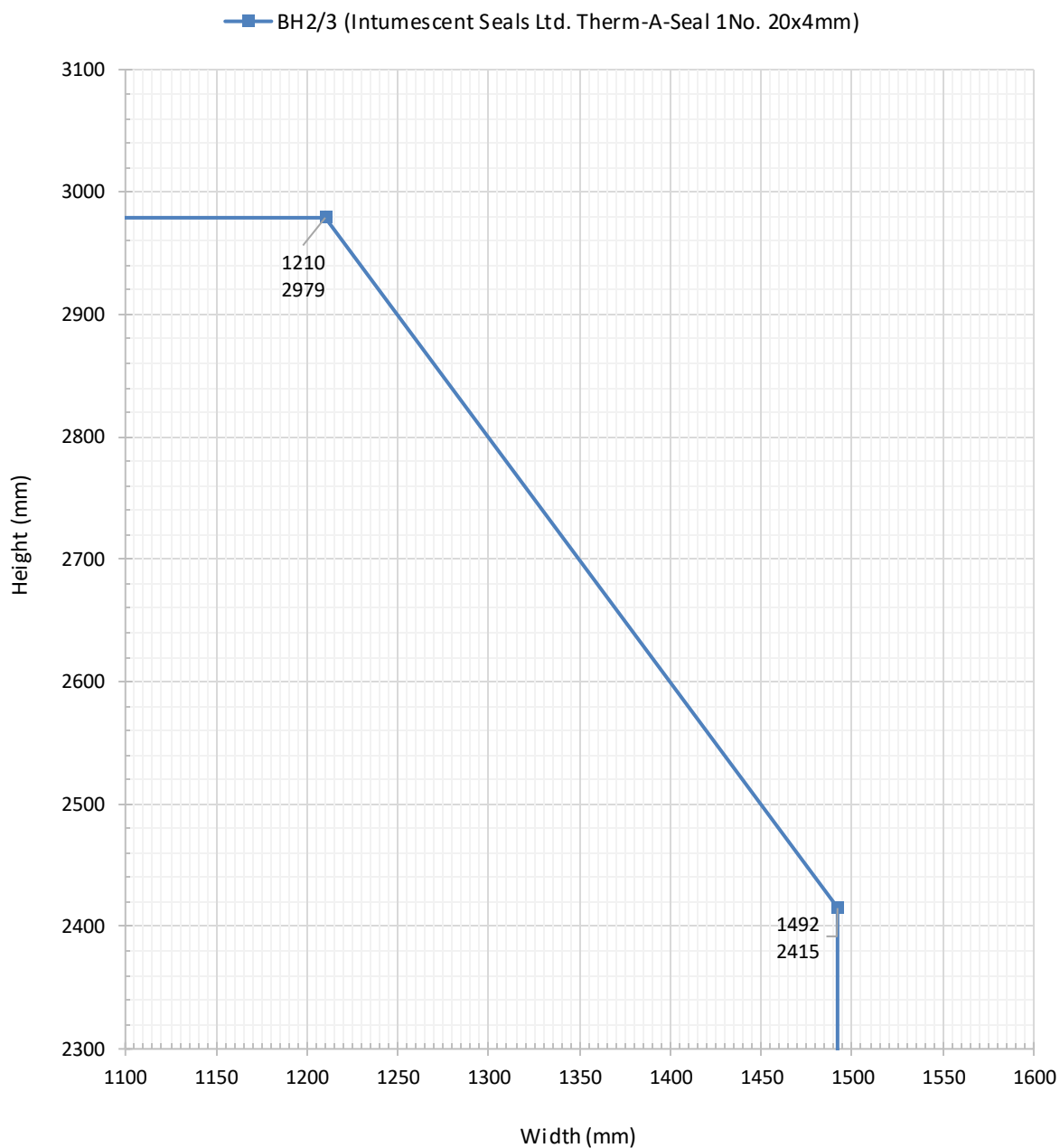
Intumescent Specification for ULSASD Leaf Option 2 (Sentry Prolite Type B) with Frame Option 1 (Softwood or Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BS1/2 (RF04016 Doorset A)	Therm-A-Seal	Intumescent Seals Ltd	Head & Jamb: 1No. 15x4mm seal fitted centrally in frame reveal or leaf edges ¹

¹ For leaves over 2250mm high the intumescent strip must be substituted for a 1No. 20x4mm.

Doorset created from Leaf option 2 with frame option 2

ULSASD

Leaf Option 2 - Sentry Prolite (Type B)
Frame Option 2 (Hardwood)
(Intumescent Seals Ltd. Therm-A-Seal 1No. 20x4mm)



Intumescent Specification for ULSASD Leaf Option 2 (Sentry Prolite Type B) with Frame Option 2 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BH2/3 (RF04016 Doorset B)	Therm-A-Seal	Intumescent Seals Ltd	Head & Jambs: 1No. 20x4mm seal fitted centrally in frame reveal or leaf edges ¹

¹ For leaves over 2650mm high, or over 1350mm wide the intumescent strip must be substituted for a 1No. 25x4mm.

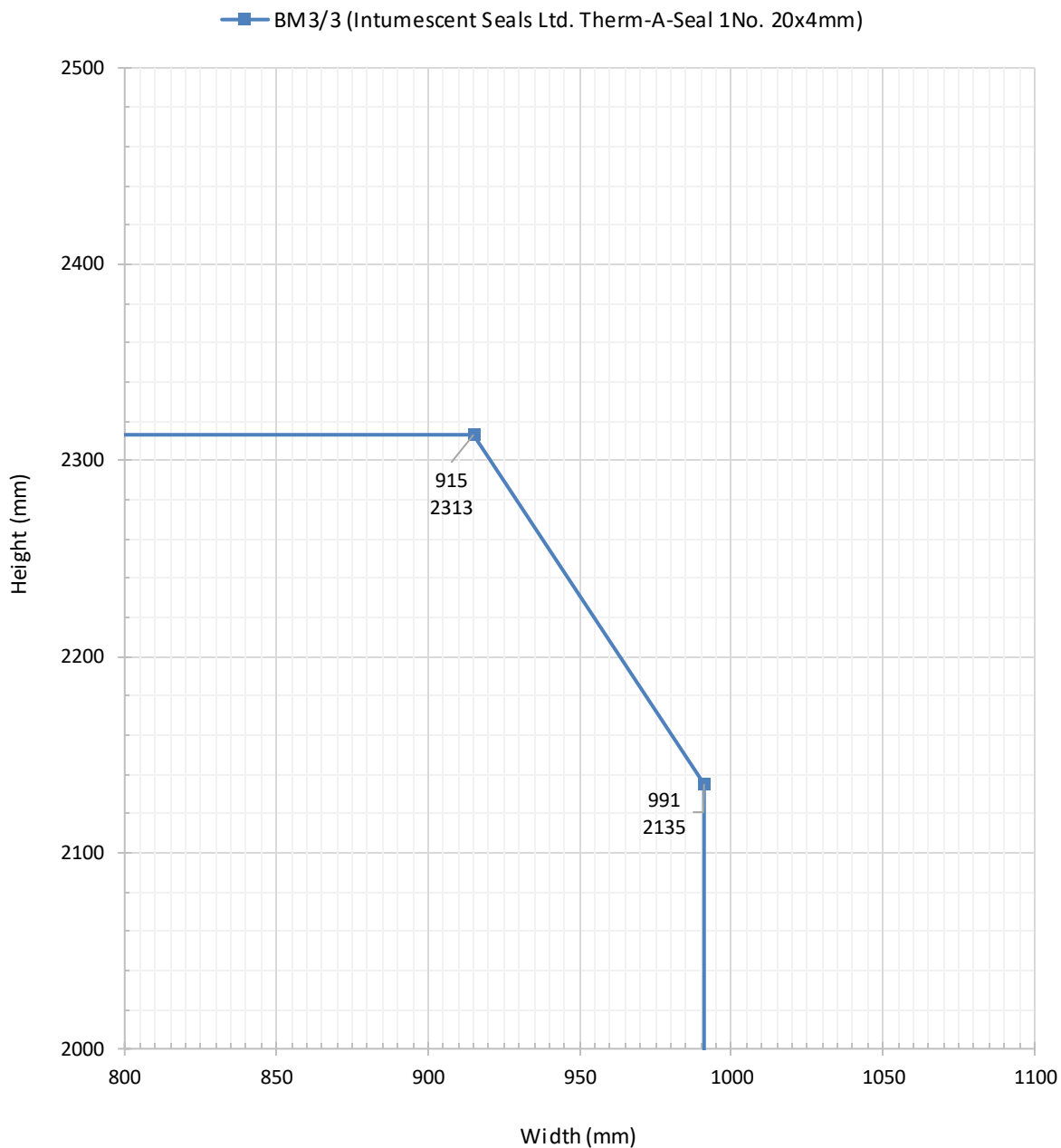
Doorset created from Leaf option 2 with frame option 3

ULSASD

Leaf Option 2 - Sentry Prolite (Type B)

Frame Option 3 (MDF)

(Intumescent Seals Ltd. Therm-A-Seal 1No. 20x4mm)



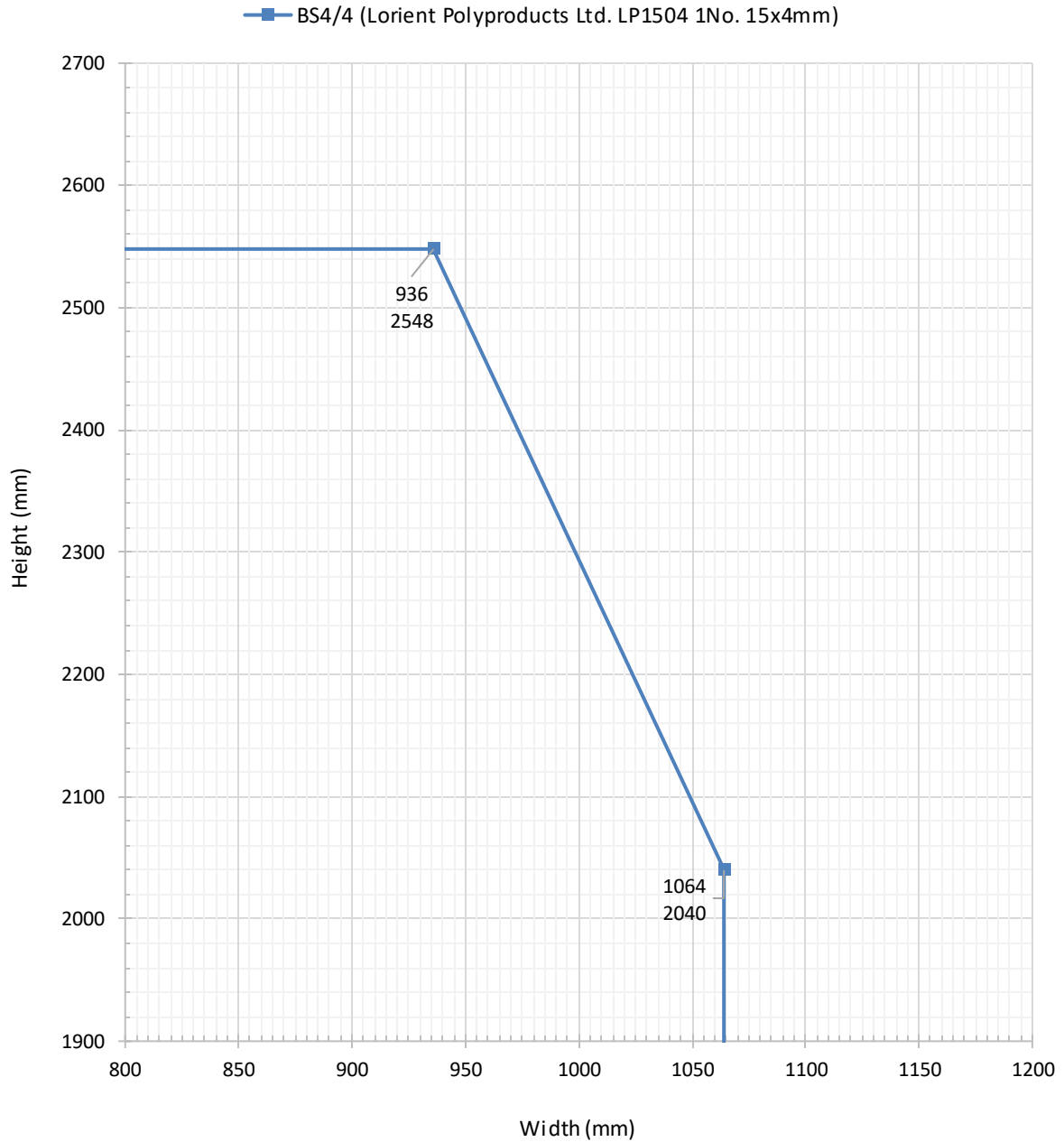
Intumescent Specification for ULSASD Leaf Option 2 (Sentry Prolite Type B) with Frame Option 3 (MDF)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BM3/3 (RF01059B)	Therm-A-Seal	Intumescent Seals Ltd	Head & Jambs: 1No. 20x4mm seal fitted centrally in frame reveal or leaf edges ¹

¹ For leaves over 2250mm high the intumescent strip must be substituted for a 1No. 25x4mm.

Doorset created from Leaf option 1 with frame option 4

ULSASD

Leaf Option 1 - Sentry Prolite (Type A)
Frame Option 4 (Softwood or Hardwood)
(Lorient Polyproducts Ltd. LP1504 1No. 15x4mm)



Intumescent Specification for ULSASD Leaf Option 1 (Sentry Prolite Type A) with Frame Option 4 (Softwood or Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BS4/4 (WF513928 Doorset A)	LP1504	Lorient Polyproducts Ltd	Head & Jambs: 1No. 15x4mm seal fitted centrally in frame reveal or leaf edges¹

¹ For leaves over 2400mm high, or over 1050mm wide the intumescent strip must be substituted for a 1No. 20x4mm.

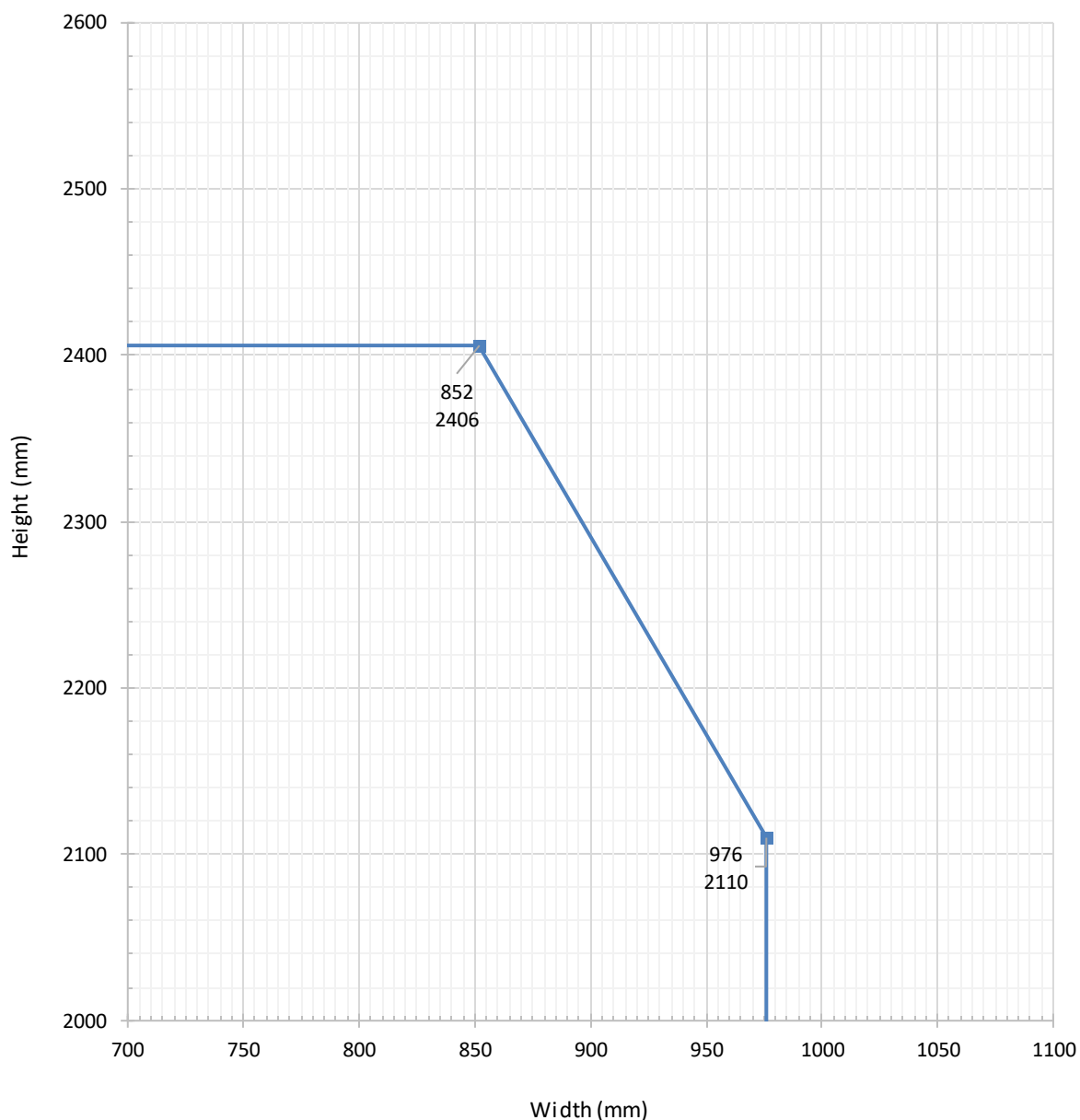
4.5.7 LSADD Configuration: Leaf Sizes & Intumescent Specification

Doorset created from Leaf option 2 with frame option 1

LSADD

Leaf Option 2 - Sentry Prolite (Type B)
Frame Option 1 (Softwood or Hardwood)
(Intumescent Seals Ltd. Therm-A-Seal 1No. 15x4mm)

CS1/5 (Intumescent Seals Ltd. Therm-A-Seal 1No. 15x4mm)



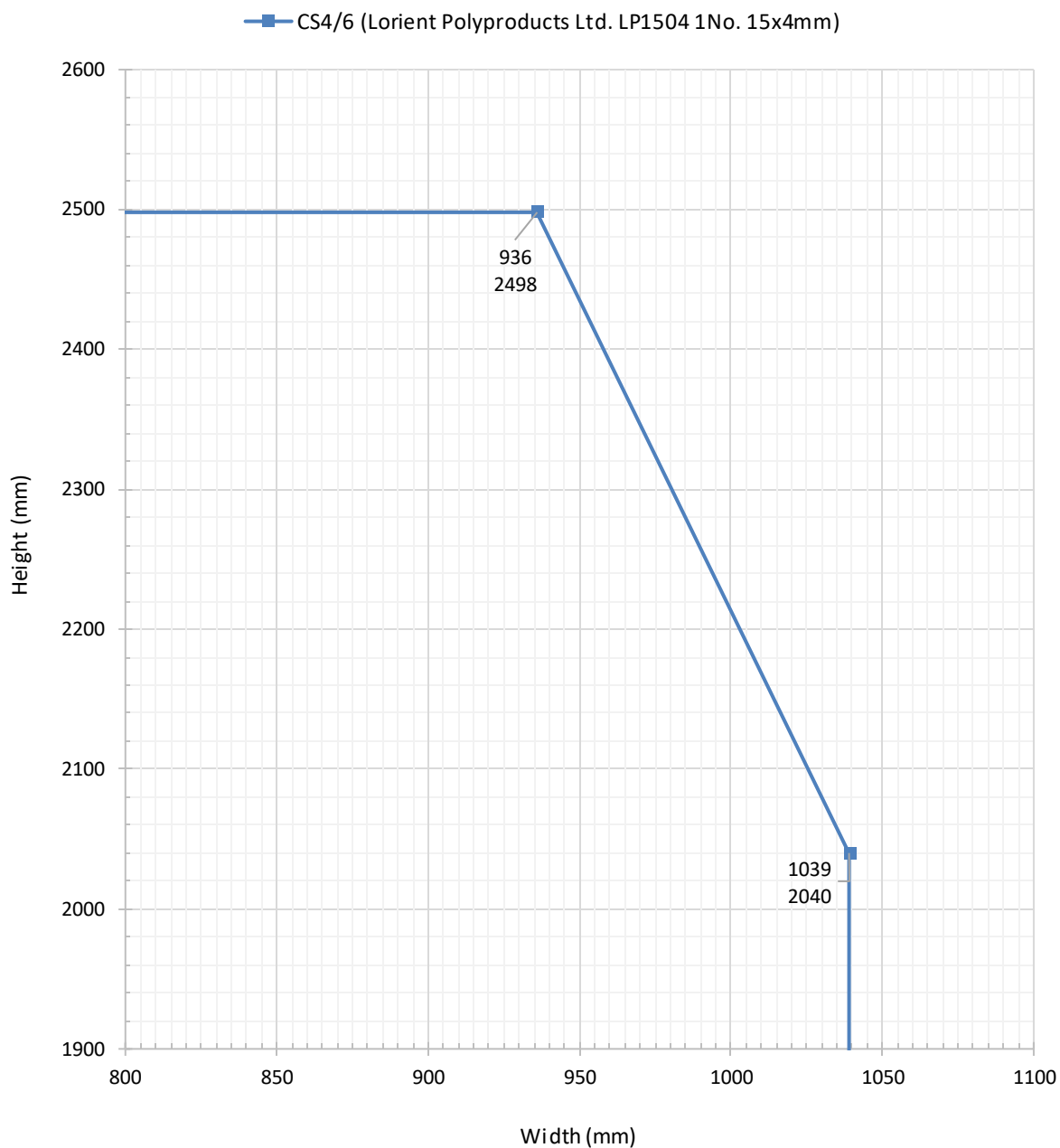
Intumescent Specification for LSADD Leaf Option 2 (Sentry Prolite Type B) with Frame Option 1 (Softwood or Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
CS1/5 (RF04016 Doorset A)	Therm-A-Seal	Intumescent Seals Ltd	Head & Jambs: 1No. 15x4mm seal fitted centrally in frame reveal or leaf edges ¹ Meeting Edge: 1No. 15x4mm seal fitted centrally in leaf housing the latch body

¹ For leaves over 2250mm high the intumescent strip must be substituted for a 1No. 20x4mm.

Doorset created from Leaf option 1 with frame option 4

LSADD

Leaf Option 1 - Sentry Prolite (Type A)
Frame Option 4 (Softwood or Hardwood)
(Lorient Polyproducts Ltd. LP1504 1No. 15x4mm)



Intumescent Specification for LSADD Leaf Option 1 (Sentry Prolite Type A) with Frame Option 4 (Softwood or Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
CS4/6 (WF513928 Doorset A)	LP1504	Lorient Polyproducts Ltd	Head & Jambs: 1No. 15x4mm seal fitted centrally in frame reveal or leaf edges ¹ Meeting Edge: 1No. 15x4mm seal fitted centrally in leaf housing the latch body

¹ For leaves over 2400mm high, or over 1050mm wide the intumescent strip must be substituted for a 1No. 20x4mm.

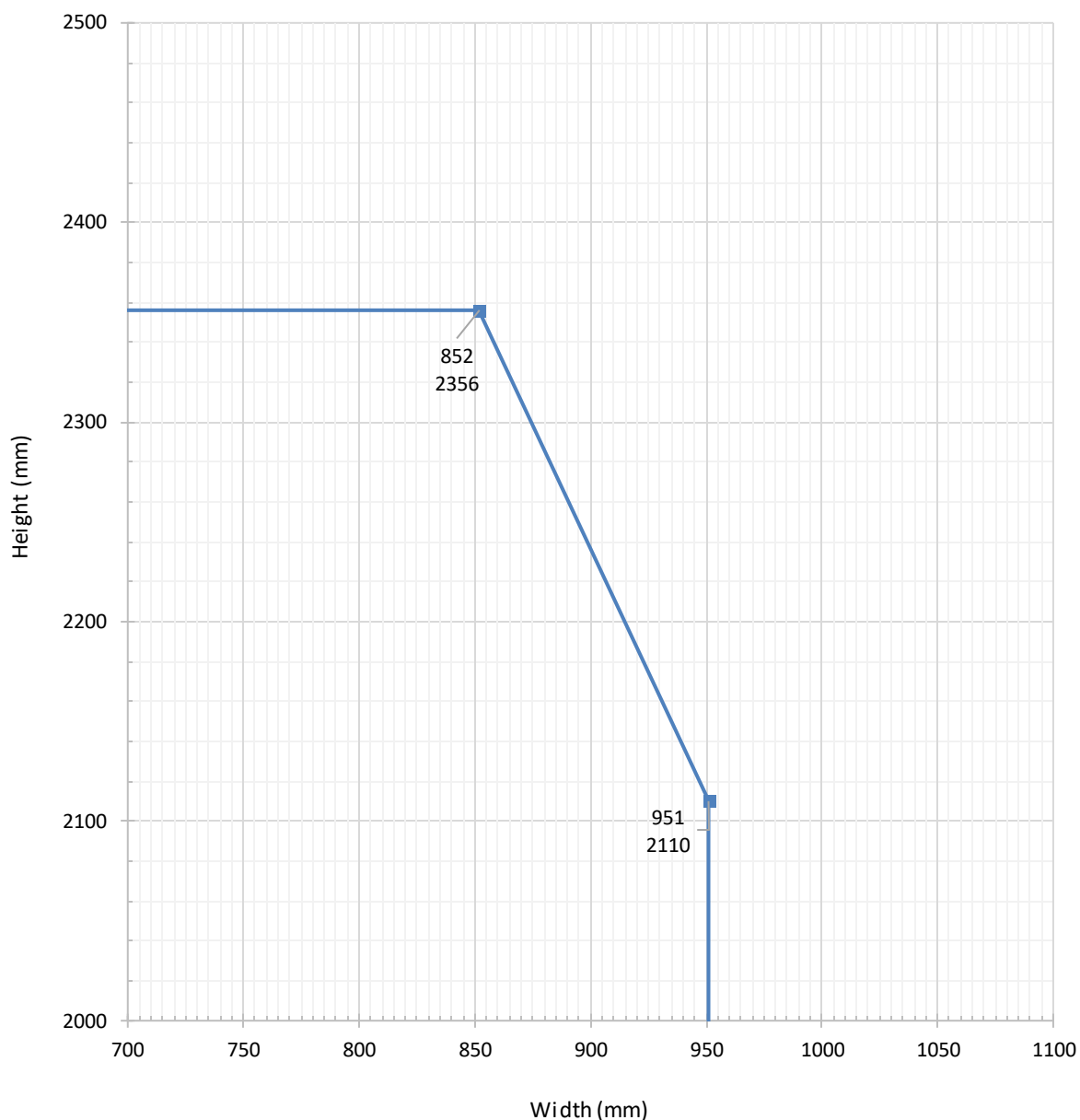
4.5.8 ULSADD Configuration: Leaf Sizes & Intumescent Specification

Doorset created from Leaf option 2 with frame option 1

ULSADD

Leaf Option 2 - Sentry Prolite (Type B)
Frame Option 1 (Softwood or Hardwood)
(Intumescent Seals Ltd. Therm-A-Seal 1No. 15x4mm)

—■ DS1/5 (Intumescent Seals Ltd. Therm-A-Seal 1No. 15x4mm)



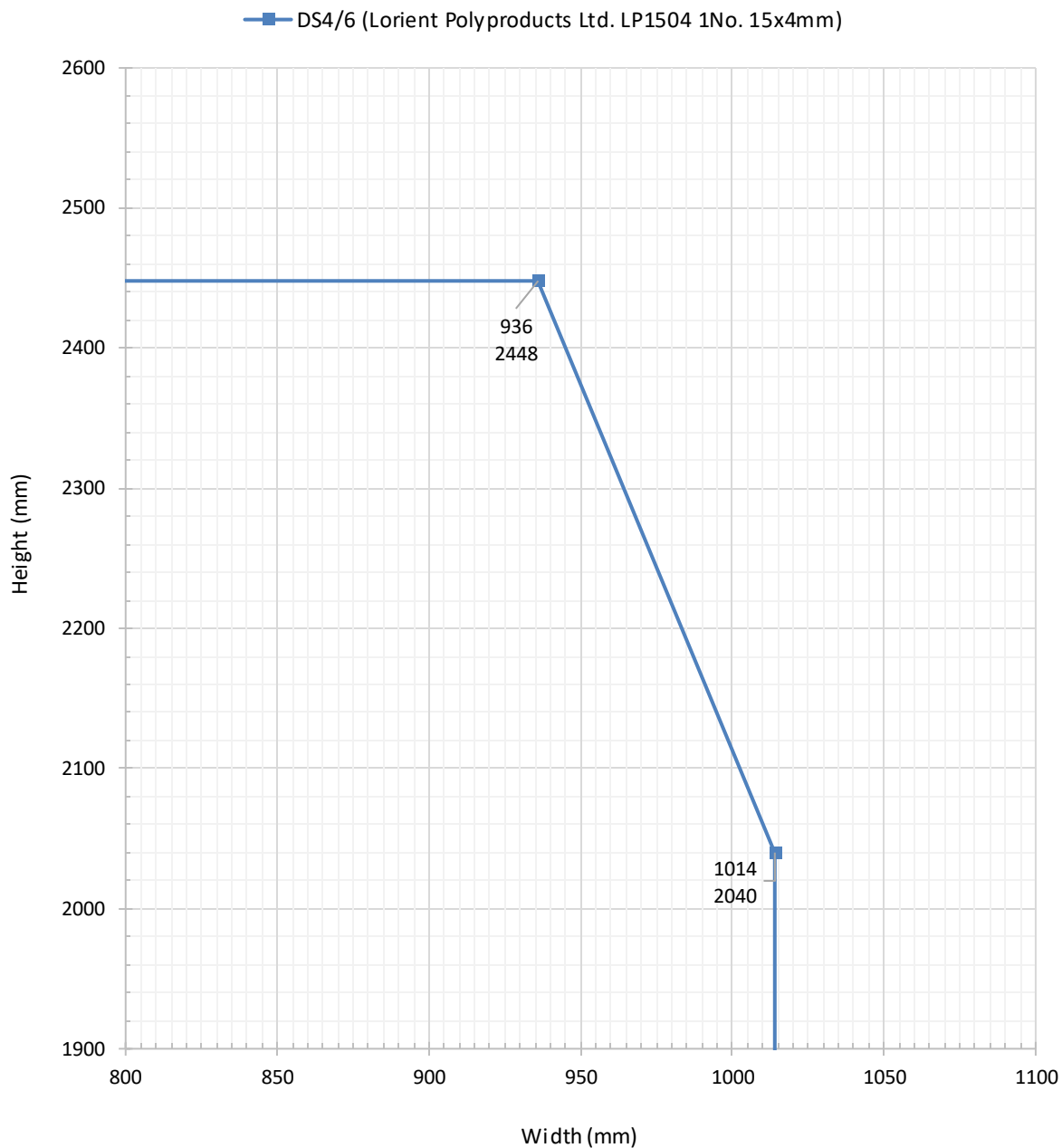
Intumescent Specification for ULSADD Leaf Option 2 (Sentry Prolite Type B) with Frame Option 1 (Softwood or Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
DS1/5 (RF04016 Doorset A)	Therm-A-Seal	Intumescent Seals Ltd	Head & Jambs: 1No. 15x4mm seal fitted centrally in frame reveal or leaf edges ¹ Meeting Edge: 1No. 15x4mm seal fitted centrally in one of the leaf edges.

¹ For leaves over 2250mm high the intumescent strip must be substituted for a 1No. 20x4mm.

Doorset created from Leaf option 1 with frame option 4

ULSADD

Leaf Option 1 - Sentry Prolite (Type A)
Frame Option 4 (Softwood or Hardwood)
(Lorient Polyproducts Ltd. LP1504 1No. 15x4mm)



Intumescent Specification for ULSADD Leaf Option 1 (Sentry Prolite Type A) with Frame Option 4 (Softwood or Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
DS4/6 (WF513928 Doorset A)	LP1504	Lorient Polyproducts Ltd	Head & Jambs: 1No. 15x4mm seal fitted centrally in frame reveal or leaf edges ¹ Meeting Edge: 1No. 15x4mm seal fitted centrally in leaf housing the latch body

¹ For leaves over 2400mm high, or over 1050mm wide the intumescent strip must be substituted for a 1No. 20x4mm.

5 General Description of Construction

5.1 Leaf Core Construction

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

5.1.1 Leaf Option 1 – Sentry Prolite (Type A) – 44mm thick

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

Element		Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	Inner	Horizontal Falcateria lamels	3No. 12 (t) x 50 (w) total thickness 36 (t)	345 **
	Outer	Vertical Falcateria lamels		
Top Rail		Hardwood	1No. 32 (w) x 36 (t)	565 **
Facing		Plywood	3.4 - 3.5 (t)	450 *
Veneer		Hardwood	0.5 - 0.6 (t)	640 *

* Nominal density.

** Stated density.

The leaf must be lipped as specified in section 5.3.

The minimum leaf thickness after calibration is 42.8mm (i.e. a maximum of 0.6mm from both sides).

The minimum leaf thickness after finishes applied is 44mm.

5.1.1.1 Alternative facing materials

In test reports WF403032 and WF513928, door option 1 Type A was tested incorporating 3.5mm thick Plywood facings with a density of 600kg/m³ and 3.4mm thick Plywood facings with a minimum density of 450kg/m³. The specimens achieved 42 and 43 minutes fire resistance integrity respectively and reported no signs of burn through. Based on the overrun achieved, Warringtonfire opine that the substitution of the following facing materials would have no significant effect on the fire resistance performance of the doorset and is therefore acceptable.

Material	Dimension (mm)	Minimum Density (kg/m ³)
Plywood	3.5 (t) or 4.0 (t) ¹	640
Plywood	5.5 (t) ²	600
Chipboard	3.5 (t) or 4.0 (t) ¹	650
MDF	3.5 (t) or 4.0 (t) ¹	700

¹ when utilising 3.5mm or 4.0mm thick facings, the core must be 36mm thick.

² when utilising 5.5mm thick ply facings the core must be 34mm thick.

5.1.2 Leaf Option 2 – Sentry Prolite (Type B) – 43mm - 46mm thick

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

Element		Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	Inner	Horizontal Falcateria lamels	3No. 12 (t) x 50 (w) total thickness 36 (t)	345 **
	Outer	Vertical Falcateria lamels		
Top rail		Hardwood	1No. 22 (w) x 36 (t) & 1No. 38 (w) x 36 (t)	565 **
Stile (hanging edge only)		Hardwood	1No. 23 (w) x 36 (t)	549 **
Facing		WBP hardwood Plywood	3.5 (t), 4 (t) or 5.5 ¹ (t)	600 **

¹ The core must be reduced to 35mm when using 5.5mm thick facings, as given above.

* Nominal density.

** Stated density.

The leaf must be lipped as specified in section 5.3.

The minimum leaf thickness after calibration is 42mm (i.e. a maximum of 0.5mm from both sides).

The minimum leaf thickness after finishes applied is 44mm.

5.1.2.1 Alternative facing materials

In test report RF04016, door option 2 Type B was tested incorporating 3.5mm thick Plywood facings with a density of 600kg/m³. The specimens achieved 37 and 44 minutes fire resistance integrity respectively and reported no signs of burn through. Based on the overrun achieved, Warringtonfire opine that the substitution of the following facing materials would have no significant effect on the fire resistance performance of the doorset and is therefore acceptable.

Material	Dimension (mm)	Minimum Density (kg/m ³)
Plywood	3.5 (t) or 4.0 (t) ¹	640
Plywood	5.5 (t) ²	600
Chipboard	3.5 (t) or 4.0 (t) ¹	650
MDF	3.5 (t) or 4.0 (t) ¹	700

¹ when utilising 3.5mm or 4.0mm thick facings, the core must be 36mm thick.

² when utilising 5.5mm thick ply facings the core must be 34mm thick.

5.2 Leaf Size Adjustment During Manufacture – 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 Height	The size of the leaf height may be reduced without restriction from the bottom edge only. The top rail must remain intact
Leaf Width	Door Option 1 (Type A) The size of the leaf width may be reduced without restriction from either edge.
	Door Option 2 (Type B) The size of the leaf width may be reduced from the closing, latch/lock edge, only. The hanging edge stile must remain intact.
Timber Lipping	The timber lipping thickness can be reduced after it has been glued in place, providing it is not reduced below the minimum stated in section 5.3

5.3 Timber Lipping – leaf options 1 & 2

The testing documented in section 3 has generally been undertaken using 6-8mm thick lippings applied to the vertical edges only or all edges using species at varying densities. A number of different adhesives have also been used to seal the lippings.

On the above basis, Sentry Prolite door blanks (leaf Options 1 & 2) must be lipped with the following specification, for all leaf options.

Timber Lipping Specification for Sentry Prolite door blanks		
Material	Size (mm)	Min Density (kg/m ³)
Hardwood	1. Flat = 6 – 11 thick 2. Rebated = not permitted	640

Notes:

1. All lippings are to be the same thickness as the door leaf.
2. Overpanels separated from the leaf heads with a transom do not need to be lipped.
3. Single and double doorsets with 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. Lippings can be bonded with Urea formaldehyde (UF), Cascamite or Polyurethane (PU) adhesive. These may be hand applied or may be applied using an edgebander. With either method it must be ensured that sufficient glue is applied to across the entire surface area between the 2No substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed, for either installation application.
5. For flat lippings it is permitted to apply maximum 8mm radius to the corners of the lipping at vertical edges to create a maximum 2mm edge profiling.

5.4 Decorative & Protective Facings – 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 to the leaf for this door design since they would have limited influence under fire resistance test conditions.

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

Notes:

1. Metallic facings are not permitted except for push plates and kick plates
2. The door leaf thickness may be reduced on both sides by a maximum of 0.6mm for door option 1 (Type A) and 0.5mm for door option 2 (Type B) for calibration purposes in order to accommodate the chosen finish. The minimum overall leaf thickness must remain at 44mm after finishing has been applied.
3. Materials may over sail lippings but must not return around leaf edges.
4. For all options, materials must not conceal intumescent strips.
5. Intumescent paints are not permitted.

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

6 Glazing within the Leaf

6.1 General

The testing conducted on Sentry Prolite door designs has demonstrated that they are capable of tolerating glazed apertures, whilst providing a margin of over performance. For example, test reference RF01059B included a glazed aperture 704mm high x 604mm wide installed into a Sentry Prolite Type B design (leaf option 2) using 6mm thick Pilkington Pyroshield glass and Sealmaster Fireglaze intumescent mastic glazing system. Test report RF04016 doorset A included a glazed aperture 700mm high x 650mm wide installed into a Sentry Prolite Type B design (leaf option 2) using 6mm thick Pilkington Pyroshield glass and Sealmaster Fireglaze intumescent mastic glazing system. Test report WF403032 Doorset B included a glazed aperture 870mm high x 685mm wide installed into a Sentry Prolite Type A design (leaf option 1) using 6mm thick Pilkington Pyroshield glass and Lorient Polyproducts Ltd. 36/6 Plus LG1512 Plus glazing system.

Glazing is therefore acceptable within the following parameters.

Leaf Option 1 Type A (Based of test report WF403032 Doorset B):

The maximum total assessed aperture area for any individual door leaf is 0.71m².

The maximum glazed aperture height is 1001mm.

The maximum glazed aperture width is 788mm.

Leaf Option 2 Type B (Based of test report RF04016 Doorset A):

The maximum total assessed aperture area for any individual door leaf is 0.55m².

The maximum glazed aperture height is 805mm.

The maximum glazed aperture width is 748mm.

General:

Multiple apertures are acceptable within the permitted glazed area, with a minimum dimension of 100mm of core between apertures.

Apertures must not be less than 100mm from top and side edges and 100mm from the bottom edge.

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

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

6.1.1 Single Pane Glass & Glazing Systems – Leaf Option 1 & 2

The glazing system must be one of the following proprietary tested systems.

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

The numerical figures in the main body of the table is the maximum area of glass for leaf option 1 and 2 (in m²) and maximum height (h) and width (w) that is considered acceptable for an individual glazed aperture, based upon the specific system.

The total area of all glazed apertures must not exceed that state in Section 6.1 above.

Glass & Glazing System Specification								
Maximum Assessed Area (m ²)								
Glass Type & Manufacturer (Test reference)	Glazing System & Manufacturer (Test reference)							
	1.	2.	3.	4.	5.	6.	7.	8.
	Fireglaze 30 Sealmaster UK Ltd	Therm A Strip Intumescent Seals Ltd	Firestrip 30 Hodgsons Sealants Ltd	Flexible Figure 1 Lorient Polyproducts Ltd	System 36 Plus Lorient Polyproducts Ltd (WF403032)	Pyroglaze 30 Mann McGowan Ltd	R8193 Pyroplex Ltd	Fireglaze Sealmaster (RF01059) (RF04016)
1	6-7mm Pyroshield 2 - Clear Pilkington UK Ltd (RF01059) (RF04016) (WF403032)	<p style="text-align: center;">Leaf Option 1 (Type A): 0.71m² 1001 (h) 788 (w)</p> <p style="text-align: center;">/</p> <p style="text-align: center;">Leaf Option 2 (Type B) 0.55m² 805 (h) 748 (w)</p>						
2	6mm Pyran S Schott Glass Ltd							
3	7mm Pyroguard EW30 Pyroguard UK Ltd							
4	7mm Pyrobelite 7 AGC Flat Glass UK							

5	7mm Pyrodur 30-104 or 30-105 Pilkington UK Ltd	Leaf Option 1 (Type A): 0.71m² 1001 (h) 788 (w) / Leaf Option 2 (Type B) 0.55m² 805 (h) 748 (w)
6	10mm Pyrodur 60-10 Pilkington UK Ltd	
7	12mm Pyrobelite 12 AGC Flat Glass UK	
8	15mm Pyrostop 30- 10 Pilkington UK Ltd	
9	16mm Pyrobel 16 AGC Flat Glass UK	

Note:

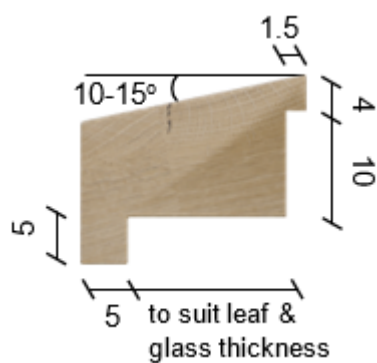
1. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.
2. Glass types 8 and 9 are fully insulating for 30 minutes in terms of the criteria set out BS 476: Part 20: 1987.
3. Pilkington UK Ltd Pyroshield 2 – Textured glass is not permitted for fire resisting applications.

6.2 Glazing Beads & Installation – all Leaf Options

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

6.2.1 Chamfered Bead

Permitted with glazing system 1 & 2 (Fireglaze 30 & Therm-A-Strip) from the table in Section 6.1.1



- The glazing beads must be created from hardwood of a minimum 640kg/m³ density.
- Glazing beads must be retained in position with 40mm long steel pins or 40mm long No. 6-8 screws, inserted at 35-40° to the vertical.
- Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.2.3 below.
- The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.
- Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires

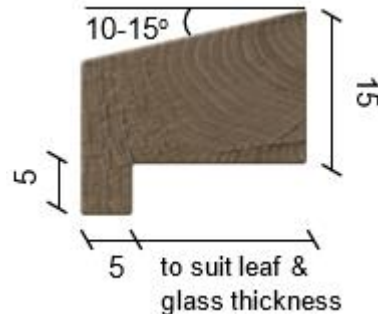


Example of Fireglaze 30 glazing system



Example of Therm-A-Strip glazing system

Permitted with glazing systems 3 – 7 (Firestrip 30, System 36 Plus, Pyroglaze 30, Flexible Figure 1 & R8193) from the table in Sections 6.1.1



- The glazing beads must be created from hardwood of a minimum 640kg/m³ density.
- Glazing beads must be retained in position with 40mm long steel pins or 40mm long No. 6-8 screws, inserted at 35-40° to the vertical.
- Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.2.3 below.
- The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.

Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires



Example of Firestrip 30 glazing system



Example of System 36 Plus glazing system



Example of Pyroglaze 30 glazing system

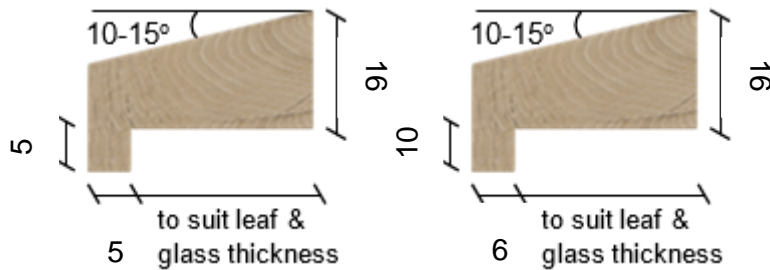


Example of Flexible Figure 1 glazing system

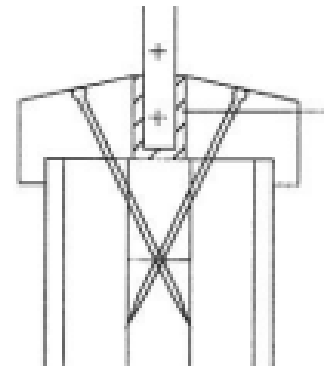


Example of R8193 glazing system

Permitted with glazing system 8 (Fireglaze) from the table in Section 6.1.1



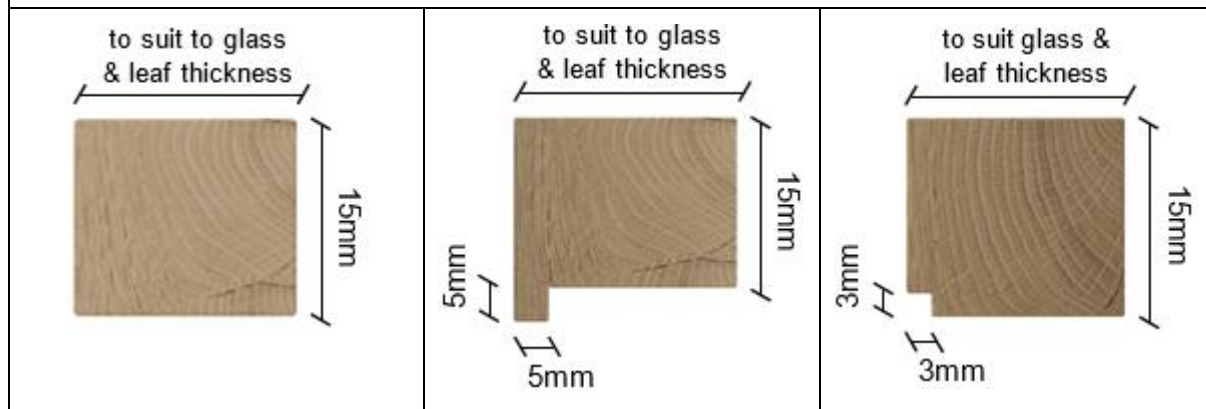
- The glazing beads must be created from hardwood of a minimum 640kg/m³ density.
- Glazing beads must be retained in position with 50mm long steel pins, inserted at 30-35° to the vertical.
- Fixings must be at 100mm maximum centres and no more than 45mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.2.3 below.
- The fitting of the glazing seal between the bead and the glass must be Sealmaster Fireglaze in accordance with that successfully tested in reports RF01059 and RF04016.
- Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires
- A 2-3mm expansion allowance should be maintained on all edges of the glass.



Example of Fireglaze glazing system

6.2.2 Square Beads

Permitted with glass types 4-9 & glazing systems 1, 2 & 3 from the table in section 6.1.1



- The glazing beads must be created from hardwood of a minimum 640kg/m³ density.
- Glazing beads must be retained in position with 40mm long steel pins or 40mm long No. 6-8 screws, inserted at 35-40° to the vertical.
- Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.2.3 below.
- A 6 – 10mm thick square aperture liner is permitted for use with square beads providing it is constructed from hardwood of minimum density 640kg/m³ and glued in position using a UF, PVA or PU type adhesive.
- The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.
- Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires

6.2.3 Glazing Pins for Glazing Within Leaf

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

Option 1 – Round, Oval & Rectangular Pins

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

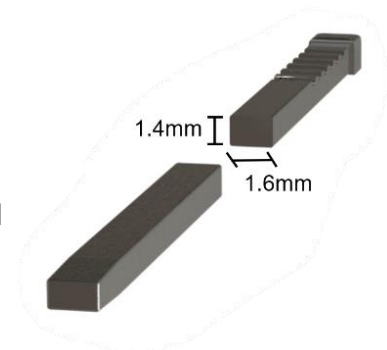
- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.03mm².
- Minimum linear dimension of 1.6mm in any direction, see figure below. The maximum pin diameter or any linear dimension may be no greater than 2.0mm.



Option 2 – Gun (Pneumatically) Fired Rectangular Pins

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

- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.24mm².
- Minimum linear dimensions as shown in the figure.
- The 1.6mm dimension is predominately oriented perpendicular to the glass, where possible.
- The maximum pin diameter or any linear dimension may be no greater than 2.0mm.



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

7 Door Frame Construction

7.1 Details for Frame

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

Frame Specification				
Frame Type	Material	Minimum Section Size (mm)	Minimum Density (kg/m ³)	Acceptable Leaf Option
1	Softwood / Hardwood ¹	Frame: 70 (d) x 32 (w) (excluding stop) Stop: 12 (w) (integral or planted on)	510	1 (Type A) 2 (Type B)
2	Hardwood ²	Frame: 70 (d) x 32 (w) (excluding stop) Stop: 12 (w) (integral or planted on)	640	2 (Type B)
3	MDF ³	Frame: 95 (d) x 25 (w) (excluding stop) Stop: 12 (w) (integral or planted on)	730	2 (Type B)
4	Softwood / Hardwood ⁴	Frame: 95 (d) x 30 (w) (excluding stop) Stop: 24 (w) (integral or planted on)	450	1 (Type A)
5	(Jeldwen DFR1051) Finger Jointed Softwood / Hardwood ⁵	Frame: 66 (d) x 43 (w) (excluding stop) Stop: 12 (w) (integral or planted on)	510	1 (Type A)

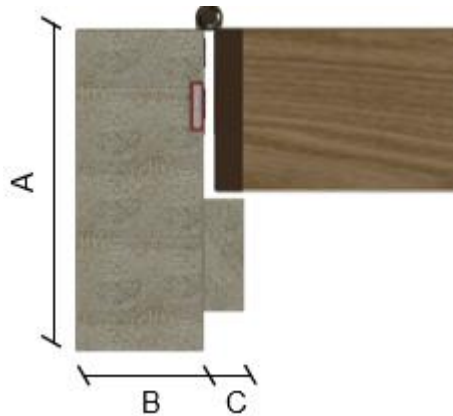
Note:

1. The single and double leaf tested in WF403032 and RF04016, evaluated the performance of the Sentry Prolite design utilising a softwood door frame (see graph contained in sections 4.5.5, 4.5.6, 4.6.7 and 4.6.8 for assessed single and double leaf size range).

2. The single leaf doorset B tested in RF04016, evaluated the performance of the Sentry Prolite design utilising a hardwood door frame (see graph contained in sections 4.5.5 and 4.5.6 for assessed single leaf size range).
3. The single leaf doorset tested in RF01059B, evaluated the performance of the Sentry Superlite design, utilising an MDF door frame (see graph contained in sections 4.5.5 and 4.5.6 for assessed single leaf size range).
4. The single and double leaf doorsets tested in WF413928, evaluated the performance of the Sentry Prolite design, utilising a Softwood door frame (see graph contained in sections 4.5.5, 4.5.6, 4.6.7 and 4.5.8 for assessed single and double leaf size range).
5. The single leaf doorset tested in WF504600 Specimen A, evaluated the performance of the Sentry Prolite design, utilising a Softwood door frame (see graph contained in sections 4.5.5 for assessed single leaf size range).
6. Minimum section size is subject to size of hardware.

7.1.1 Standard frame detail

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



Frame Option 1 & 2

A: Frame depth = 70mm minimum

B: Frame width = 32mm minimum

C: Stop width = 12mm minimum

Frame Option 3

A: Frame depth = 95mm minimum

B: Frame width = 25mm minimum

C: Stop width = 12mm minimum

Frame Option 4

A: Frame depth = 95mm minimum

B: Frame width = 30mm minimum

C: Stop width = 24mm minimum

Frame Option 5

A: Frame depth = 66mm minimum

B: Frame width = 43mm minimum

C: Stop width = 12mm minimum

7.2 Door Frame Joints

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



Half Lapped Joint



Mitre Joint



Mortice & Tenon Joint



Butt Joint



Trenched Joint

Approved door frame jointing options

7.3 Decorative Facings – All Frame Options

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

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

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

Notes:

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

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

8 Overpanels

8.1 Framed on all edges (transomed)

Overpanels of the same construction as the door leaf/leaves 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(s) from the overpanel and must be to the same specification as frame option 1 with a minimum section size of 70mm x 44mm (not including the stop), as described in the table in section 7.1.
- Transom joints must utilise one of the following methods: mortice and tenon joints or butt joints (see section 7.2). Either method requires joints to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws. Butt joints must be additionally bonded with urea formaldehyde.
- Joints are required to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws.
- Solid 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
- The frame to overpanel junction is permitted to have a maximum 1mm gap tolerance.



8.1.1.1 Fitted in square edge frame sections (i.e. no rebate)

The intumescent seals specified for the jambs in section 4.5 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 reveal.

Maximum panel dimensions are given as below:

Assembly Element		Height (mm)	Width (mm)
Overpanel	Single Doorsets	2000	Overall doorset width
	Double Doorsets	1000	Overall doorset width

9 Adhesives

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

Element	Product/Material Type
Door blank core	PVA or MUF
Door blank facings	WBP or MUF
Top rail	MUF
Timber lipping	UF, Cascamite or PU
Decorative facings	MUF

10 Hardware

10.1 General

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

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

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 Jiangsu Sainty Bancom Wood Co. Ltd, T/A Sentry International.
- As a result of the Certifire approval of the item of hardware

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

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

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

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

10.2 Intumescent to Hardware

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

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

Hardware Intumescent Specification		
Item	Location	Product/Manufacturer
Hinges	Fitted under both hinge blades ¹	<ol style="list-style-type: none"> 1. 1mm MAP paper – Lorient Polyproducts Ltd 2. 1mm Interdens – Dufaylite Developments Ltd 3. 1mm Interdens – Lorient Polyproducts Ltd. 4. 1mm G30 – Sealmaster Ltd 5. 1mm Therm-A-Strip – Intumescent Seals Ltd 6. 0.8-1mm Graphite – Firestop Ltd
Lock/latches	Under forend & keep for latches with a forend under 65mm high	<ol style="list-style-type: none"> 1. 1mm MAP paper – Lorient Polyproducts Ltd 2. 1mm Interdens – Dufaylite Developments Ltd 3. 1mm Interdens – Lorient Polyproducts Ltd. 4. 1mm G30 – Sealmaster Ltd 5. 1mm Therm-A-Strip – Intumescent Seals Ltd 6. 0.8mm Graphite – Firestop Ltd
	Encasing latch body and under forend & keep for latches with a forend larger than 65mm	<ol style="list-style-type: none"> 1. 1mm Interdens – Dufaylite Developments Ltd 2. 1mm Interdens – Dufaylite Developments Ltd 3. 0.8mm Graphite – Firestop Ltd

¹ No intumescent protection behind the hinge blade is required when using Intumescent Seals Ltd. Therm-A-Seal perimeter seals as successfully tested in reports RF04016 and 01059B.

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

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

10.3 Essential Hardware

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

Configuration	Hardware
LSASD	<ul style="list-style-type: none">• Latch• Handle• Hinges• Self-closing device (closer)
ULSASD	<ul style="list-style-type: none">• Hinges• Self-closing device (closer)
LSADD	<ul style="list-style-type: none">• Latch• Handle• Hinges• Self-closing device (closer)• Surface mounted bolts
ULSADD	<ul style="list-style-type: none">• Hinges• Self-closing device (closer)

10.4 Latches & Locks

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

10.4.1 Single Point Engagement

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2, 3, 4 & 5

Configurations: LSASD & LSADD

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

Element	Manufacturer & Product Reference (Test Reference)
Locks & latches	<ol style="list-style-type: none"> 1. Standard tubular mortise latch (RF04016) 2. Henderson Hardware Ltd. tubular mortised latch (RF01059B) 3. E*S Eurospec tubular steel latch TL2 (WF403032) 4. Union Assa Abloy BS5 lever mortice sashlock (WF513928) 5. Frisco UK Sales Ltd. 70271 (WF504600)

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

Element	Specification
Maximum forend and strike plate dimensions	185mm high x 25mm wide x 4mm thick
Maximum body dimensions	125mm high x 75mm wide x 18mm thick
Intumescent protection	see section 10.2
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel, stainless steel or brass with a melting point $\geq 800^{\circ}\text{C}$

Notes:

1. In all instances the location of the handle must be between 800 – 1200mm from the threshold, unless the door leaf measures a maximum 1600mm in height, which in this case, the handle must be installed at the centre position with a tolerance of 200mm above or below.

10.4.2 Cylinders

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2, 3, 4 & 5

Configurations: LSASD & LSADD

Components with the following specification are deemed acceptable.

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

10.5 Handles

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2, 3, 4 & 5

Configurations: LSASD & LSADD

The table below details the tested handles that are approved.

Element	Manufacturer & Product Reference (Test reference)
Handles	<ul style="list-style-type: none">Hoppe AR200 (WF513928)Aluminium lever handle (RF04016 & RF01059B)Zoo Hardware aluminium lever type handle (WF403032)Frisco UK Sales Ltd. 39914 (WF504600)

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

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

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

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

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

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

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

10.6 Butt Hinges

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2, 3, 4 & 5

Configurations: LSASD, ULSASD, LSADD & ULSADD

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

Element	Manufacturer & Product Reference (Test reference)
Hinges	<ul style="list-style-type: none"> Howdens Eclipse HNG0025 butt hinges (WF513928) Royde and Tucker H105 lift off hinge (RF04016 & RF01059B) Royde and Tucker Hi-Load 101 lift off hinges (WF403032) Frisco UK Sales Ltd. 14852 (WF504600)

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:	If 2 hinges are required:	Top	100 –180mm from the head to top of hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
	If 3 hinges are required:	Top	100 –180mm from the head to top of hinge
		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 10.2	

Note:

Leaves less than 1000mm (h) must be hung on a minimum 2 hinges. Leaves 1000mm - 2300mm (h) must be hung on a minimum of 3 hinges. Leaves greater or equal 2400mm (h) must be hung on 4 hinges. Leaves greater than 2650mm high must be hung on 5 hinges.

10.7 Doorset Self Closing

Doorset automatic self-closing can be provided by:

- Overhead face fixed closers

Automatic doorset self-closing devices such as concealed jamb mounted, concealed overhead mounted, transom mounted, and pivots used with floor springs are not considered acceptable for use with the Sentry Prolite doorset range.

10.7.1 Overhead Face Fixed Closer

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2, 3, 4 & 5

Configurations: LSASD, ULSASD, LSADD & ULSADD

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

Element	Manufacturer & Product Reference (Test reference)
Overhead face-fixed closers	<ul style="list-style-type: none"> • Howdens Eclipse 28989 face fixed overhead closer (WF513928) • Dorma Door Controls TS73V face fixed overhead closer (RF04016 & RF01059B) • Rutland TS3204 face fixed overhead closer (WF403032) • Frisco UK Sales Ltd. 28932 (WF504600)

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

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

Note:

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

10.8 Surface Mounted Bolts

These items are suitable in the following applications only:

Leaf & Frame Options:

Leaf option 1 with frame option 4

Leaf option 2 with frame option 1

Configurations: LSADD

Surface mounted bolts have not been specifically tested. Bolts of these designs are surface mounted and require no material to be routed out of the door leaf or frame to accept them. Moreover, they provide an additional point of restraint to the top and bottom of one of the door leaves when comparing them to the double doorsets successfully tested and summarised in section 3. This would likely improve the stability and reduce the overall distortion of this door leaf when subject to fire conditions. Considering the above Warringtonfire opinion that adding a surface mounted bolt to the slave leaf would have no significant effect to the doorsets overall fire resistance performance and may be a benefit in terms of fire resistance and is therefore acceptable in this assessment.

This is not permitted with unlatched configurations.

Flush bolts are not permitted in this assessment.

10.9 Non-Essential Hardware

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

10.9.1 Pull Handles

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2, 3, 4 & 5

Configurations: LSASD, ULSASD, LSADD & ULSADD

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

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

10.9.2 Push Plates & Kick Plates

Leaf options: 1 & 2

Frame options: 1, 2, 3, 4 & 5

Configurations: LSASD, ULSASD, LSADD & ULSADD

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

Approved specification:

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

10.9.3 Security Viewers

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2, 3, 4 & 5

Configurations: LSASD, ULSASD, LSADD & ULSADD

The table below details the tested security viewer that is approved.

Element	Manufacturer & Product Reference (Test reference)
Security viewers	<ul style="list-style-type: none">• Union Assa Abloy 35-60mm fire rated viewer (WF513928)

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

- Door security viewers with brass or steel bodies of a diameter less than or equal to 15mm may be used provided that the through-hole is bored tight to the case of the viewer (maximum tolerance +1 mm). Lenses must be glass and the item must be protected with a tested acrylic intumescent mastic.
- Must be fitted no closer than 100mm to door edge, glazing or any other hardware component

10.9.4 Door Selectors

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1 & 4

Configurations: LSADD & ULSADD

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

10.9.5 Environmental Seals

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2, 3, 4 & 5

Configurations: LSASD, ULSASD, LSADD & ULSADD

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.

10.9.6 Threshold drop Seals

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2, 3, 4 & 5

Configurations: LSASD, ULSASD, LSADD & ULSADD

A Norseal NOR810 aluminum drop seal was successfully tested in report WF403032 and is acceptable for use in all door designs. It is permitted for use without the requirement for any intumescent protection.

Alternatively, components with the following specification are also deemed acceptable, recessed into the bottom of leaves.

Product	Manufacturer
IS8010si	Lorient Polyproducts Ltd.
RP8Si	Raven Products Ltd.
NOR810, NOR810S, NOR810dB+	Norsound Ltd.

10.9.7 Letter Boxes / Plates

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2, 3, 4 & 5

Configurations: LSASD, ULSASD, LSADD & ULSADD

The Assa Abloy Ltd. Firemaster letterplates have been assessed based on the Certifire certificate CF219 referenced in section 3.1.7.

The letterplate is approved on the basis of:

- a) Initial type testing.
- b) A design appraisal against TS32.
- c) Certification of quality management system to ISO 9001: 2008.
- d) Inspection and surveillance of factory production control.

The Certifire approval is applicable to timber faced and edged leaves with timber, cellulosic or mineral cores in timber, metal or composite frames having fire resistances of 30 minutes. This is based on suitable test evidence to BS 476 Part: 22 and BS EN 1634-1 test evidence.

The proposed door designs have been successfully tested with larger apertures. Considering the performance achieved in the primary evidence, Warringtonfire have permitted the use of Firemaster letterplate in the Sentry Prolite doorset designs.

The letterplate is therefore acceptable for use with the proposed door design to the following requirements.

- 1No. letterplate per leaf.
- The letterplate must be installed a minimum 250mm and a maximum 1700mm from the base of the door leaf.
- The letter plate must not be less than 100mm from the door leaf vertical edges.
- The letterplate must be no closer than 200mm from glazed apertures or other items of hardware.
- The combined area occupied by the letterplate and glazing, if both elements are fitted, must be within the maximum glazed area permitted in section 6.
- The letter plate may be installed in both directions in relation to fire attack.
- The letterplate must be installed with the intumescent protection provided by the manufacture.
- The letterplate installed centrally within the aperture, tightly fitted into the cut out with no significant gaps.
- The letterplate must be installed in line with the manufacturer's instructions with the fixings provided.

Other than the points specified above, the letterplate must be installed complying with the requirements given in Certifire Certificate CF219.

10.9.8 Knockers, Numerals & Signage

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2, 3, 4 & 5

Configurations: LSASD, ULSASD, LSADD & ULSADD

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 specifications:

Knockers:

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

Numerals & Signage:

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

11 Installation




11.1 General

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

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

11.2 Door Frame Installation

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


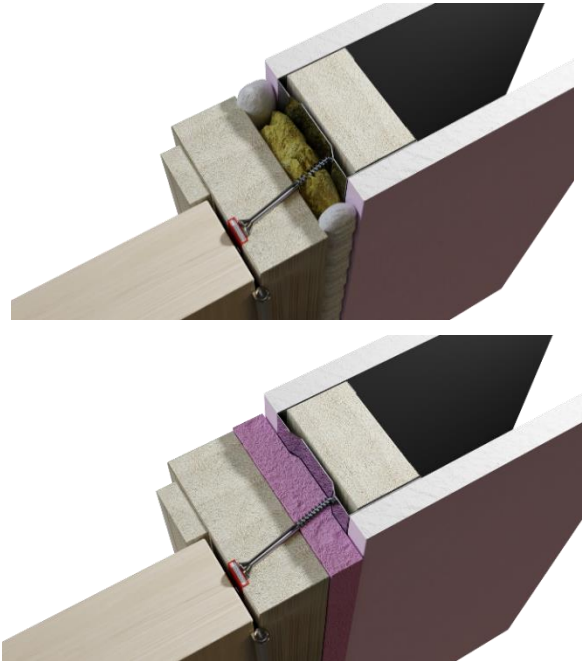
Permitted Installations	
	<p>Instances where the door frame and the wall of the same depth such that architraves are fitted flush to both faces. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see door frame section.</p> <p>Architraves requirements are documented in the firestopping section of this report.</p>
	<p>Instances where the wall thickness is greater than the door frame depth.</p> <p>In this scenario timber architraves of minimum 18mm thick 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 11.5. Furthermore, the main frame section (from which the door is hung) must be constructed to at least the minimum door frame section size (width and depth) as per the requirements noted in this report – see door frame section. The extension piece must be constructed using the same timber species as the main frame section.</p> <p>Note: the aperture must be lined using the same board orientation used on the partition face in flexible constructions.</p>

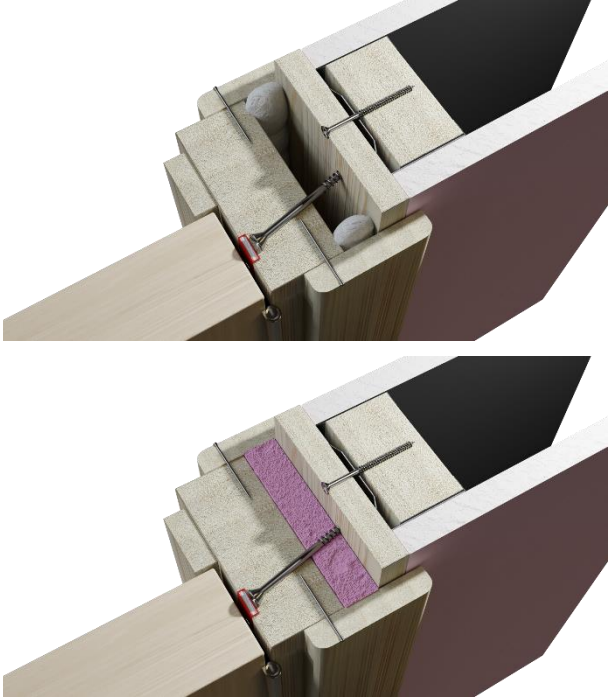
Note:

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

11.3 Firestopping

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

Gap (mm)	Requirement	3D model depiction
0 – 2	In practice, unlikely to occur, but if present, must be sealed with architraves, as below, fitted over a bead of acrylic intumescent sealant, tested as below.	N/A
3 – 10	<p>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, BS EN 1634-1 or BS EN 1366-3 Annex NA.</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>	
10 – 20	<p>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: 198, BS EN 1634-1 or BS EN 1366-3 Annex NA or full depth expanding PU foam, fire tested for this application to BS 476: Part 22: 1987, BS EN 1634-1 or BS EN 1366-3 Annex NA.</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>	

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, BS EN 1634-1 or BS EN 1366-3 Annex NA.</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.

11.4 Packers

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

11.5 Wall Types, Structural Opening & Fixity

11.5.1 Wall Types

The following wall types are approved for this doorset design:

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

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

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

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

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

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

11.5.2 Structural Opening

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

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

11.5.3 Fixity

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

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

For all other configurations of doorset, the upper horizontal framing section abutting the structural opening must also be secured to the wall using steel fixings at 600mm maximum centres and maximum of 150mm from corner. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm.

11.6 Post Production (Onsite) Leaf Size Adjustment

The Sentry Prolite 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.

Note: Any unlippped edges must not be reduced.

11.7 Door Gaps

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

Door Gap & Alignment Tolerance Specification	
Location	Dimension
Door edge gaps	A minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud of each other or from the door frame by more than 1mm.
Threshold	8mm between bottom of leaf and top of floor covering. This is the maximum tolerance for fire resistance only.

12 Insulation Performance

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

Insulation Performance Criteria	
Type	Details
Partially insulating	Doorsets incorporating up to 20% of non-insulating glazing (including letter plate if installed)
Fully insulating	Unglazed doorsets or doorsets including 30-minute insulating glazing (e.g. 15mm Pyrostop or 16mm Pyrobel)

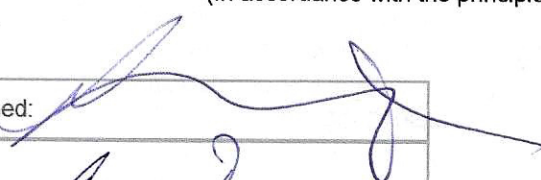
13 Conclusion

If Sentry Prolite doorsets constructed in accordance with the specification documented in this field of application were to be tested in accordance with BS 476: Part 22:1987, it is our opinion that they would provide a minimum of 30 minutes integrity and insulation (subject to section 12).

14 Declaration by the Applicant

- 1) We the undersigned confirm that we have read and comply with obligations placed on us 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:	Azhar Hontiat
Position:	Director
Date:	22nd SEPT 2022
Jiangsu Sainty Bancom Wood T/A Sainty-Sentry	

15 Limitations

The following limitations apply to this assessment:

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

16 Validity

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

Position:	Assessor	Reviewer
Signature:		
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