
Title

Field of Application Report for:
Flamebreak Doorsets
for:
30 Minutes Fire Resistance

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

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1 Foreword

This field of application report has been commissioned by Pacific Rim Wood Ltd and relates to the fire resistance of Flamebreak, 30 minute doorset designs, a construction manufactured by P.T. Kutai Timber of Indonesia.

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

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

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

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

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

2 Proposal

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

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

3 Test Evidence

The test evidence summarised below has been generated to support the fire resistance performance of the door designs that are the subject of this field of application.

Notes:

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

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

The same time temperature curve is used to control the temperature within the furnace for both test methods (the heating curve given within ISO 834-1). However, the plate thermocouple used to record the temperature within the furnace for the EN test method, requires a higher thermal inertia to read the same temperature as the probe thermocouple that is used for the BS 476 Part 22:1987 test, particularly during the early stages of the test. This results in more onerous test conditions for doorsets tested to the BS EN 1634-1: 2014 +A1:2018 test standard compared with the BS 476 Part 22:1987 test standard, which has been demonstrated by testing the same products to both standards.

It is therefore the opinion of Warringtonfire that the fire resistance performance of the 30 minute fire resisting doorsets can be assessed to provide at least 30 minutes fire resistance integrity and insulation performance, if the doorsets, constructed in accordance with the specifications documented in this field of application, were to be tested in accordance with BS 476 Part 22:1987.

A number of the test reports cited have been supplied by sponsors other than Pacific Rim Wood Ltd. The test evidence is based on the same type of door core as that contained within this assessment and has been deemed suitable to increase the scope of the doorsets designs tested by Pacific Rim Wood Ltd. Permission has been obtained from the owners of the test data to reference it in to increase the scope as discussed above.

Primary Test Data – See Appendix A for individual Test Summaries

Report No.	Configuration	Leaf Size (mm)	Test Standard	Performance (mins)
18-003111-PR04	LSASD	2150 x 926 x 44	BS 476: Part 22: 1987	Integrity 34 Insulation: 29
Test is presented as primary test data for the Flamebreak 430 design incorporating a 3-pt lock and an IGU				
WF403587	A: ULSASD	2040 x 826 x 44	BS 476: Part 22: 1987	Integrity 47 Insulation: 47
Test is presented as direct test evidence of the Flamebreak design opening away from furnace heating conditions				
WF381914	B: ULSADD	2155 x 936/680 x 44	BS 476: Part 22: 1987	Integrity 44 Insulation: 44
Test is presented as primary test data for the Flamebreak 430 design utilising Sealed Tight Solutions leaf edge intumescent seals				
RF98033	ULSADD	2135 x 915 x 45	BS 476: Part 22: 1987	36
Test is presented as primary test data for the Flamebreak design utilising Lorient Polyproducts Ltd Type617 seals without lippings installed				
RF98075	2No. ULSASD	A = 2055 x 865 x 44 B = 2135 x 916 x 44	BS 476: Part 22: 1987	A = 31 B = 33
Test is presented as primary test data for the Flamebreak design utilising Lorient Polyproducts Ltd Type617 seals with lippings installed on vertical and top edges				
RF00044	A: ULSASD	2080 x 915 x 44	BS 476: Part 22: 1987	A = 31
Test is presented as primary test data for the Flamebreak design with stiles and rails but without lippings				
RF00046	ULSADD	2135 x 835 x 44	BS 476: Part 22: 1987	32
Test is presented as primary test data for the Flamebreak design without stiles and with lippings on vertical edges only				
RF00098	2No. ULSASD	A = 2080 x 916 x 44 B = 2080 x 860 x 44	BS 476: Part 22: 1987	A = 32 B = 33
Test is presented as primary test data for the Flamebreak design with stiles and top rail and without lippings				
RF00166	ULSASD	A = 2440 x 1220 x 44 B = 2390 x 1154 x 44	BS 476: Part 22: 1987	A = 37 B = 41
Test is presented as supporting test data for the Flamebreak design comparing similar specimens lipping and unlipped				
RF04011	LSASD	1976 x 758 x 44	BS 476: Part 22: 1987	31
Test is presented as primary test data for the Flamebreak design utilising graphite seals with lippings on all edges				
RF05041	ULSADD	2041 x 825 x 44	BS 476: Part 22: 1987	39
Test is presented as supporting data with specimen having stile removed & lipped on vertical edges only with rebated meeting edges				

Primary Test Data – See Appendix A for individual Test Summaries

Report No.	Configuration	Leaf Size (mm)	Test Standard	Performance (mins)
RF08100	A: ULSADD	2100 x 900/350 x 44	BS 476: Part 22: 1987	A: 39
	B: ULSASD	2100 x 900 x 44	BS 476: Part 22: 1987	B: 51
Test is presented as supporting data with specimen utilising P.U glue-line for lipping, large glazed apertures – ply and MDF faces				
RF08116	A: ULSASD	2040 x 826 x 44	BS 476: Part 22: 1987	A: 45
	B: ULSASD	2040 x 826 x 44	BS 476: Part 22: 1987	B: 35
Test is presented as supporting data with specimen utilising 10 x 4 Pyroplex seals with ply and MDF faces				
RF08118	ULSADD + OP	2400 x 1000 x 44 + 400 OP	BS 476: Part 22: 1987	41
Test is presented as primary test data for the Flamebreak design - specimen comprised ply face leaves with flush overpanel and rebated head junction using Pyroplex seals				
RF10149	ULSADD + OP	2130 x 930 x 44 + 400 OP	BS 476: Part 22: 1987	33 (failure at lock – perimeter failure at 38)
Test is presented as supporting data for ply faced Flamebreak doorsets with light weight core material				
RF11026	LSASD	2761 x 1236 x 44	BS 476: Part 22: 1987	39
Test is presented as primary test data for the Flamebreak design - specimen comprised ply face leaves with no perimeter stiles or rails				
Warres 316266	LSASD	1490 x 1490 x 44	BS 476: Part 20: 1987	33
Test is presented as supporting data for doorsets installed in softwood framed glazed screen, both incorporating the Lorient Polyproducts Ltd System 36 Plus glazing system				
RF10128	A: ULSASD	2100 x 1000 x 44	BS 476: Part 22: 1987	A: 44
	B: ULSADD	2696 x 950/445 x 54		B: 65
Test is presented as supporting data for Flamebreak doorsets incorporating the Norsound NOR810S threshold dropseal				

4 Technical Specification

4.1 General

The technical specification for the proposed door assembly is given in the following sections based on the test evidence for the door design, 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 Description of Construction

The essential construction of the Flamebreak 30 minute door leaf includes the following basic components in the design.

Element	Materials	Dimensions (mm)	Minimum Density (kg/m ³)
Core	Parasorianthes falacateria or Albisia falcatta or Ochroma pyramidale	3 layers of lamels laid in alternate directions – grooved to accept the stiles and rails	140-360 (average 210)
Stiles: Mixed tropical hardwood	Leaf size ≥ 2440 (h) x 1220 (w)	1No. 26 - 36 thick (depending on facing thickness) x 35 deep, incorporating a 9 x 9 tongue to locate into the core material	480
	Leaf size ≤ 2135 (h) x 915 (w)	1No. 26 – 36 thick (depending on facing thickness) x 35 deep	480
Top & bottom rails	'Mixed tropical hardwood'	1No. 26 - 36 thick (depending on facing thickness) x 35 deep, incorporating a 9 x 9 tongue to locate into the core material	480
Facings	Various timber based products – see section 12 for details	Between 4 – 9mm – see section 12 for details	Various
Lippings	Hardwood	See section 4.3.4	

The permitted dimensions, configurations and required intumescent materials for the Flamebreak cores used for FD30 fire door applications may vary according to the material and thickness of the facing material. These restrictions are defined by reference to the data sheets in section 6.2.

Flamebreak 430 (4mm plywood faced) cores may be supplied without perimeter framing by Pacific Rim Wood Ltd. for subsequent conversion to door assemblies. This design may only be used for FD30 fire door applications which are specified as a latched, single acting, single leaf configuration and provided that they are hardwood lipped on the vertical and top edges using lipping materials complying with specifications described by reference to section 4.3.4. Flamebreak 430 door assemblies without framing must be used with 25 x 4mm Lorient Type 617 intumescent seals within the dimensional limits defined by reference to the appropriate data sheet in section 6.2.

4.3.1 Leaf Edging Materials

Flamebreak 30 door cores are supplied with structural perimeter framing around the tri-laminated core. The design has been tested without additional lippings and this variation to design is to be referenced as ‘edge banded’, see section 4.3.3 for details.

When, during manufacture, the structural framing is removed, the resulting door leaf must be lipped, in line with the requirements of section 4.3.2.

Door leaves must always be either lipped or retain an element of internal framing, the requirements for each approach are given below.

4.3.2 Where Timber Lippings Required

When door blanks to the Flamebreak 30 design have been cut on the vertical (long) leaf edges removing the leaf framing or have been supplied without leaf framing, they must be lipped, meeting the specification in section 4.3.4. Where lippings are to be utilised:

- The vertical perimeter framing to the core can be removed completely to one or both sides of the core
- The structural head rail can be reduced by the thickness of the lipping material to be added plus a maximum of 3mm
- There are no restrictions regarding reduction to the bottom rail.

4.3.3 Blanks without Lippings (Edge Banded)

Flamebreak 30 core constructions that include perimeter framing (stiles and rails) may be used for FD30 applications without the addition of lippings subject to the following limitations:

- The vertical perimeter stiles may be reduced by up to 50% of the original dimension provided that the reduction is applied equally to both stiles
- The head rail must not be reduced by more than 3mm
- There are no restrictions regarding reduction to the bottom rail.

4.3.4 Lipping Material Specification

Material	Size (mm)	Min. Density (kg/m ³)
Hardwood -must be straight grained, joinery quality, free from knots, splits and checks.	1. Flat = 6 – 18 thick with a maximum of 2 profiling permitted at corners of lipping (see section 11.1)	640
	2. Rounded = 8 – 20 thick with a radius matching the distance between leaf edge and floor pivot (see section 11.1)	
	3. Rebated = 20 – 30 thick with a 12 deep equal rebate (meeting edges of double doors & flush overpanel junction only – see notes below)	

Notes:

The following notes apply irrespective of whether the leaf framing is intact or not.

- Doorsets with flush overpanels must be lipped on the vertical edges and additionally at the bottom edge of the overpanel and top edge of the doors
- Where applied, lippings along the vertical edges must over-run the lippings along the horizontal edges
- Double doorsets without flush overpanels are permitted with square or rebated meeting edges
- Single leaf doorsets with flush overpanels may use a rebated overpanel junction
- Double doorsets with flush overpanels may use a rebated overpanel junction or rebated meeting edges, but must not use both concurrently.

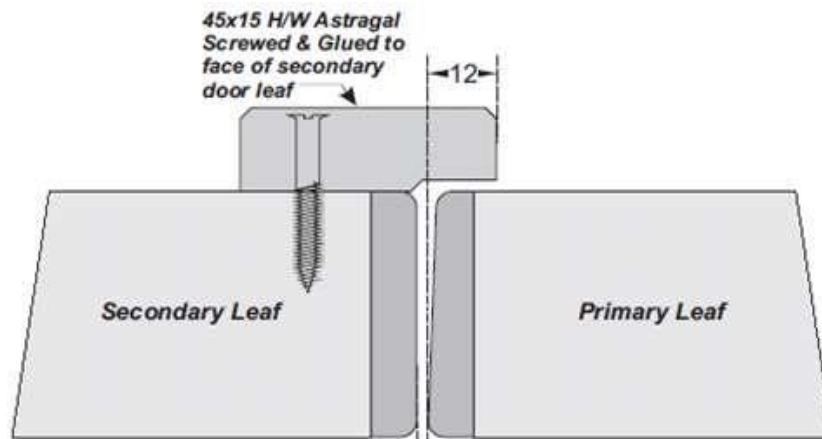
4.3.5 Meeting Stile Astragals

Generally, fire doors should be able to open simultaneously. However, where additional performances are required (e.g. acoustic performances) it may be necessary to provide for sequential opening.

An astragal detail may be used where these conditions apply, without adverse influence on existing fire test/assessment data.

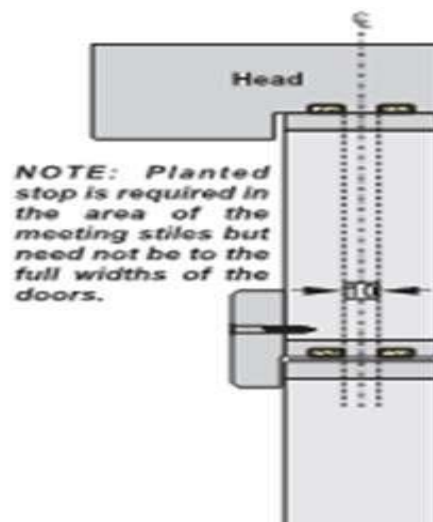
Astragals can be applied to both door leaves and may be profiled for aesthetic effect providing they meet the minimum specification given below.

The hardwood for the astragal must be hardwood of the same minimum density being used for the lipping material. See following diagram.



4.3.6 Planted Stop for Flush Overpanels

For single acting doorsets with flush overpanels it may be necessary to provide for a planted stop detail at the junction between the overpanel and the leaf heads. The planted stop is to have the same specification as that given for the meeting edge astragal in section 4.3.5. See following diagram for recommended installation detail.



5 Leaf Sizes

The approval for increased leaf dimensions is based on the tests listed in section 3 and takes into account the margin of over-performance above 30 minutes integrity for the design and the characteristics exhibited during test. Data sheets specifying the maximum approved leaf sizes and graphs showing the permitted gradient between maximum height and width are contained in section 6.2.

Doorsets with reduced dimensions are deemed to be less onerous. Therefore, doors with dimensions that are less than those tested and stated in section 6.2 may be manufactured.

6 Configurations

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

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

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

The test evidence included has been generated on doors fitted with a latch/lock but disengaged for the test. This represents a more onerous condition in terms of leaf restraint at the closing/meeting edges and therefore permits assessment of the latched configurations as listed in the tables below.

Abbreviation	Description
LSASD & ULSASD	Latched & unlatched, single acting, single doorsets
DASD	Double acting, single doorsets
LSASD+OP & ULSASD+OP	Latched & unlatched, single acting, single doorset + overpanel
DASD+OP	Double acting, single doorset + overpanel
LSADD & ULSADD	Latched & unlatched, single acting, double doorsets
DADD	Double acting, double doorsets
LSADD+OP & ULSADD+OP	Latched & unlatched, single acting, double doorset + overpanel
DADD+OP	Double acting, double doorset + overpanel

Unequal leaf double doorsets are covered by this assessment with no restriction on the smaller leaf dimension.

6.1 Orientation

The primary fire resistance tests for these designs were mostly 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, for timber based door leaves hung in timber door frames (see Annex C of BS EN 1634-1: 2014 + A1: 2018 for justification).

Test WF403587 evaluated a single leaf specimen opening away from the furnace which achieved 47 minutes with no failures prior to the termination of the test.

Based on this testing, assessment is made that doorsets to these designs may be hung to open either away from or towards the fire risk side of the doorset.

6.2 Leaf Size Envelopes

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

Envelopes sizes are developed based on the following criteria:

1. Flamebreak leaf facing option required
2. Configuration required
3. Intumescent option.

6.2.1 All Leaf Facing Options – LSASD

Intumescent Specification For: LSASD Single Point Lock			
Intumescent Spec. Ref. (Test Ref)	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
A1 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
A2 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
A3 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
A4 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: Leaf Size in excess of 2390mm high and/or 1100mm wide 1No. 25 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.

LSASD
(Single Point Lock)
All Facing Options
Intumescent specs A1 & A2 have the same leaf size envelope

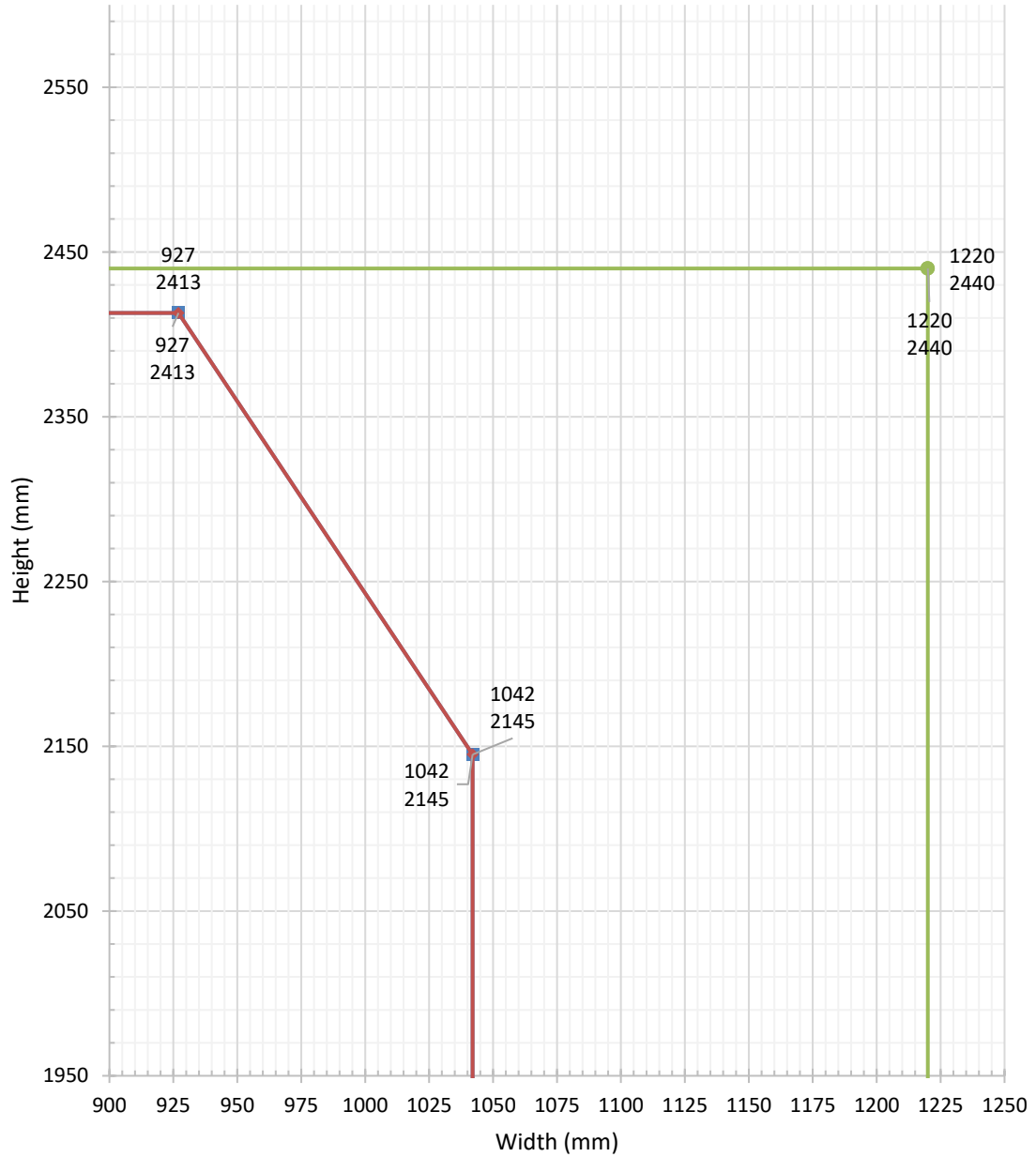


6.2.2 All Leaf Facing Options – ULSASD & DASD

Intumescent Specification For: ULSASD & DASD Single Point Lock			
Intumescent Spec. Ref. (Test Ref)	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
B1 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
B2 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
B3 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: Leaf Size in excess of 2390mm high and/or 1100mm wide 1No. 25 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.

ULSASD & DASD
 (Single Point Lock)
 All Facing Options
 Intumescent specs B1 & B2 have the same leaf size envelope

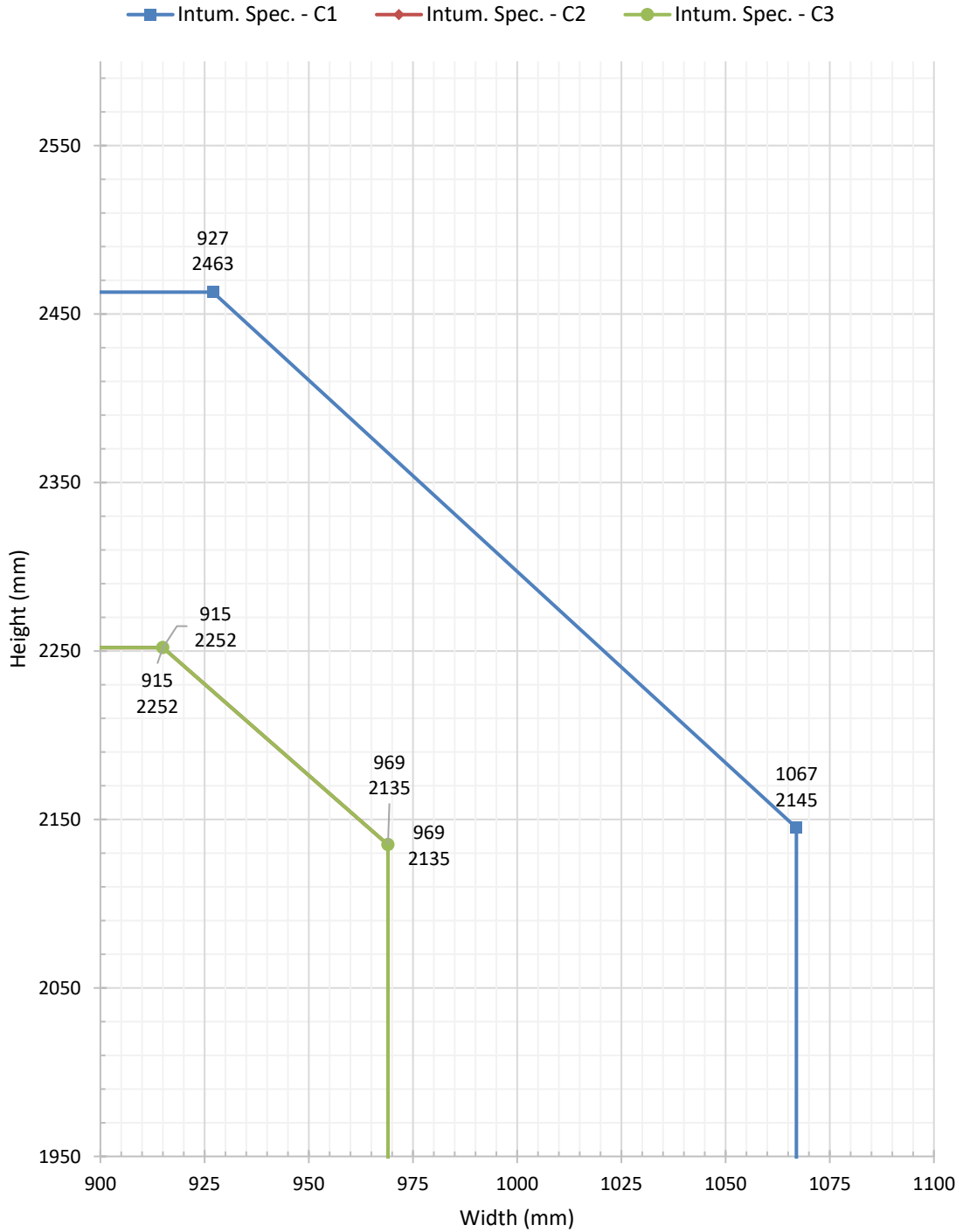
Intum. Spec. - B1 Intum. Spec. - B2 Intum. Spec. - B3



6.2.3 All Leaf Facing Options – LSADD

Intumescent Specification For: LSADD Single Point Lock			
Intumescent Spec. Ref. (Test Ref)	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
C1 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Hanging Jambs: 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 2No 10 x mm seals fitted 5mm either side of centreline in one leaf edge only
C2 (RF98033)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Hanging Jambs: 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 1No 20 x mm seals fitted centrally in one leaf edge only Meeting Edges: Rebated: 1No. 10 x 4mm seal fitted centrally in the rebate of both leaf edges.
C3 (RF98033)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Hanging Jambs: 1No. 25 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 1No 20 x mm seals fitted centrally in one leaf edge only Meeting Edges: Rebated: 1No. 10 x 4mm seal fitted centrally in the rebate of both leaf edges.

LSADD
(Single Point Lock)
All Facing Options
Intumescent specs C2 & C3 have the same leaf size envelope



6.2.4 All Leaf Facing Options – ULSADD & DADD

Intumescent Specification For: ULSADD & DADD Single Point Lock			
Intumescent Spec. Ref. (Test Ref)	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
D1 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Hanging Jambs: 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 2No 10 x mm seals fitted 5mm either side of centreline in one leaf edge only
D2 (RF98033)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Hanging Jambs: 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 1No 20 x mm seals fitted centrally in one leaf edge only Meeting Edges: Rebated: 1No. 10 x 4mm seal fitted centrally in the rebate of both leaf edges.

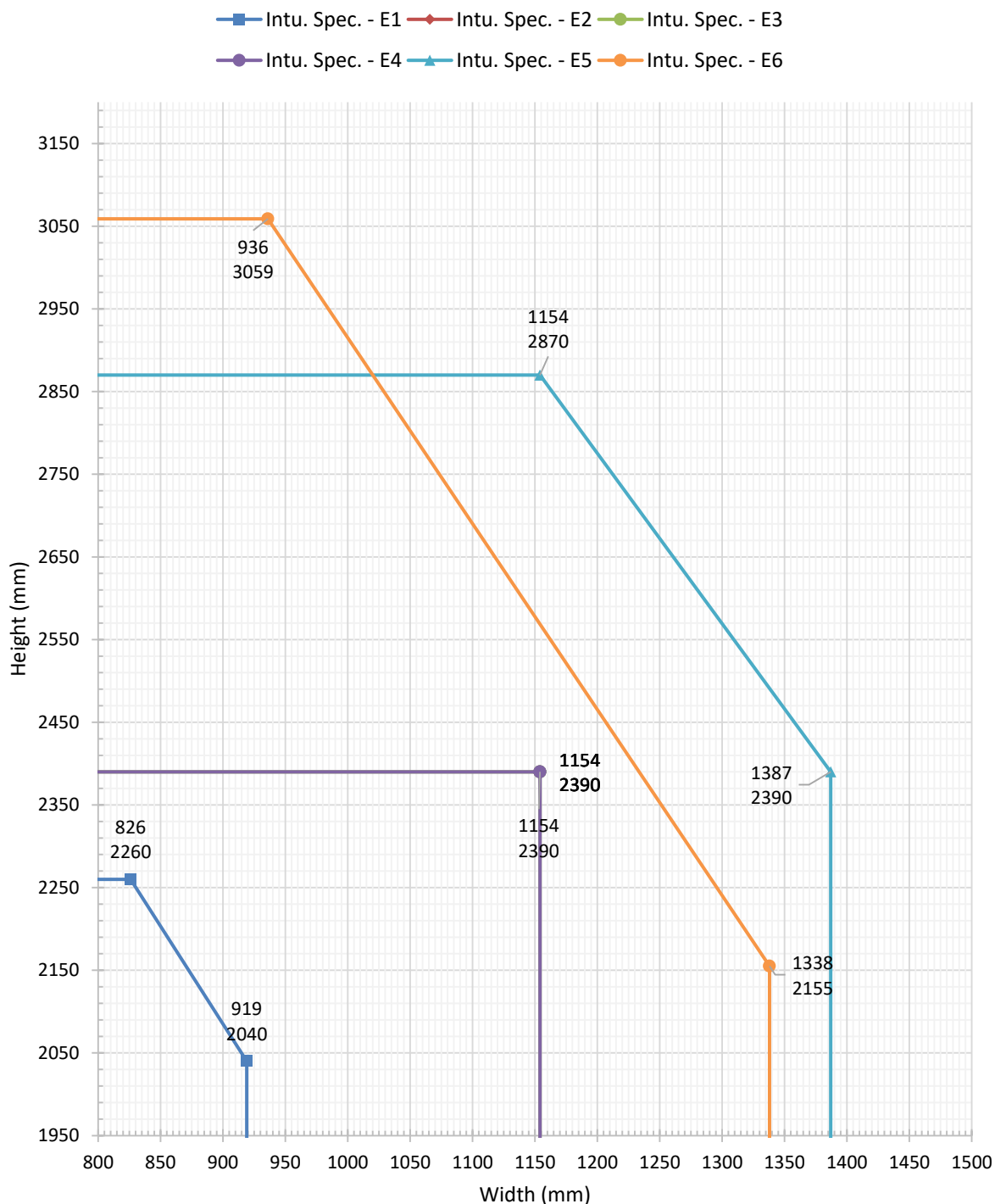
ULSADD & DADD
(Single Point Lock)
All Facing Options



6.2.5 4mm Thick Plywood Leaf Facings – LSASD

Intumescent Specification For: LSASD & Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
E1 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 1No. 10 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
E2 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
E3 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
E4 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: Leaf Size in excess of 2390mm high and/or 1100mm wide 1No. 25 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
E5 (WF381914)	ST154FO	Sealed Tight Solutions Ltd	Head & Jambs: 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
E6 (WF381914)	ST204FO	Sealed Tight Solutions Ltd	Head & Jambs: Leaf Size in excess of 2600mm high and/or 1250mm wide 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.

LSASD
 (Single Point Lock)
 4 Plywood Facings
 Intumescent specs E2 & E3 and E5 & E6 have the same leaf size envelopes

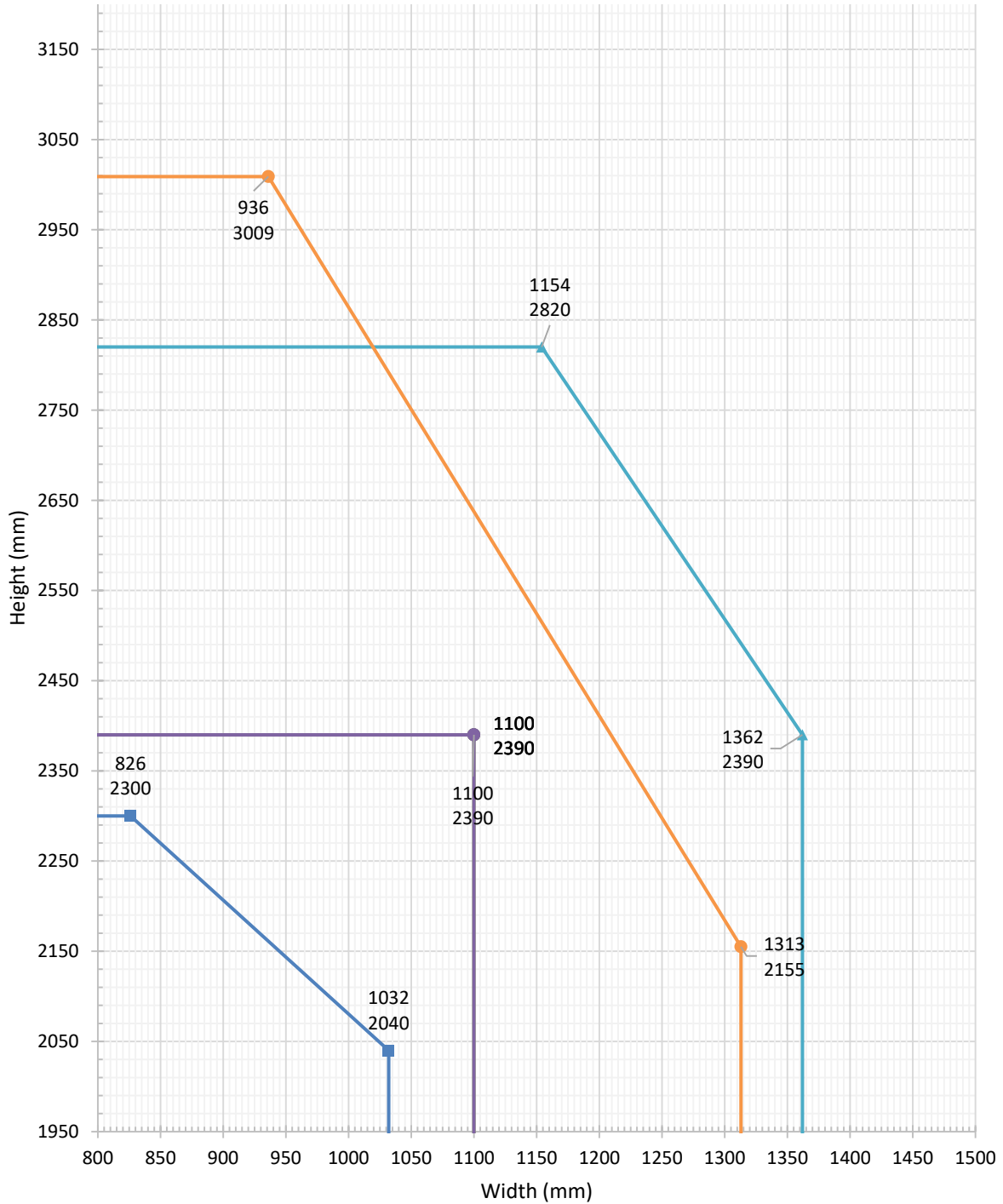


6.2.6 4mm Thick Plywood Leaf Facings – ULSASD & DASD

Intumescent Specification For: ULSASD & DASD Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
F1 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 1No. 10 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
F2 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
F3 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
F4 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
F5 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: Leaf Size in excess of 2390mm high and/or 1100mm wide 1No. 25 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
F6 (WF381914)	ST154FO	Sealed Tight Solutions Ltd	Head & Jambs: 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
F7 (WF381914)	ST204FO	Sealed Tight Solutions Ltd	Head & Jambs: Leaf Size in excess of 2600mm high and/or 1250mm wide 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.

ULSASD & DASD
 (Single Point Lock)
 4 Plywood Facings
 Intumescent specs F1 & F2; F3 & F4 and F6 & F7 have the same leaf size envelopes

■ Intu. Spec. - F1 ◆ Intu. Spec. - F2 ● Intu. Spec. - F3 ● Intu. Spec. - F4
 ▲ Intu. Spec. - F5 ● Intu. Spec. - F6 ● Intu. Spec. - F7



6.2.7 4mm Thick Plywood Leaf Facings – LSADD

Intumescent Specification For: LSADD Single Point Lock			
Intumescent Spec. Ref. (Test Ref)	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
G1 (RF98033)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Hanging Jambs: 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 1No 20 x mm seals fitted centrally in one leaf edge only Meeting Edges: Rebated: 1No. 10 x 4mm seal fitted centrally in the rebate of both leaf edges.
G2 (RF98033)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Hanging Jambs: 1No. 25 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 1No 20 x mm seals fitted centrally in one leaf edge only Meeting Edges: Rebated: 1No. 10 x 4mm seal fitted centrally in the rebate of both leaf edges.
G3 (WF381914)	ST104FO & ST154FO	Sealed Tight Solutions Ltd	Head & Hanging Jambs: 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 2No 10 x 4mm seals fitted centrally 10mm apart in one leaf edge only
G4 (WF381914)	ST104FO & ST154FO	Sealed Tight Solutions Ltd	Head & Hanging Jambs: Leaf Size in excess of 2600mm high and/or 1250mm wide 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 2No 15 x 4mm seals fitted centrally 5mm apart in one leaf edge only

LSADD
(Single Point Lock)
4 Plywood Facings

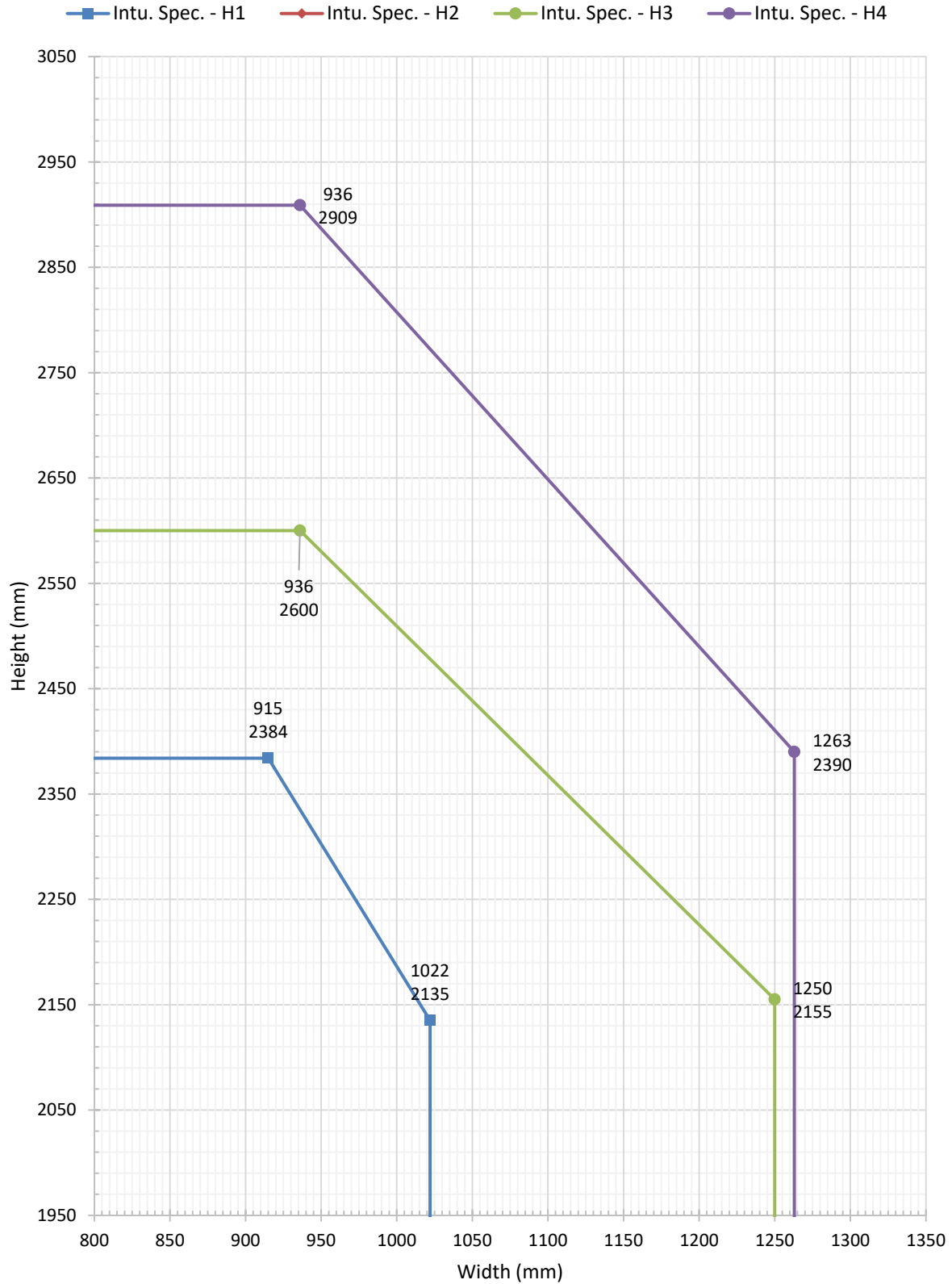
Intumescent specs G1 & G2 have the same leaf size envelope



6.2.8 4mm Thick Plywood Leaf Facings – ULSADD & DADD

Intumescent Specification For: ULSADD & DADD Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
H1 (RF98033)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Hanging Jambs: 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 1No 20 x mm seals fitted centrally in one leaf edge only Meeting Edges: Rebated: 1No. 10 x 4mm seal fitted centrally in the rebate of both leaf edges.
H2 (RF98033)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Hanging Jambs: 1No. 25 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 1No 20 x mm seals fitted centrally in one leaf edge only Meeting Edges: Rebated: 1No. 10 x 4mm seal fitted centrally in the rebate of both leaf edges.
H3 (WF381914)	ST104FO & ST154FO	Sealed Tight Solutions Ltd	Head & Hanging Jambs: 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 2No 10 x 4mm seals fitted centrally 10mm apart in one leaf edge only
H4 WF381914)	ST104FO & ST154FO	Sealed Tight Solutions Ltd	Head & Hanging Jambs: Leaf Size in excess of 2600mm high and/or 1250mm wide 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 2No 15 x 4mm seals fitted centrally 5mm apart in one leaf edge only

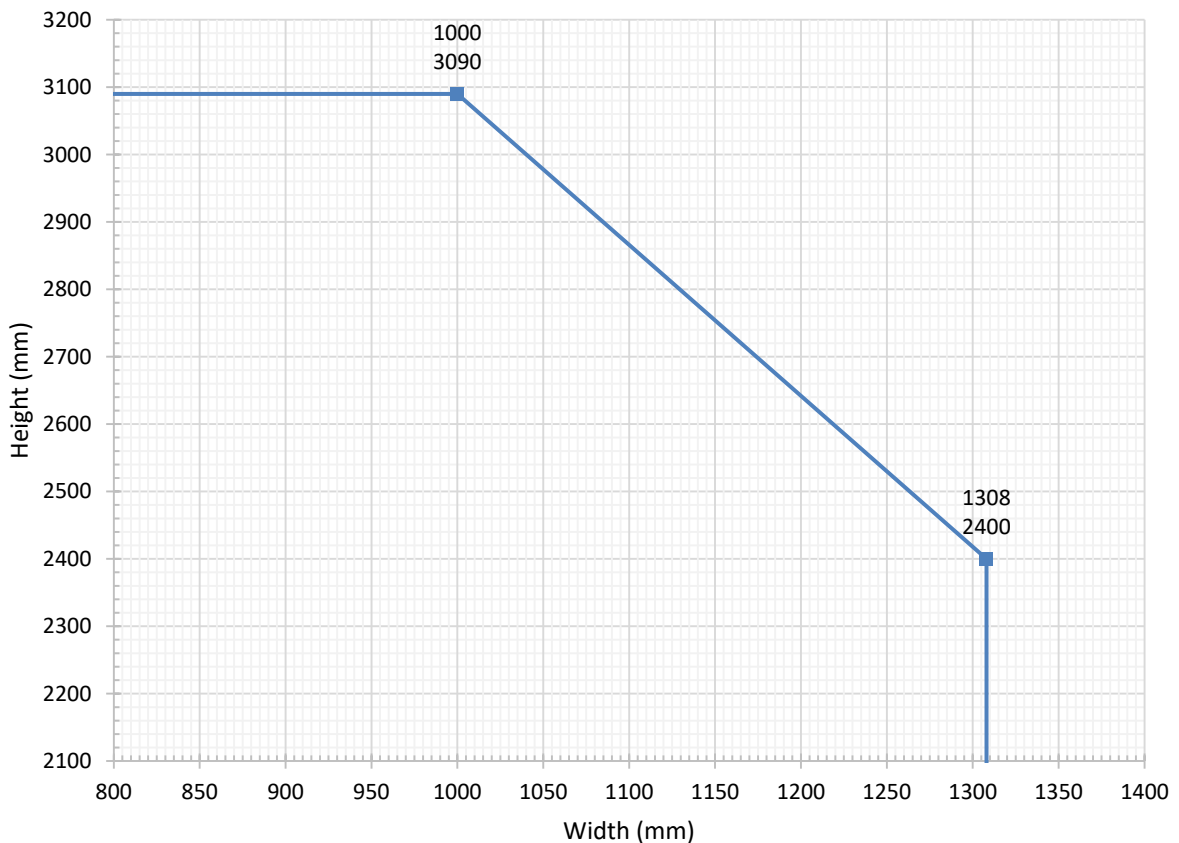
ULSADD & DADD
(Single Point Lock)
4 Plywood Facings
Intumescent specs H1 & H2 have the same leaf size envelope



6.2.9 4mm Thick Plywood Leaf Facings – LSASD+OP

Intumescent Specification For: LSASD+OP Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer / Supplier	Location, Size & Quantity
I1 (RF08118)	Rigid Box Seals	Pyroplex Ltd	<p>Head: Square: 2No. 10 x 4mm PVC encapsulated Pyroplex fitted centrally 10mm apart in the leaf edge or bottom of overpanel.</p> <p>Head: Rebated: Head of Leaves: 2No. 10 x 4mm with one strip centrally fitted on the top of the upstand of the rebate and one centrally in the bottom of the rebate.</p> <p>Jamb: 2No. 10 x 4mm fitted centrally in the leaf edge or frame reveal.</p>

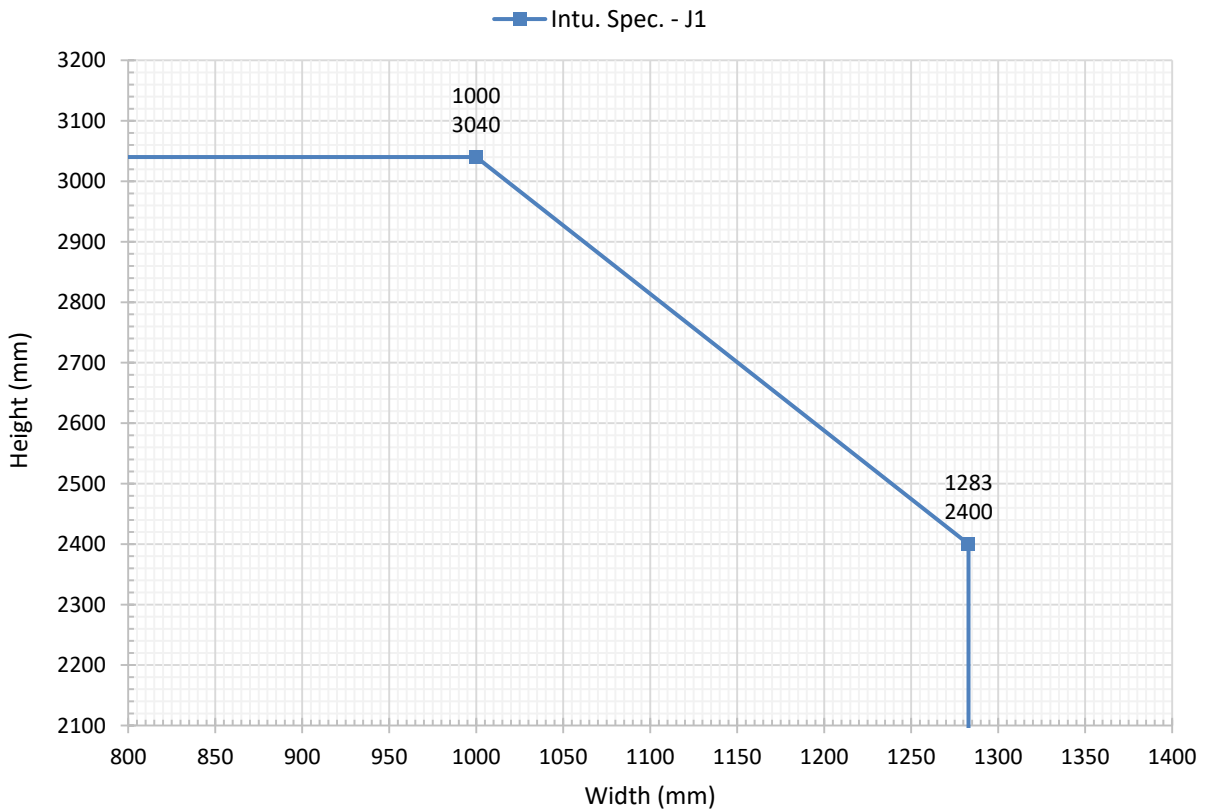
LSASD+OP
 (Single Point Lock)
 4 Plywood Facings
 —■ Intu. Spec. - I1



6.2.10 4mm Thick Plywood Leaf Facings – ULSASD+OP & DASD+OP

Intumescent Specification For: ULSASD+OP & DASD+OP Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
J1 (RF08118)	Rigid Box Seals	Pyroplex Ltd	Head: Square: 2No. 10 x 4mm PVC encapsulated Pyroplex fitted centrally 10mm apart in the leaf edge or bottom of overpanel. Head: Rebated: Head of Leaves: 2No. 10 x 4mm with one strip centrally fitted on the top of the upstand of the rebate and one centrally in the bottom of the rebate. Jamb: 2No. 10 x 4mm fitted centrally in the leaf edge or frame reveal.

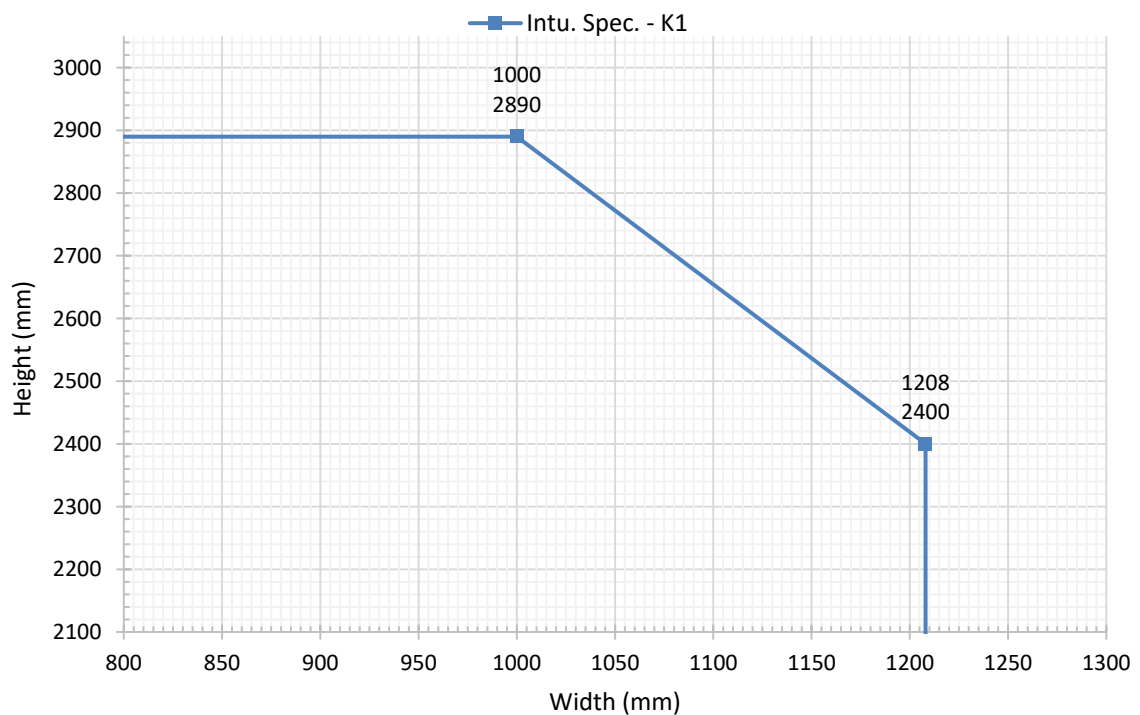
ULSASD+OP & DASD+OP
 (Single Point Lock)
 4 Plywood Facings



6.2.11 4mm Thick Plywood Leaf Facings – LSADD+OP

Intumescent Specification For: LSADD+OP Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
K1 (RF08118)	Rigid Box Seals	Pyroplex Ltd	<p>Head: Square: 2No. 10 x 4mm PVC encapsulated Pyroplex fitted centrally 10mm apart in the leaf edge or bottom of overpanel.</p> <p>Head: Rebated: Head of Leaves: 2No. 10 x 4mm with one strip centrally fitted on the top of the upstand of the rebate and one centrally in the bottom of the rebate.</p> <p>Jamb: 2No. 10 x 4mm fitted centrally in the leaf edge or frame reveal.</p> <p>Meeting Edges: 2No. 10 x 4mm fitted centrally 10mm apart in one leaf edge only.</p>

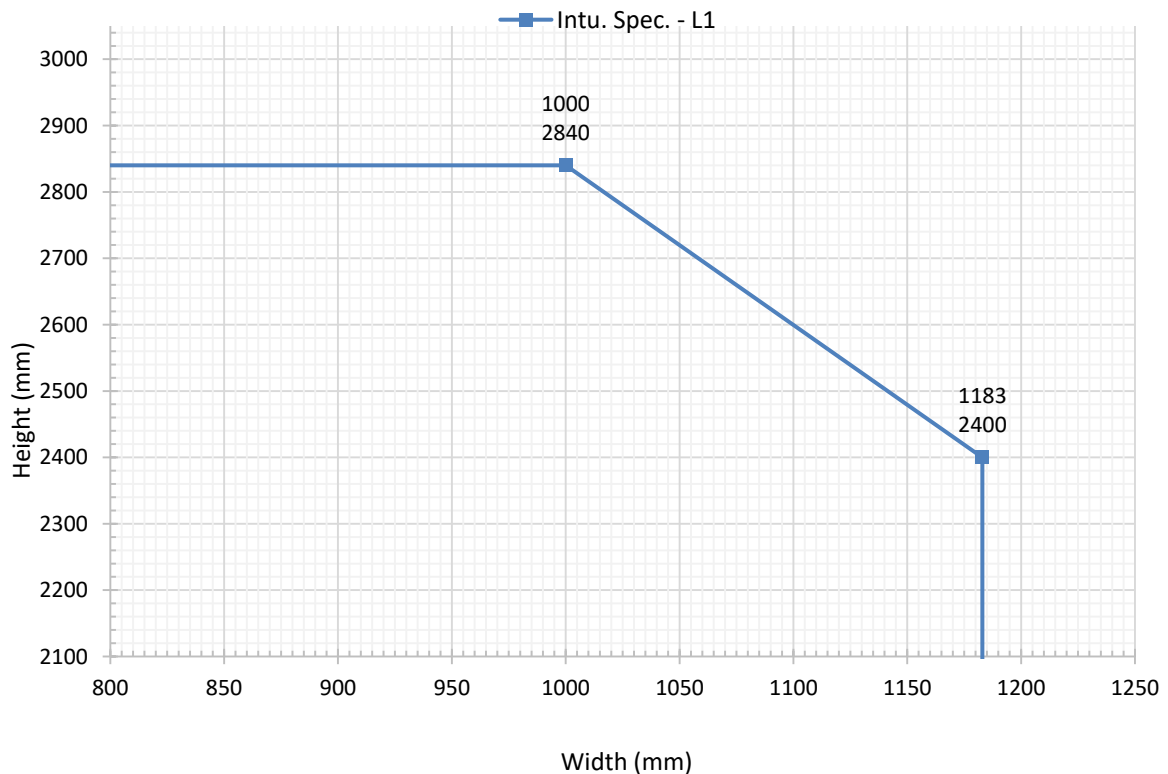
LSADD+OP
 (Single Point Lock)
 4 Plywood Facings



6.2.12 4mm Thick Plywood Leaf Facings – ULSADD+OP & DADD+OP

Intumescent Specification For: ULSADD+OP & DADD+OP Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer / Supplier	Location, Size & Quantity
L1 (RF08118)	Rigid Box Seals	Pyroplex Ltd	<p>Head: Square: 2No. 10 x 4mm PVC encapsulated Pyroplex fitted centrally 10mm apart in the leaf edge or bottom of overpanel.</p> <p>Head: Rebated: Head of Leaves: 2No. 10 x 4mm with one strip centrally fitted on the top of the upstand of the rebate and one centrally in the bottom of the rebate.</p> <p>Jamb: 2No. 10 x 4mm fitted centrally in the leaf edge or frame reveal.</p> <p>Meeting Edges: 2No. 10 x 4mm fitted centrally 10mm apart in one leaf edge only.</p>

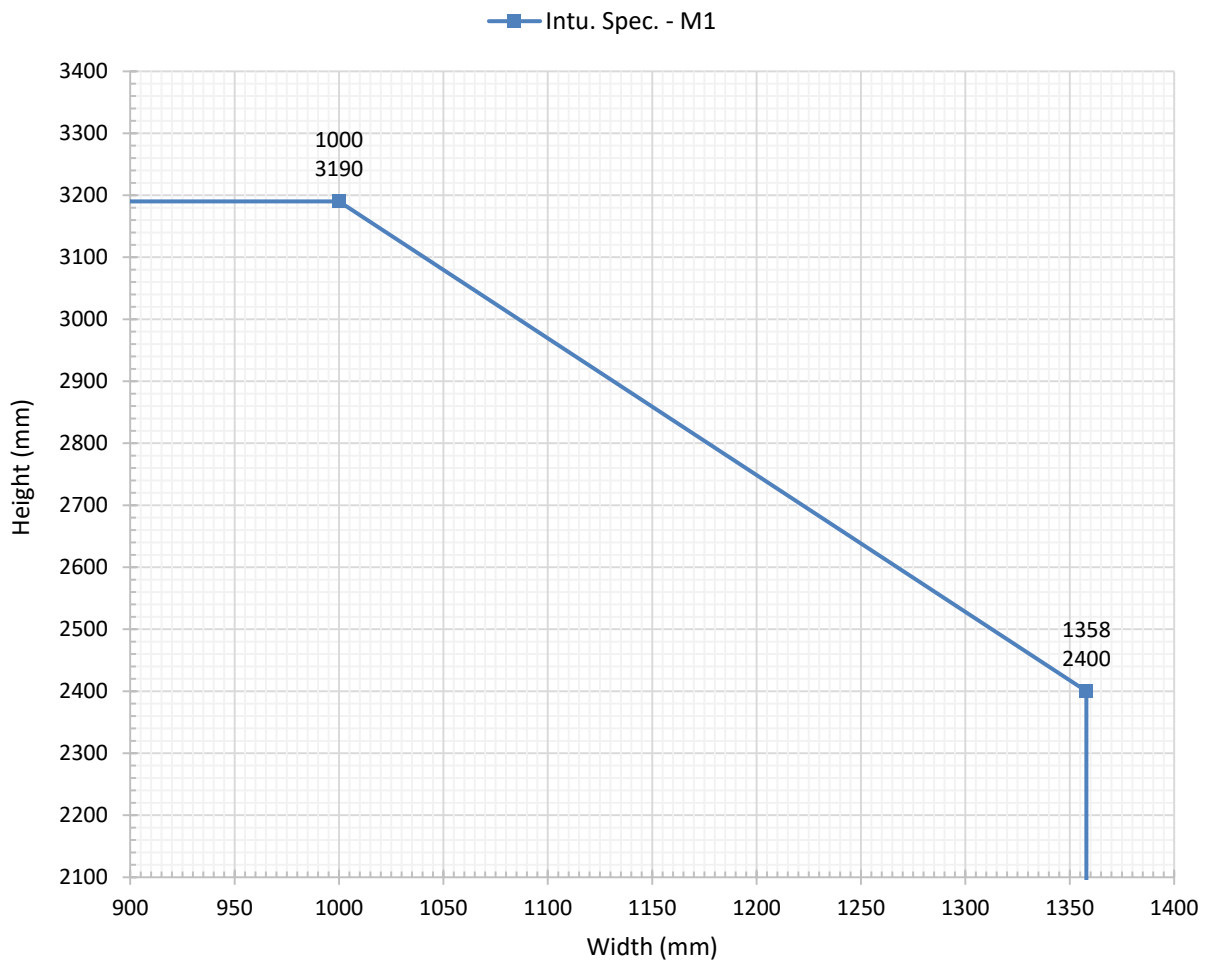
ULSADD+OP & DADD+OP
 (Single Point Lock)
 4 Plywood Facings



6.2.13 4mm & 6mm thick Plywood and 6mm thick MDF Leaf Facings – LSASD

Intumescent Specification For: LSASD Single Point Lock			
Intumescent Spec. Ref. (Test Ref)	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
M1 (RF08118)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 2No. 10 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.

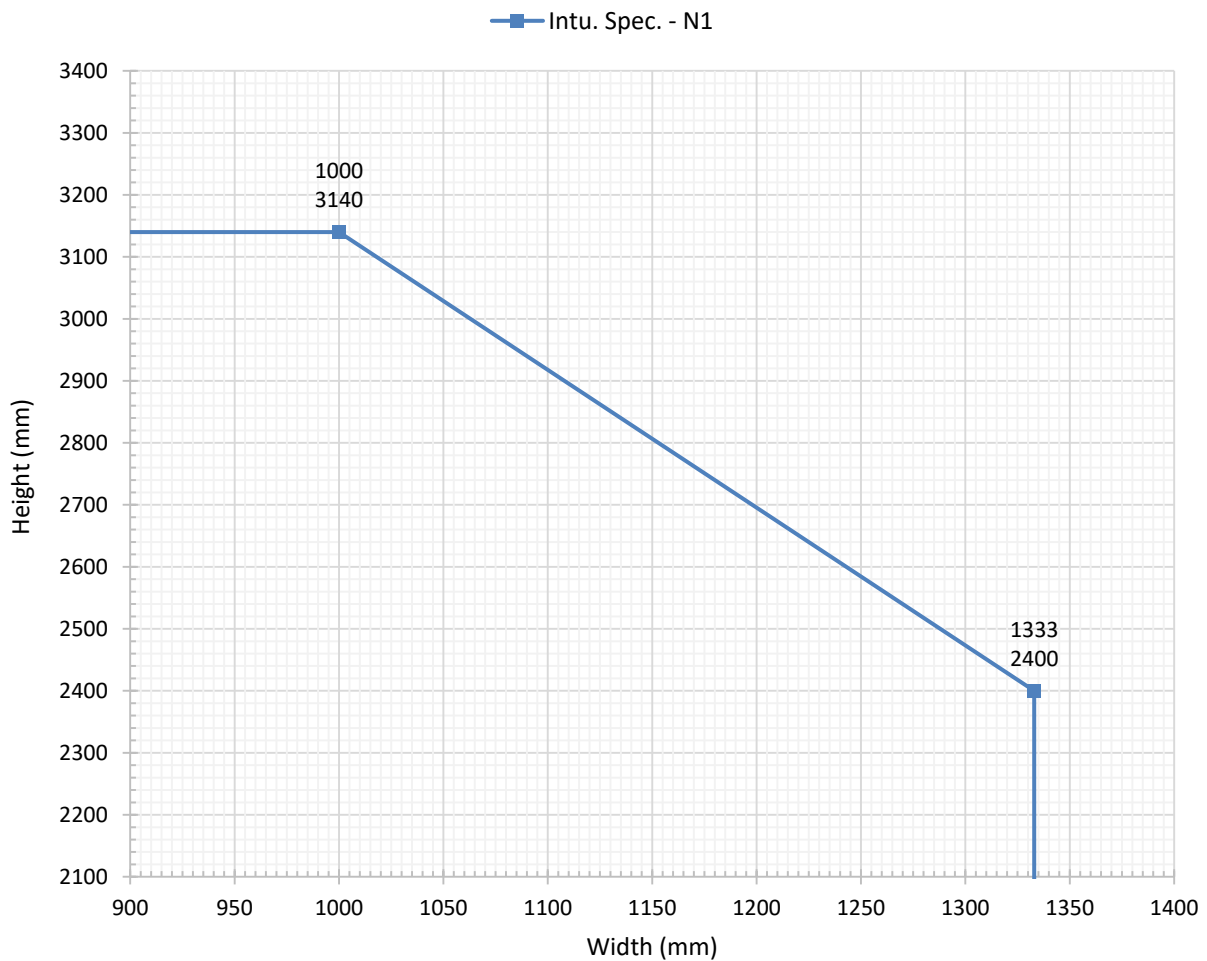
LSASD (Single Point Lock)
 4 & 6mm Plywood & 6mm MDF Facings



6.2.14 4mm & 6mm thick Plywood and 6mm thick MDF Leaf Facings – ULSASD & DASD

Intumescent Specification For: ULSASD & DASD Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
N1 (RF08118)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 2No. 10 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.

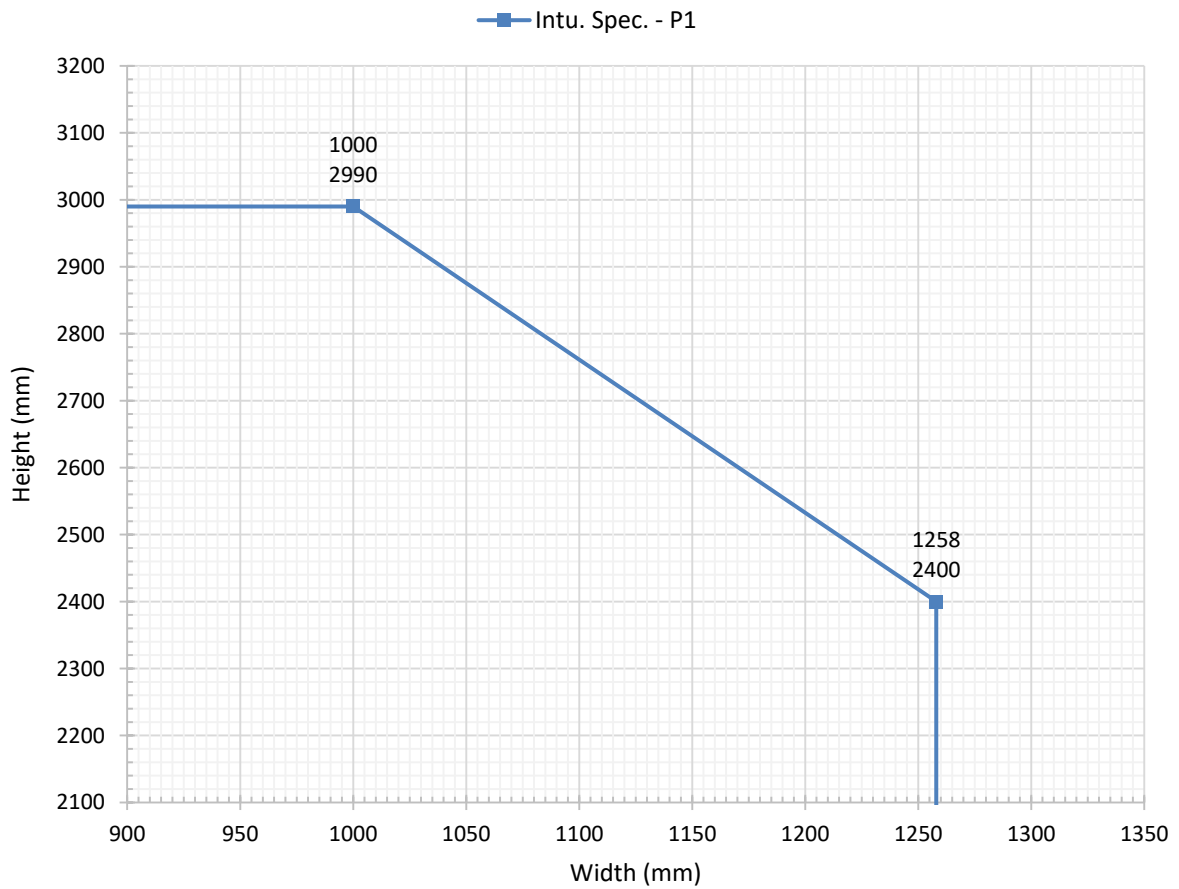
ULSASD & DASD
 (Single Point Lock)
 4 & 6mm Plywood & 6mm MDF Facings



6.2.15 4mm & 6mm thick Plywood and 6mm thick MDF Leaf Facings – LSADD

Intumescent Specification For: LSADD Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
P1 (RF08118)	Rigid Box Seals	Pyroplex Ltd	Head & Hanging Jambs: 2No. 10 x 4mm exposed strip. Fitted centrally 10mm apart in the leaf edge or frame reveal to the head and jambs. Meeting Edges: Square: 2No 10 x 4mm seals fitted centrally 10mm apart in one leaf edge only

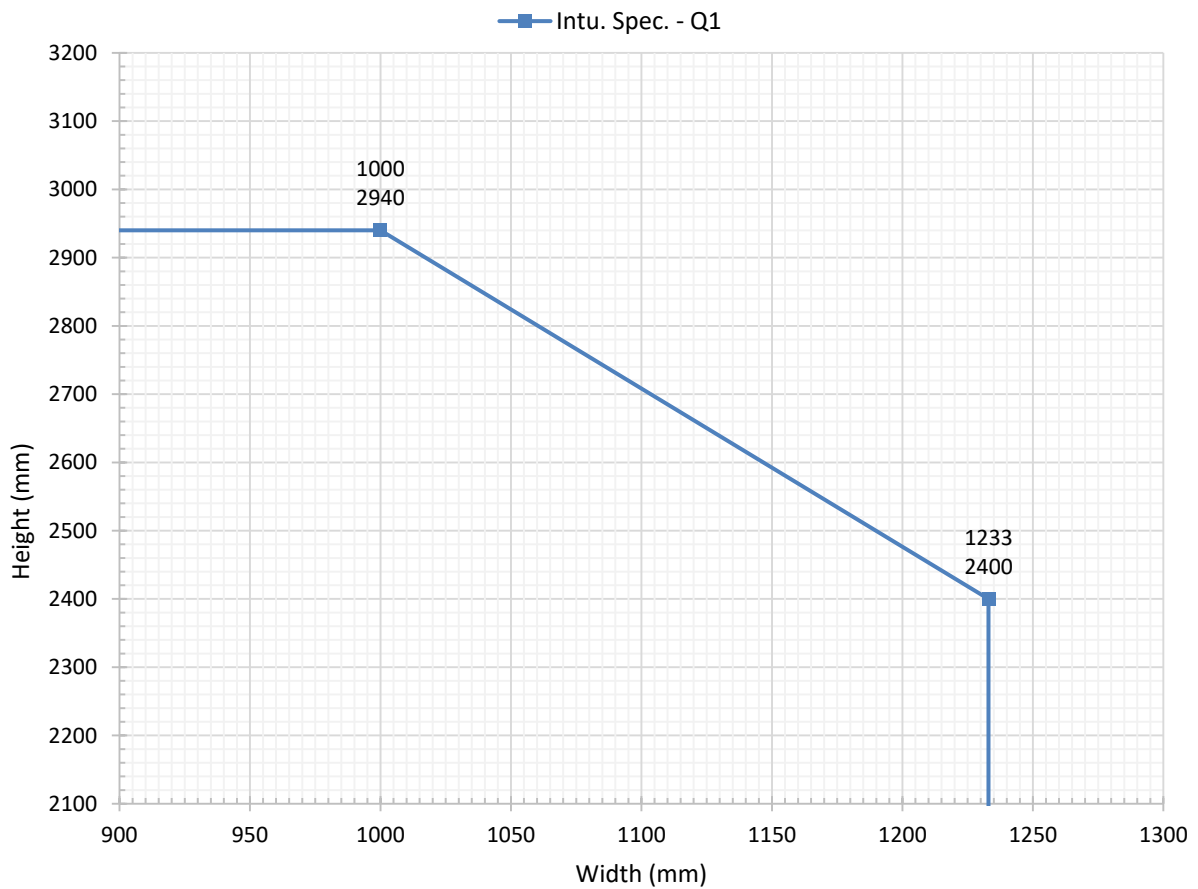
LSADD
 (Single Point Lock)
 4 & 6mm Plywood & 6mm MDF Facings



6.2.16 4mm & 6mm Thick Plywood and 6mm thick MDF Leaf Facings –ULSADD & DADD

Intumescent Specification For: ULSADD & DADD Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
Q1 (RF08118)	Rigid Box Seals	Pyroplex Ltd	Head & Hanging Jamb: 2No. 10 x 4mm exposed strip. Fitted centrally 10mm apart in the leaf edge or frame reveal to the head and jamb. Meeting Edges: Square: 2No 10 x 4mm seals fitted centrally 10mm apart in one leaf edge only

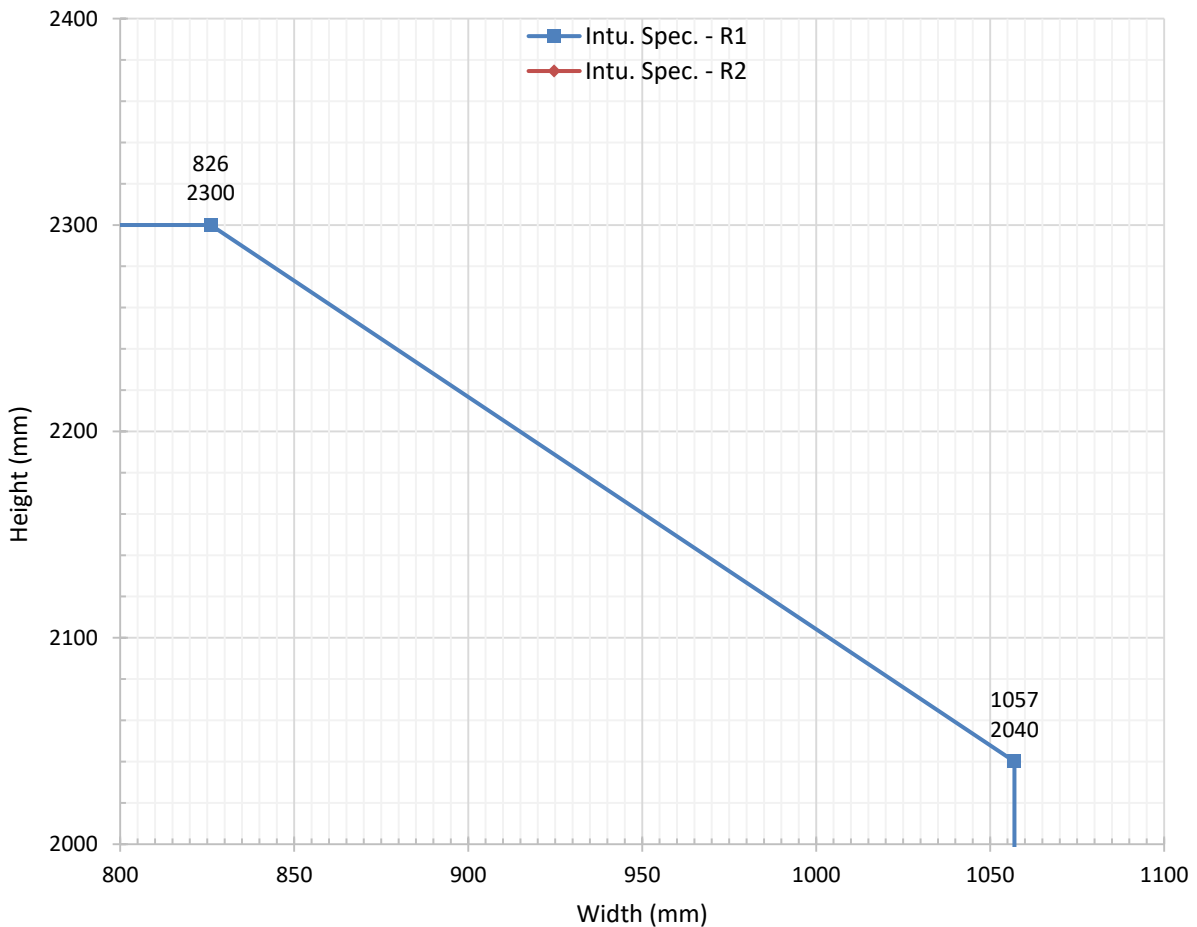
ULSADD & DADD
 (Single Point Lock)
 4 & 6mm Plywood & 6mm MDF Facings



6.2.17 6mm thick MDF Leaf Facings – LSASD

Intumescent Specification for LSASD Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
R1 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 1No. 10 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
R2 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: Leaf Size in excess of 2300mm high. 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.

LSASD
 (Single Point Lock)
 6mm MDF Facings
 Intumescent specs R1 & R2 have the same leaf size envelope

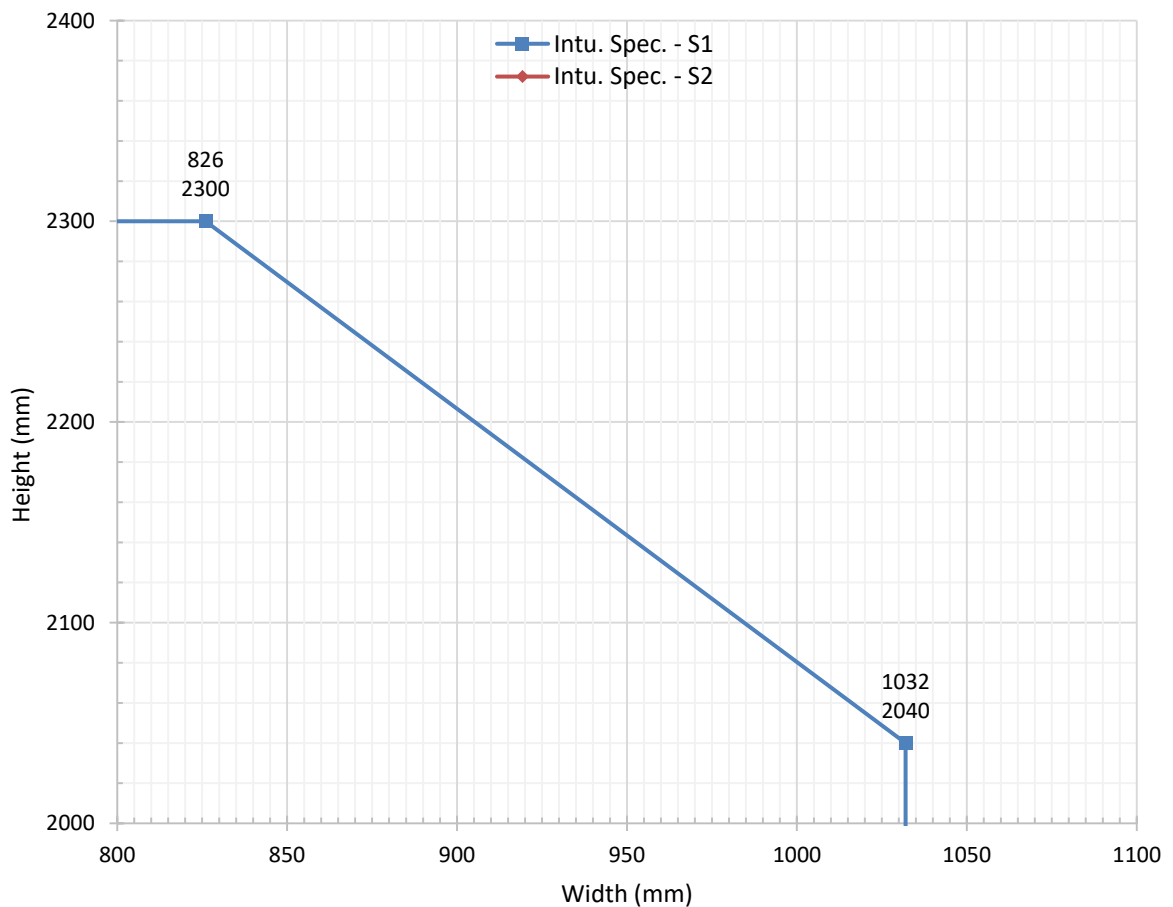


6.2.18 6mm thick MDF Leaf Facings –ULSASD & DASD

Intumescent Specification for ULSASD & DASD Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
S1 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 1No. 10 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
S2 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: Leaf Size in excess of 2300mm high. 1No. 15 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.

ULSASD & DASD
 (Single Point Lock)
 6mm MDF Facings

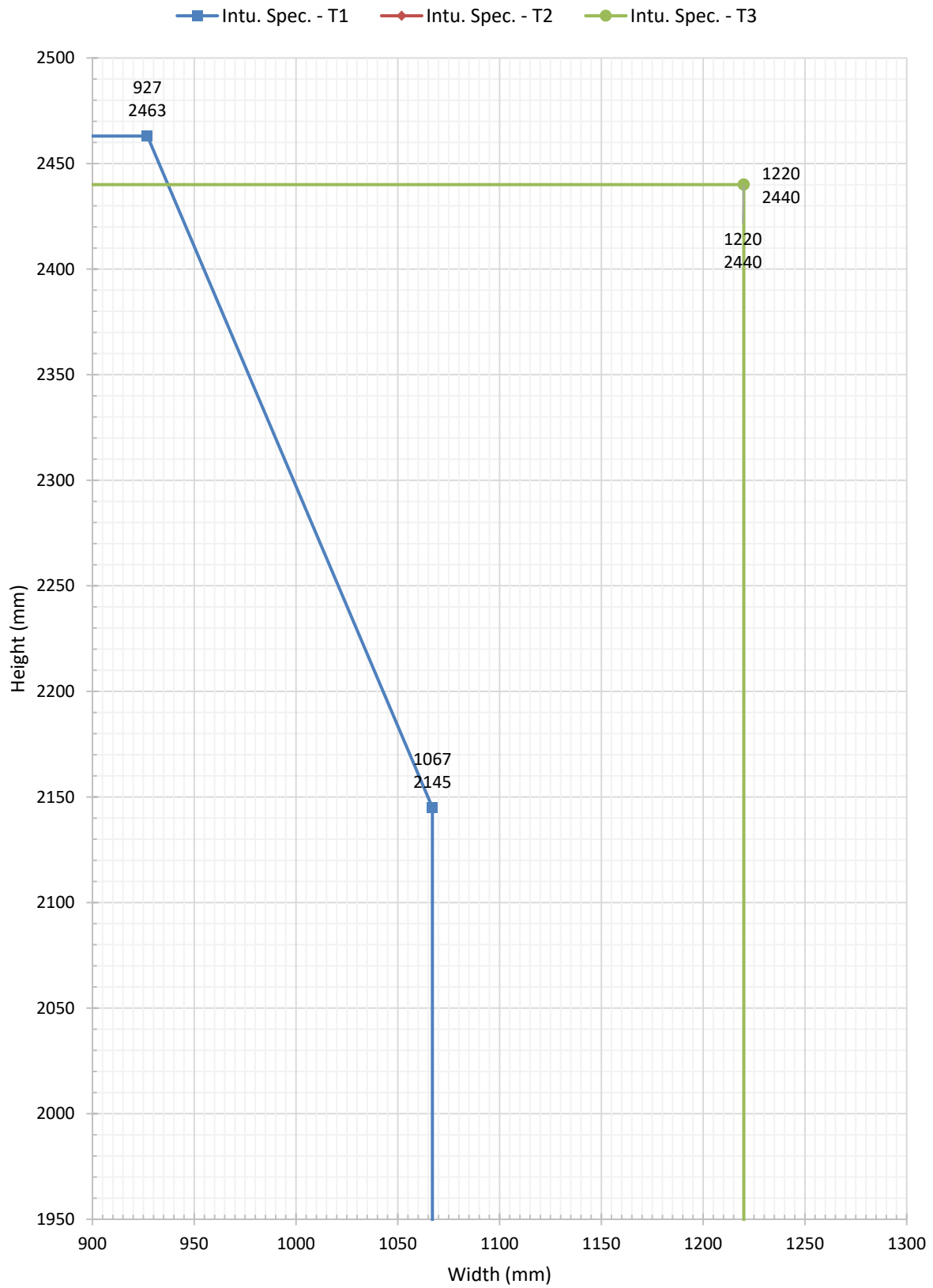
Intumescent specs S1 & S2 have the same leaf size envelope



6.2.19 9mm thick MDF Leaf Facings – LSASD

Intumescent Specification For LSASD Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
T1 (RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
T2 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
T3 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: Leaf Size in excess of 2390mm high and/or 1100mm wide 1No. 25 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.

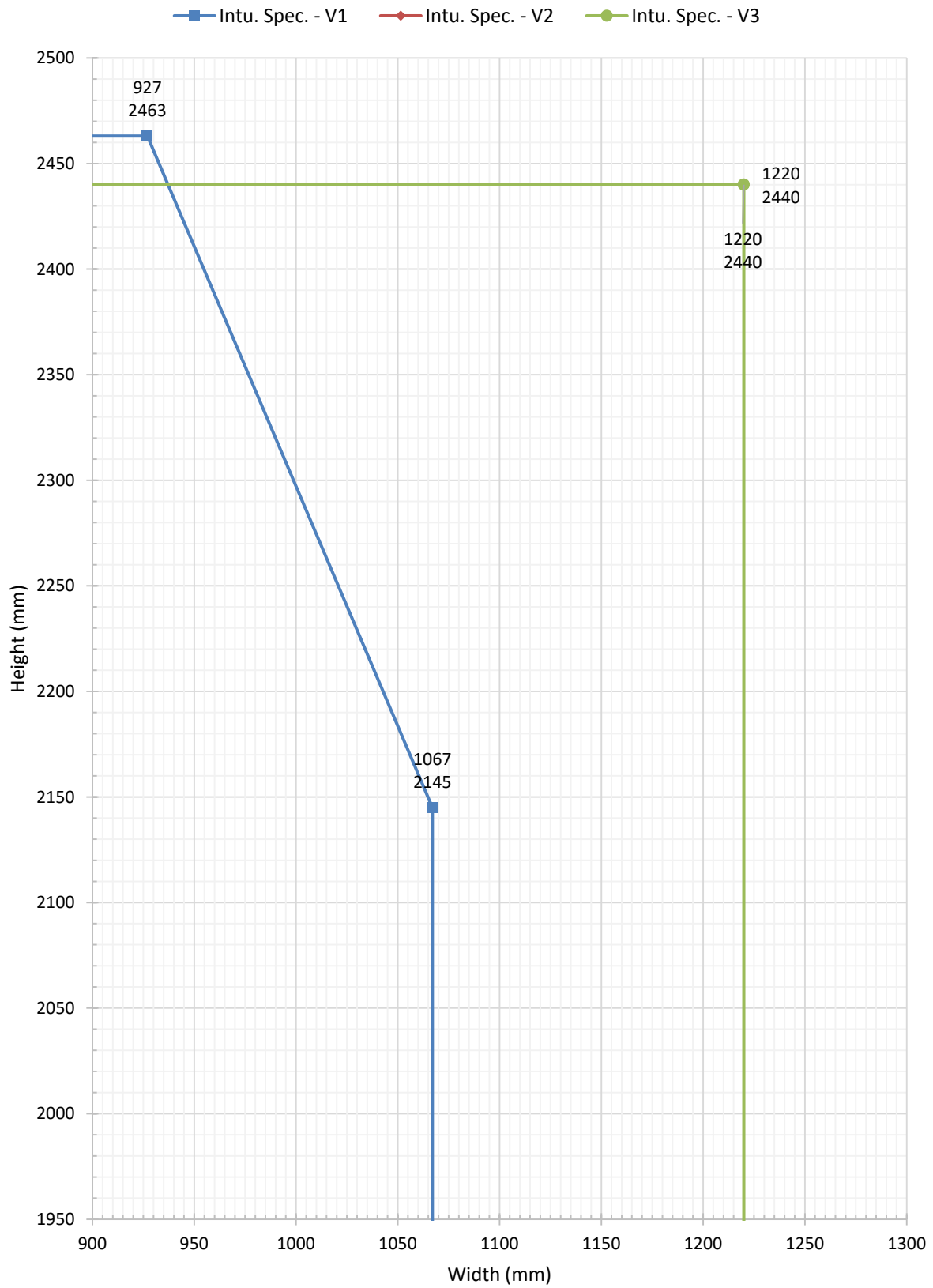
LSASD
(Single Point Lock)
9mm MDF Facings



6.2.20 9mm thick MDF Leaf Facings – ULSASD & DASD

Intumescent Specification For: ULSASD & DASD Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
V1 (RF08100 & RF08116)	Rigid Box Seals	Pyroplex Ltd	Head & Jambs: 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
V2 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: 1No. 20 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.
V3 (RF00166)	Type 617 or Palusol 100	Lorient Polyproducts Ltd	Head & Jambs: Leaf Size in excess of 2390mm high and/or 1100mm wide 1No. 25 x 4mm exposed strip. Fitted centrally in the leaf edge or frame reveal to the head and jambs.

ULSASD & DASD
(Single Point Lock)
9mm MDF Facings

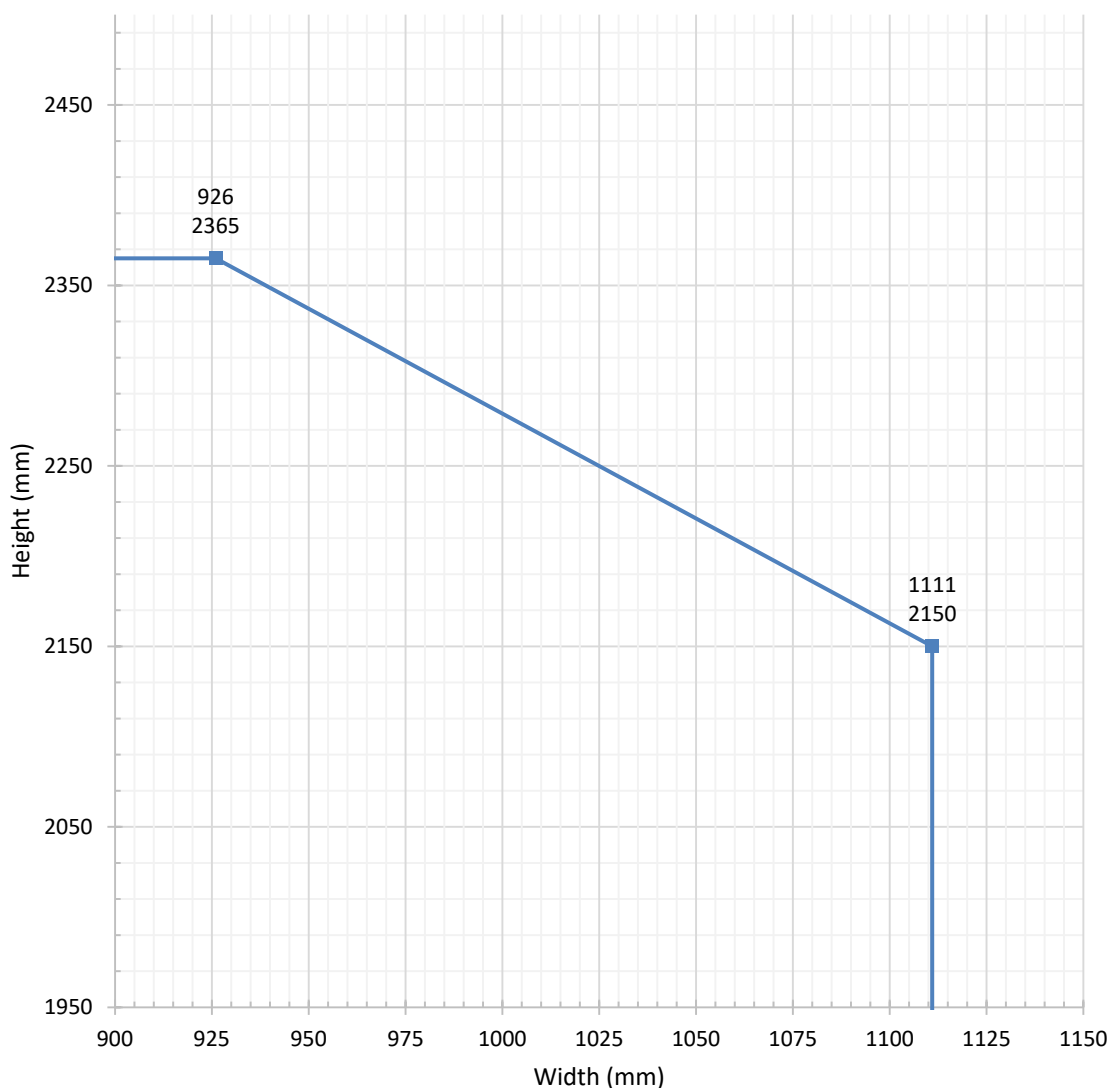


6.2.21 4mm Thick Plywood Leaf Facings – LSASD & Multipoint Lock

Intumescent Specification For: LSASD Multipoint Lock			
Intumescent Spec. Ref. (Test Ref)	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
X1 (18-003111-PR04)	ST154FO	Sealed Tight Solutions Ltd	Head: & Jambs: 1No. 15 x 4mm PVC encapsulated seal fitted centrally in the frame reveals.

LSASD
 (Multipoint AV2 Lock)
 4mm Plywood Facings

—■ Intum. Spec. - X1

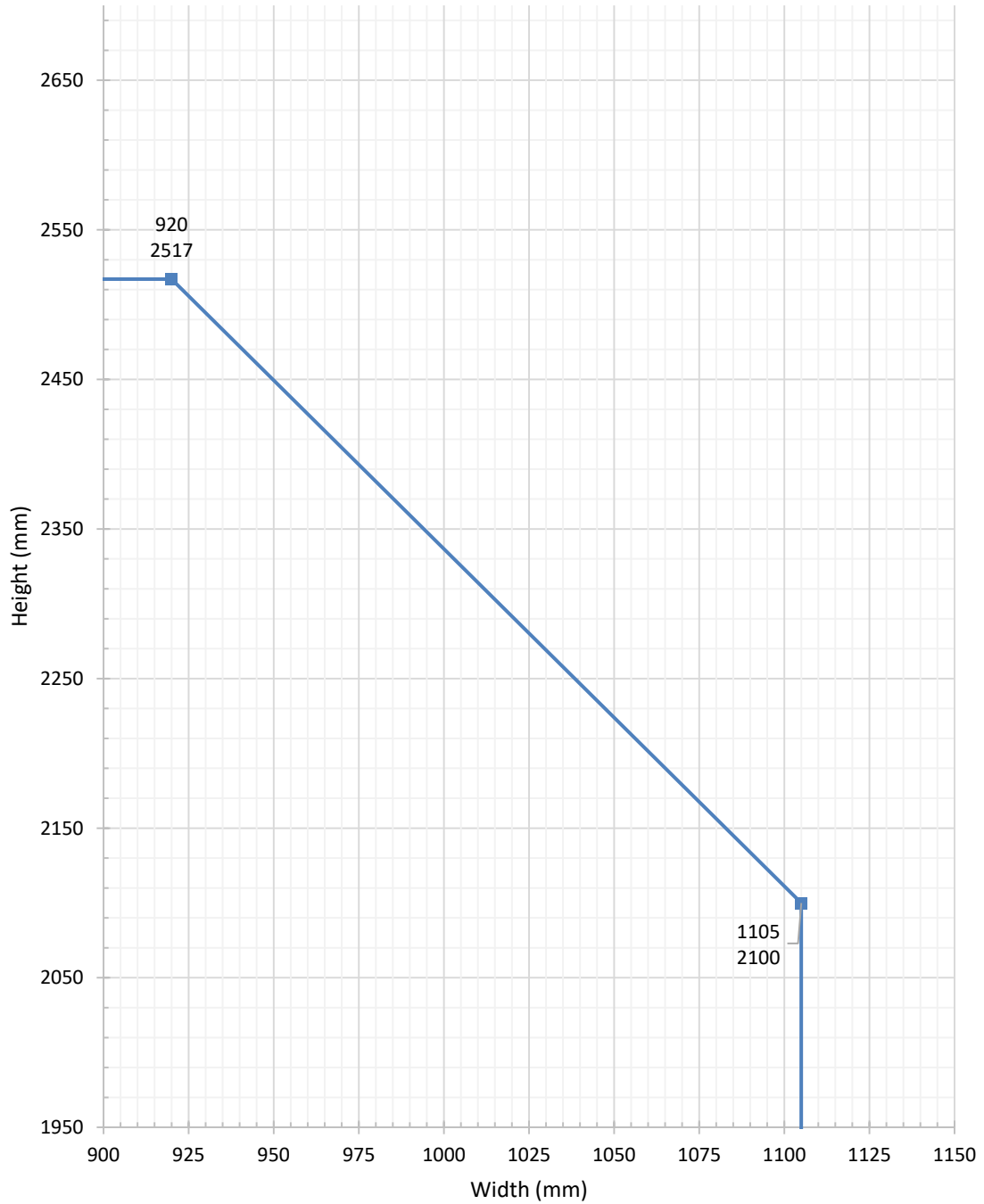


6.2.22 All Leaf Facing Options – LSASD, ULSASD & DASD with Safehinge ALUmax

Intumescent Specification				
For: LSASD, ULSASD & DASD with Safehinge ALUmax				
Intumescent Spec. Ref. Y1 (Chilt/A12005 Revision C)				
Element	Make/type	Size (mm)	Location	
Leaf edges - hanging edge only	Lorient Polyproducts Ltd LP1504 Type 617	15 x 4	Fitted central to the leaf thickness on the external face of the Safehinge™ ALUmax ALU30 aluminium profile	
	Lorient Polyproducts Ltd GPF1902 foamed graphite	19 x 2	Fitted central to the leaf thickness on the internal face of the Safehinge™ ALUmax ALU30 aluminium profile	
Frame reveal	Head	Lorient Polyproducts Ltd LP1504DS Type 617	15 x 4	Fitted central in the frame reveal
	Jambs	Lorient Polyproducts Ltd LP1504DS Type 617	15 x 4	Fitted central in the frame reveal
Around top pivot	Fully interrupted	-	Top pivot fully interrupts seal in frame head	
Under top pivot	Safehinge™ SHC35-035 graphite top centre wrap or Interdens wrap	1 thick 2 thick	Wrapped around the sides and base of the casing (frame)	
	Safehinge™ SHC35-020 3No. intumescent pockets for strap	2 thick x 28 long x 14 wide	Fitted within the 'pockets' in the outer face of the top strap	
Under upstand of bottom 'L' bracket pivot, when exposed	<ol style="list-style-type: none"> 1. Interdens - Dufaylite Developments Ltd 2. Pyrostrip 300 Isa – Mann McGowan Ltd 3. MAP paper - Lorient Polyproducts Ltd 4. Therm-A-Strip - Intumescent Seals Ltd 	1 thick	Fitted in the hanging jamb, under the upstand. See Appendix F for installation diagrams	

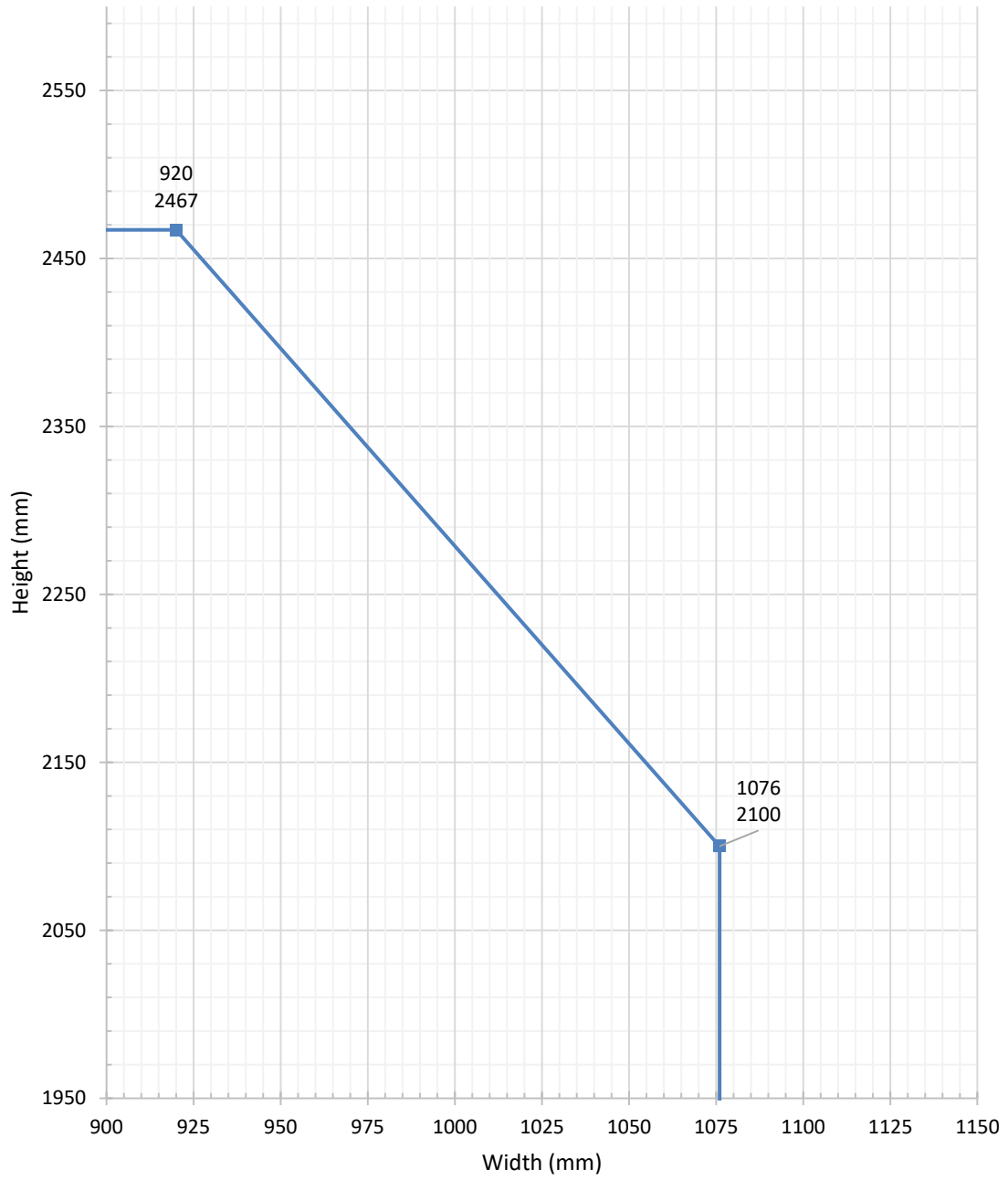
LSASD (Safehinge ALUmax)

—■— Intu. Spec. - Y1



ULSASD & DASD (Safehinge ALUmax)

—■ Intum. Spec. -Y1

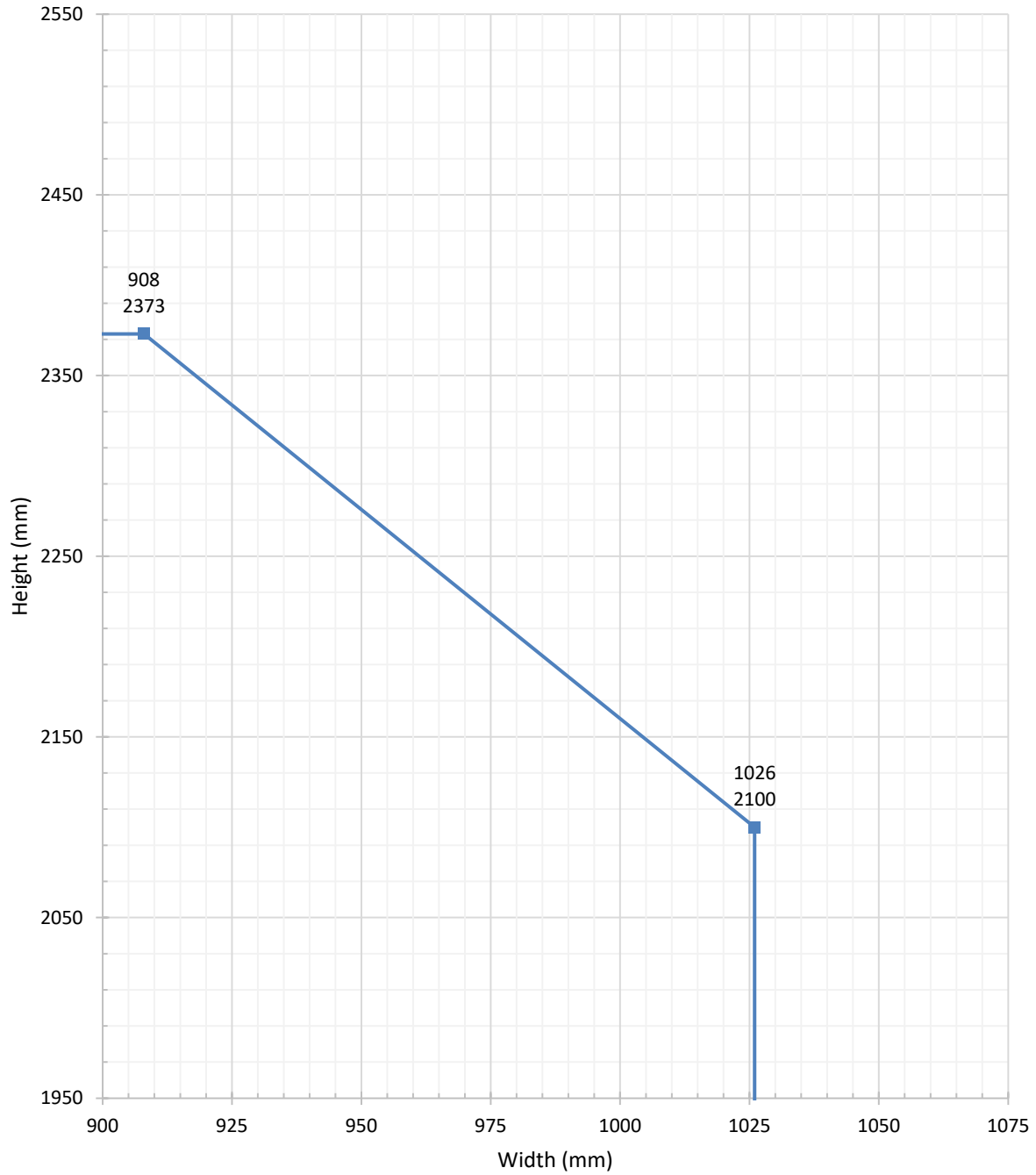


6.2.23 All Leaf Facing Options – LSADD, ULSADD & DADD with Safehinge ALUmax

Intumescent Specification				
For: LSADD, ULSADD & DADD with Safehinge ALUmax				
Intumescent Spec. Ref. Z1 (Chilt/A12005 Revision C)				
Element	Make/type	Size (mm)	Location	
Leaf edges	Hanging edge only	Lorient Polyproducts Ltd LP1504 Type 617	15 x 4	Centrally fitted to leaf thickness on external face of Safehinge™ ALUmax ALU30 aluminium profile
		Lorient Polyproducts Ltd GPF1902 foamed graphite	19 x 2	Centrally fitted to leaf thickness on internal face of Safehinge™ ALUmax ALU30 aluminium profile
	Meeting edges	Lorient Polyproducts Ltd LP1004DS Type 617	10 x 4	2 No. seals spaced 10mm apart and centrally fitted in the meeting edge of one leaf only
Frame reveal	Head	Lorient Polyproducts Ltd LP2004DS Type 617	20 x 4	Fitted centrally in the frame reveal
	Jambs	Lorient Polyproducts Ltd LP1504DS Type 617	15 x 4	Fitted centrally in the frame reveal
Around top pivot	Fully interrupted	-	Top pivot fully interrupts seal in frame head	
Under top pivot	Safehinge™ SHC35-035 graphite top centre wrap or Interdens wrap	1 thick 2 thick	Wrapped around the sides and base of the casing (frame)	
	Safehinge™ SHC35-020 3No. intumescent pockets for strap	2 thick x 28 long x 14 wide	Fitted within the 'pockets' in the outer face of the top strap	
Under upstand of bottom 'L' bracket pivot, when exposed	1. Interdens - Dufaylite Developments Ltd 2. Pyrostrip 300 Isa – Mann McGowan Ltd 3. MAP paper - Lorient Polyproducts Ltd 4. Therm-A-Strip - Intumescent Seals Ltd	1 thick	Fitted in the hanging jamb, under the upstand. See Appendix F for installation diagrams	

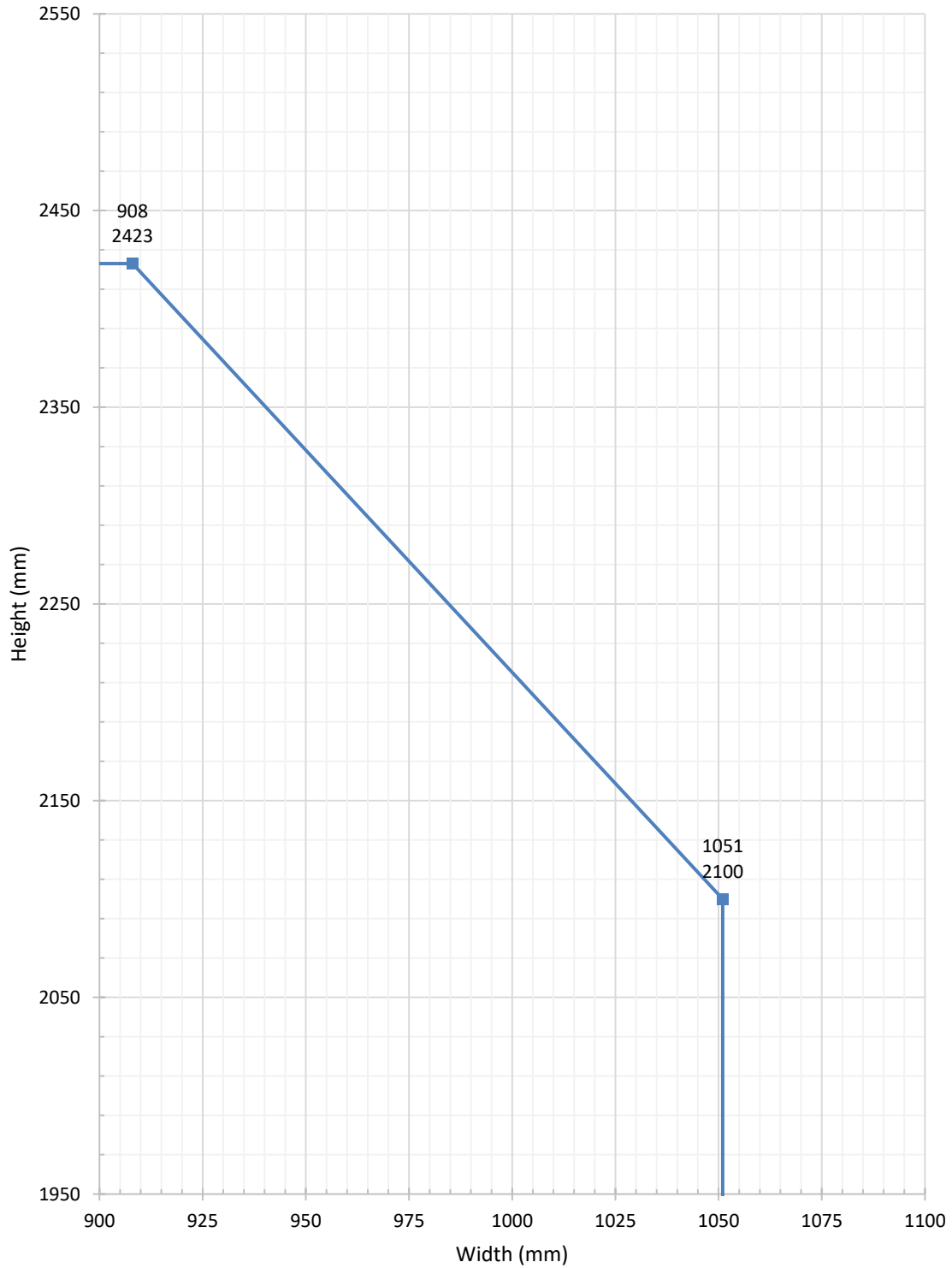
ULSADD & DADD (Safehinge ALUmax)

—■ Intum. Spec. - Z1

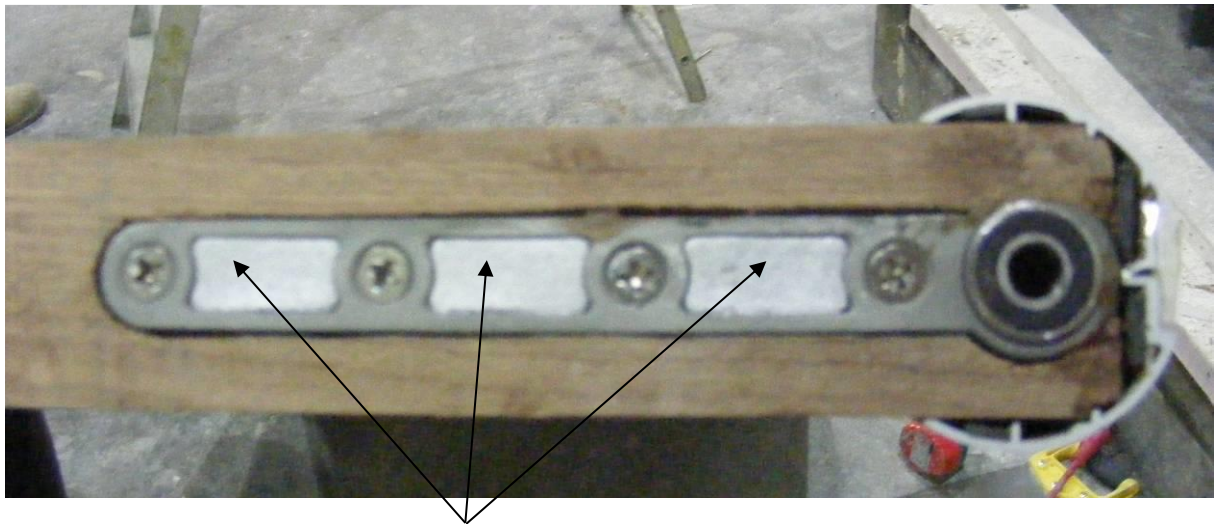
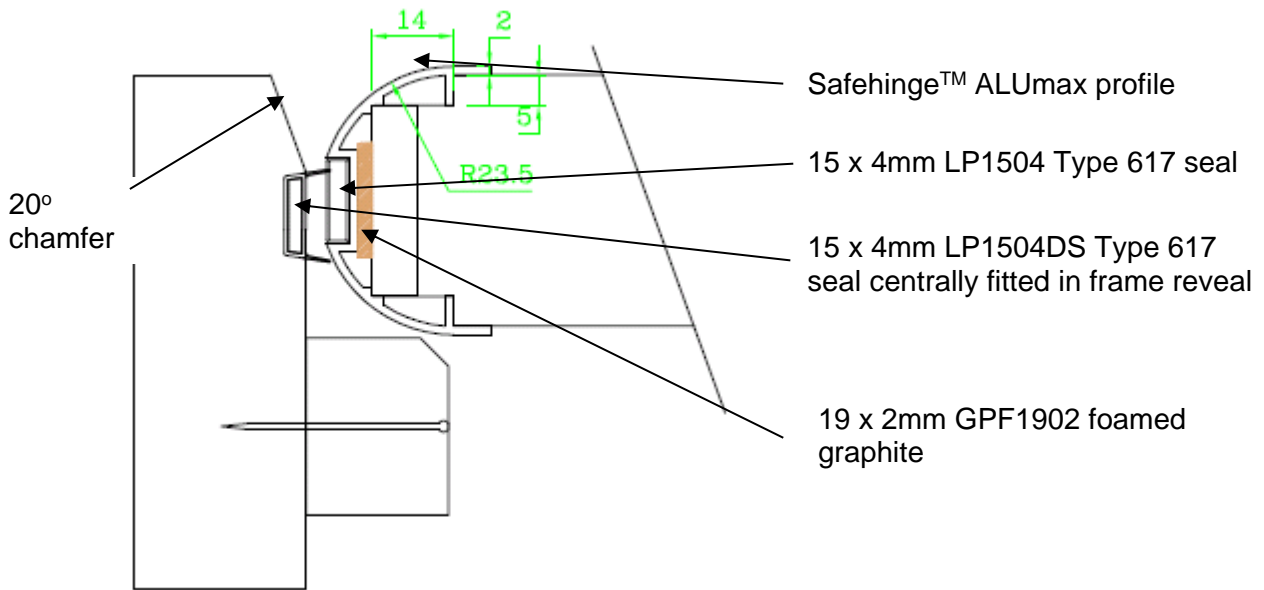


LSADD (Safehinge ALUmax)

—■ Intum. Spec. - Z1



6.2.23.1 Intumescent seal locations for 30 minute Safehinge™ ALUmax system



Approved intumescent pack in pockets of top pivot strap. The approved intumescent pack is also fitted around the sides and base of the casing

7 Leaf Size Adjustment

The Pacific Rim Wood Ltd. Flamebreak 30 door leaf designs may be altered as follows.

Element	Reduction
Leaf	Door leaves of this design have been tested in single & double leaf configuration both with & without stiles & bottom rails. This therefore permits the door leaves to be reduced in height and/or width without restriction, providing that reduction in height is made from the bottom edge only & the top rail remains in position.
Lipping	The dimensions stated in section 4.3.4 must be complied with, see section 17.3 for site fitting tolerance.
Head Rail	If no lipping is fitted to the head of door the integral head rail may only be trimmed by a maximum of 3mm for fitting purposes.

8 Door Leaf Glazing

The testing conducted on the Pacific Rim Wood Ltd. Flamebreak 30 has demonstrated that the designs are capable of tolerating glazed apertures whilst providing a margin of over-performance. Glazing is therefore acceptable within the following parameters.

- The maximum assessed glazed area for all configurations is 1.15m²
- Glazed opening must not be less than 100mm from any leaf edge
- Multiple apertures are acceptable within the permitted glazed area, with a minimum dimension of 80mm of Pacific Rim Wood Ltd Flamebreak core between apertures
- Aperture shape is not restricted, providing the glazing system and beads are compatible with that shape, but no aperture internal angle may be less than 60 degrees
- The glazing system must be one of the tested or proprietary systems listed in section 8.1 and detailed in appendix C
- The glass type must be one of the proprietary glasses detailed in section 8.1
- Glazing beads and fixings must be as specified in section 8.2
- Timber for glazing beads must be straight grained joinery quality, free from knots, splits and checks
- False glazing beads may be utilised as specified in section 8.2.3
- For IGU option see section 8.7.

8.1 Assessed Glazing Systems

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 are the maximum area of glass (in m²) 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 8 above.

Maximum Assessed Area (m ²)															
Glass			Glazing System & Manufacturer												
			1.	2.	3.	4.	5.	6.	7.	8	9	10	11	12	13
Type & Manufacturer	Thick (mm)	Fireglaze 30 Sealmaster UK Ltd	Firestrip 30 Hodgson Sealants Ltd	Therm A Strip Intumescent Seals Ltd	Pyroglaze 30 Mann McGowan Ltd	Norsound Vision 30 ²	Norsound Universal ³	R8193 Pyroplex Ltd	30049	30054	System 36Plus	Flexible Figure1	ST105 GT(3)	ST105 GT	
									Pyroplex		Lorient Polyproducts Ltd		Sealed Tight Solutions		
1	Pyroshield 2 Pilkington UK Ltd	6 & 7	1.15	1.15	1.15	0.72	1.15	1.15	0.72	0.72	0.72	0.72	0.72	-	0.4
2	Pyran S Schott Glass Ltd	6	1.15	1.15	1.15	0.72	1.15	1.15	0.72	0.72	0.72	0.72	0.72	-	0.4
3	Pyrostem Pyroguard UK Ltd	6	1.15	1.15	1.15	0.72	1.15	1.15	0.72	0.72	0.72	0.72	0.72	-	0.4
4	Pyroclear 30-001	7	See section 8.6												
5	Pyroguard EW30 Pyroguard UK Ltd	7	0.87	0.87	0.87	0.72	0.87	0.87	0.72	0.72	0.72	0.72	0.72	0.68	1.15
6	Pyrobelite 7 AGC Flat Glass UK	7	1.15	1.15	1.15	0.72	1.15	1.15	0.72	0.72	0.72	0.72	0.72	1.15	1.15
7	Pyrodur 30-104/105 ⁴ Pilkington UK Ltd	7	1.15	1.15	1.15	0.72	1.15	1.15	0.72	0.72	0.72	0.72	0.72	1.15	1.15

Glass Type & Manufacturer			1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
			Fireglaze 30 Sealmaster UK Ltd	Firestrip 30 Hodgson Sealants Ltd	Therm A Strip Intumescent Seals Ltd	Pyroglaze 30 Mann McGowan Ltd	Norsound Vision 30 ²	Norsound Universal ³	R8193 Pyroplex Ltd	30049	30054	System 36Plus	Flexible Figure 1	ST105 GT(3)	ST105 GT
							Pyroplex		Lorient Polyproducts Ltd		Sealed Tight Solutions				
8	Pyrodur 60-10 Pilkington UK Ltd	10	1.15	1.15	1.15	0.72	1.15	1.15	0.72	0.72	0.72	0.72	0.72	1.15	1.15
9	Pyroguard EW Maxi Pyroguard UK Ltd	11	0.52	0.52	0.52	0.52	0.52	NA	0.52	0.52	0.52	0.52	0.52	1.15	1.15
10	Pyranova 15-S2.0	11	1.15	1.15	1.15	0.72	1.15	NA	0.72	0.72	0.72	0.72	0.72	1.15	1.15
11	Pyrobelite 12 (9EG) AGC Flat Glass UK	12	1.15	1.15	1.15	0.72	1.15	NA	0.72	0.72	0.72	0.72	0.72	1.15	1.15
12	Pyrostop 30-10 Pilkington UK Ltd	15	1.15	1.15	1.15	0.72	1.15	NA	0.72	0.72	0.72	0.72	0.72	1.15	1.15
13	Pyrobel 16 AGC Flat Glass UK	16	1.15	1.15	1.15	0.72	1.15	NA	0.72	0.72	0.72	0.72	0.72	1.15	1.15

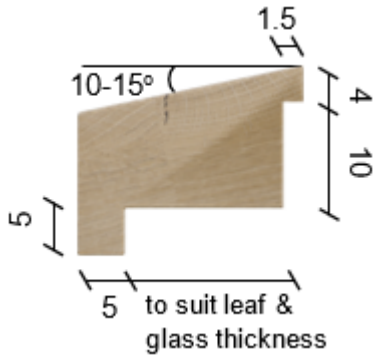

Note:

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. See section 8.4 below for additional scope for Norsound Vision 30 glazing system.
3. See section 8.5 below for additional scope for Norsound Universal 30 glazing system.
4. Pyrodur 30-104 and 30-105 may be freely interchanged having the same scope of application, in fire resistance terms, herein. The two products have different impact resistance rating, contact Pilkington UK Ltd for details.
5. Glass types 10 - 13 are fully insulating for 30 minutes in terms of the criteria set out BS 476: Part 20: 1987.

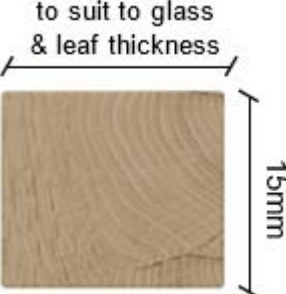
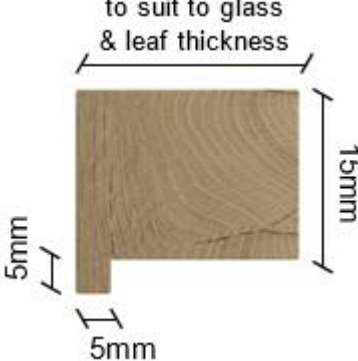
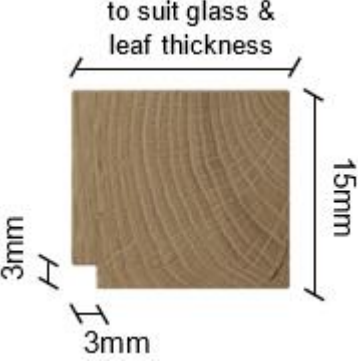
8.2 Glazing Beads & Installation Details

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.

8.2.1 Chamfered Bead

Permitted with all glazing systems from the table in Section 8.1	
	
<ul style="list-style-type: none"> • The glazing beads must be created from hardwood of a minimum 640kg/m³ density. • It is permitted to use a flush bead (i.e. a bead with no bolection return) with a chamfer providing all other details meet the specification given for the square bead option in the table above • 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 8.2.4 below. • The fitting of the glazing seal between the bead and the glass should generally be in accordance with the manufacturer's instructions with a tight fit present between the substrates. • Glass should be aligned within the aperture using hardwood or non-combustible setting block placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires 	

8.2.2 Square Beads

Permitted with Proprietary systems 1, 2 & 3 and glass types 5 - 13 as specified in the table in section 8.1		
		
<ul style="list-style-type: none"> • 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 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 8.2.4 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 generally be in accordance with the manufacturer’s instructions with a tight fit present between the substrates. • Glass should be aligned within the aperture using hardwood or non-combustible setting block placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires 		

8.2.3 False Beads

False timber beads may be applied to glass types 5 - 13 using one of the following intumescent glazing products.

Glazing System	Manufacturer
1. Therm-A-Strip 30	Intumescent Seals Ltd
2. Fireglaze 30	Sealmaster Ltd
3. Firestrip 30	Hodgson Sealants Ltd
4. Envirograf Product 77 - G10/10	Intumescent Systems Ltd

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

8.2.4 Glazing Pins for Glazing within Leaf

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

Option 1 – Round, Oval & Rectangular Pins

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

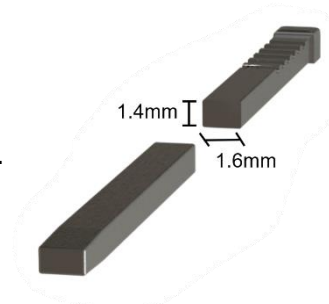
- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.03mm².
- Minimum linear dimension of 1.6mm in any direction, see figure below.



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.



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

8.3 Improved Security Bead

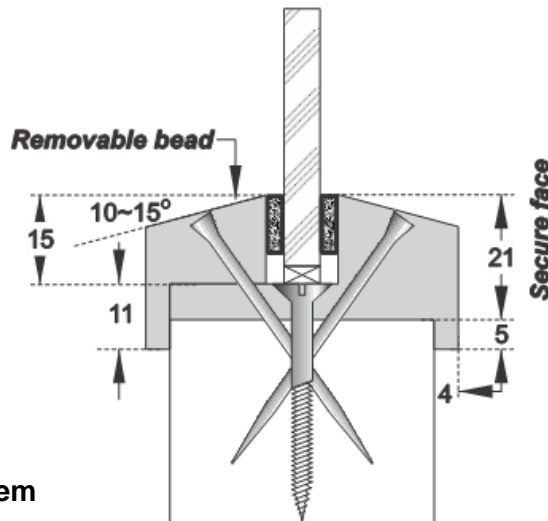
A combined bead and aperture lining can be used to deny access to fixings from one side of the door leaf to improve security. The enhanced security bead has been assessed as acceptable by Warringtonfire to be suitable since the glass and glazing system and beading is based on a standard chamfered bolection bead but with an integral liner which if anything would be expected to provide enhanced protection to the glazing pocket.

All glazing details are to meet the specification given in sections 8.1 and 8.2 unless otherwise stated below.

The aperture in the door must be lined using minimum 26mm thickness combined bead and lining in hardwood of minimum 640kg/m³ density.

The combined bead and lining is bonded to the aperture in the door using the adhesive types approved for lippings (see section 14) and reinforced using No. 6 – 8, 50mm long screw fixings located centre thickness of the door at 200mm centres.

The beads must be retained in position with 50mm long steel pins or 50mm 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 8.2.4 above. The bead profile must be appropriate for the glazing system selected.

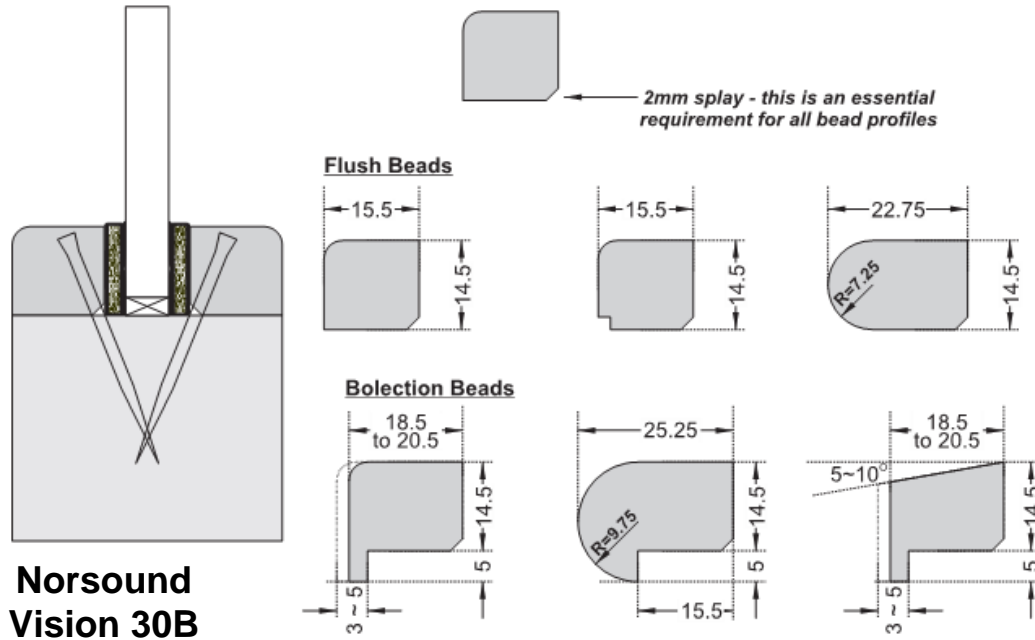


Security Bead System

8.4 Norsound Ltd. – Norsound Vision 30B

The Norsound Ltd. glazing system tested in IF12011 has the following scope of application in addition to that described in sections 8.1 & 8.2.

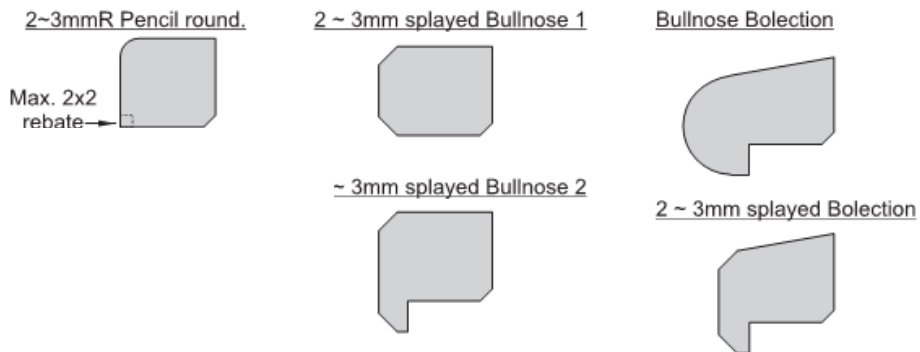
The Norsound Vision 30B is illustrated below.



**Norsound
 Vision 30B**

Alternative Bead Profiles

Note: When used with flush beads the maximum approved glass thickness is 8mm.



1. Bead height must be nominally 14.5mm
2. The intumescent seal component of Norsound Vision 30B is 15mm high and is required to project 0.5mm above the sightline of the bead
3. Beads must incorporate a bolection return. Bolection returns should be a minimum of 5mm high, and a minimum of 3mm thick (projecting from the leaf face)
4. Glazing beads must be retained in position with, minimum, 40mm long steel pins or, minimum, 40mm long No. 6-8 screws, inserted at 35-40° to the vertical at no more than 40mm from each corner and at 150mm maximum centres
5. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 8.2.4.

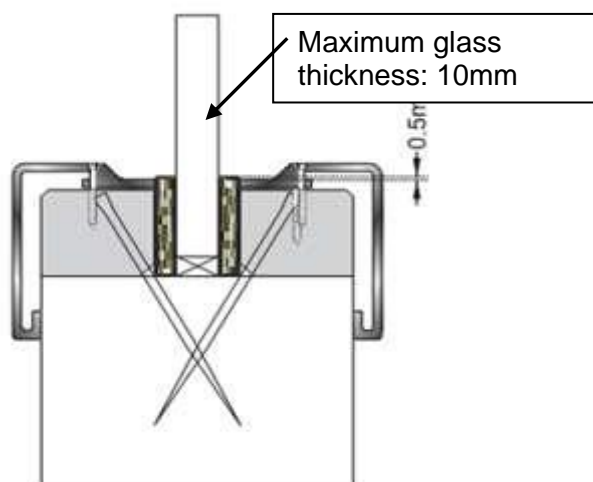
The bead type and permitted glass types must meet the following specification.

Bead Shape	Material	Minimum Density (kg/m ³)	Permitted Glass Types
Square & flush	Straight grained, joinery quality softwood or hardwood, free from knots, splits and	510	1 – 8 excluding 5 in section 8.1
	MDF	700	
Bolection	Straight grained, joinery quality softwood or hardwood, free from knots, splits and	510	1 – 13 excluding 5 in section 8.1
	MDF	700	

8.5 Norsound Ltd. – Norsound Universal 30B

The Norsound Ltd. Universal 30B glazing system has the following scope of application in addition to that described in sections 8.1 & 8.2.

The Norsound Universal 30B is illustrated below:



8.5.1 Norsound Universal 30B Installation Notes

1. Bead height must be nominally 13mm
2. The intumescent seal component of Norsound Universal 30B is 15mm high and is required to project 0.5mm above the sightline of the aluminium cladding fixed over the glazing bead
3. Glazing beads must be retained in position with minimum 40mm long x 1.5mm diameter steel pins, or minimum 40mm long No. 6 – 8 screws, inserted at 35 – 40° to the vertical, at no more than 40mm from each corner and at 150mm maximum centres
4. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 8.2.4 above
5. The Norsound Universal aluminium section cladding the timber bead must be secured to the core bead by using 3No. 10 – 12mm No.4 grub screws per length.

The bead material and permitted glass types must meet the following specification.

Material	Min. Density (kg/m ³)	Permitted Glass Types
Straight grained, joinery quality softwood or hardwood, free from knots, splits and checks	450	1 – 8 excluding 5 in section 8.1
MDF	700	

8.6 Pyroclear 30-001 (6mm thick) – Pilkington Group Ltd.

The following limitations will apply to Pilkington Pyroclear 30-001 glass type.

1. The maximum assessed glazed area for all leaf configurations is 1.15m²
2. Hardwood (minimum density 640kg/m³) glazing beads must be 25mm high x 21mm deep with a 22° chamfer and a 5mm x 5mm bolection return
3. Beads must be retained in position with 50mm long x 2mm diameter steel pins or 50mm long No. 6 – 8 steel screws, inserted at 45° to the vertical, at no more than 50mm from each corner and at 150mm maximum centres. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 8.2.4 above
4. The glazing system is limited to systems 4, 8, 10 or 11 from section 8.1 above
5. The glass must be fitted with maximum 10mm edge cover and allowing for 10mm expansion on all edges
6. Aperture shape is not restricted, providing the glazing system and beads are compatible with that shape
7. Timber for glazing beads must be hardwood, straight grained, joinery quality, free from knots, splits and checks
8. Glazed openings must not be less than 100mm from any edge, with a minimum dimension of 80mm between apertures
9. Multiple apertures are permitted, subject to point 7 above.

8.7 IGU Installation in Door Leaf

The following section provides a scope of approval for the use of the AGC Pyrobelite based IGU in Flamebreak door leaves. Unless stated in the following sections, all construction details for the Flamebreak leaf must remain as specified in the main assessment.

Based on test data contained within RF10070, the following specification is permitted:

Glazing details.

- Glass: IGU comprised of 7mm(t) Pyrobelite/8mm(t) steel spacer/6.8mm(t) laminate glass, the Pyrobelite must be oriented to the fire risk side
- 25 (w) x 16mm (h) with a 5 x 5mm bolection return hardwood beads (minimum density 640kg/m³). The bead shape may be square topped or incorporate a 10 – 15° chamfer
- Beads must be retained with 50mm long steel pins at maximum of 50mm from corners and 150mm centres inserted at 30° to the plane of the glass
- STS 105GT located between the glass and the beads with a ST302 liner around all 4 sides of the aperture
- 2mm high x 20mm wide x 25mm long hardwood or non-combustible setting blocks with 2mm expansion allowance to all edges
- Maximum glazed area is 0.27m²
- Multiple panes are permitted within the maximum area above with a minimum of 150mm between apertures.

9 Overpanels

9.1 Solid

Given the integrity performance and stability of the door core tested and summarised in section 3, overpanels of the same construction as the door leaves may be used either flush with the leaf heads or when separated by a transom. In either case the overpanel must be fully contained within the door frame (see following diagram). The following parameters apply:

- All Flamebreak 30 designs may be used in conjunction with an overpanel fitted above a transom
- For flush overpanel configurations the door leaves and overpanel must be constructed using 4mm plywood faced Flamebreak 430 only.

The transom must be of the same section and material assessed for the door frames (see note under the table in section 11) must separate the leaf head(s) from the overpanel and the overpanel must be fully contained by the door frame (see following diagram).

Joints between the transom and frame jambs must utilise one of the following methods; mortice and tenon or butt joints (see section 11.2).

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 PVA/PU/UF or equivalent adhesive.

The intumescent seals specified for the jambs in the relevant data sheet within section 6.2, must also be fitted to all concealed edges of the overpanel. The seals may be fitted in the overpanel edges or alternatively in the frame reveal. A maximum 2mm gap is permitted between the edge of the overpanel and the frame reveal.

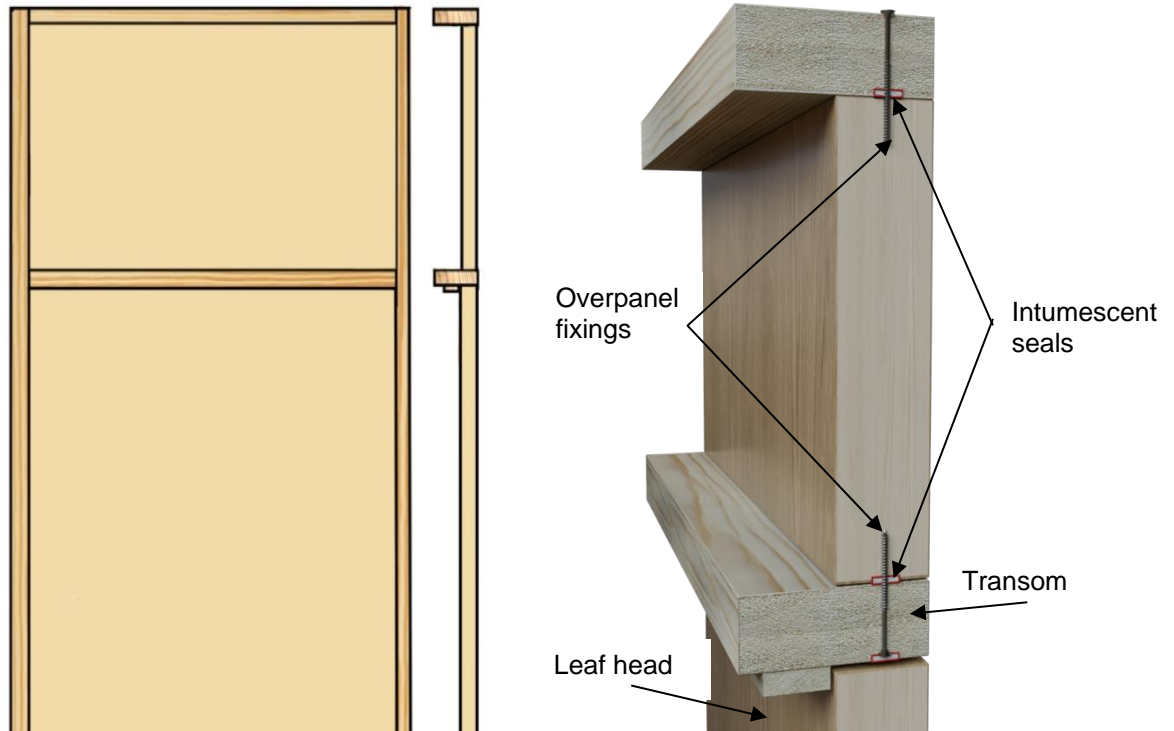
Maximum overpanel heights are as follows.

Configuration	Maximum Overpanel Height (mm)
Single doorsets	2000
Double doorsets	1500

The overpanels must be fixed by one of the following methods:

1. 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.

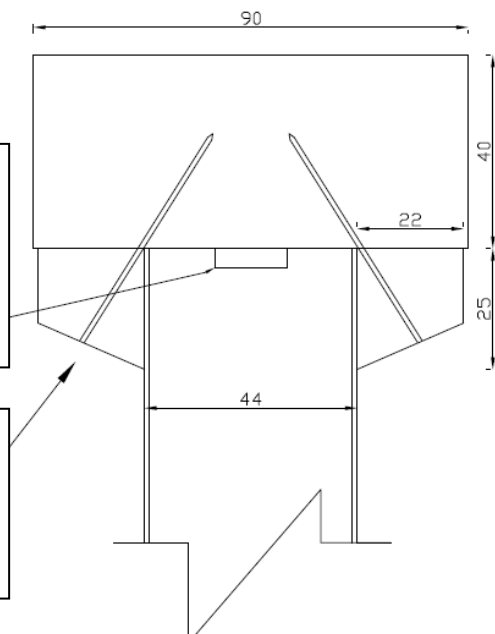
Note: Drawing is representative of doorset construction only, actual construction must be as the text within this document specifies.



2. Timber beads fixed either side of the panel as illustrated below.

The intumescent seals specified for the jambs in the relevant data sheet within section 6.2, must also be fitted to all concealed edges of the overpanel, seals may be fitted in the overpanel edges or alternatively in the frame reveal.

Hardwood beads (minimum density 640kg/m³) must be fixed using 50mm long steel pins or screws fixed at 35 – 40°, at maximum of 50mm from all corners and at maximum 150mm centres.



10 Fanlights & Side Screens

10.1 General

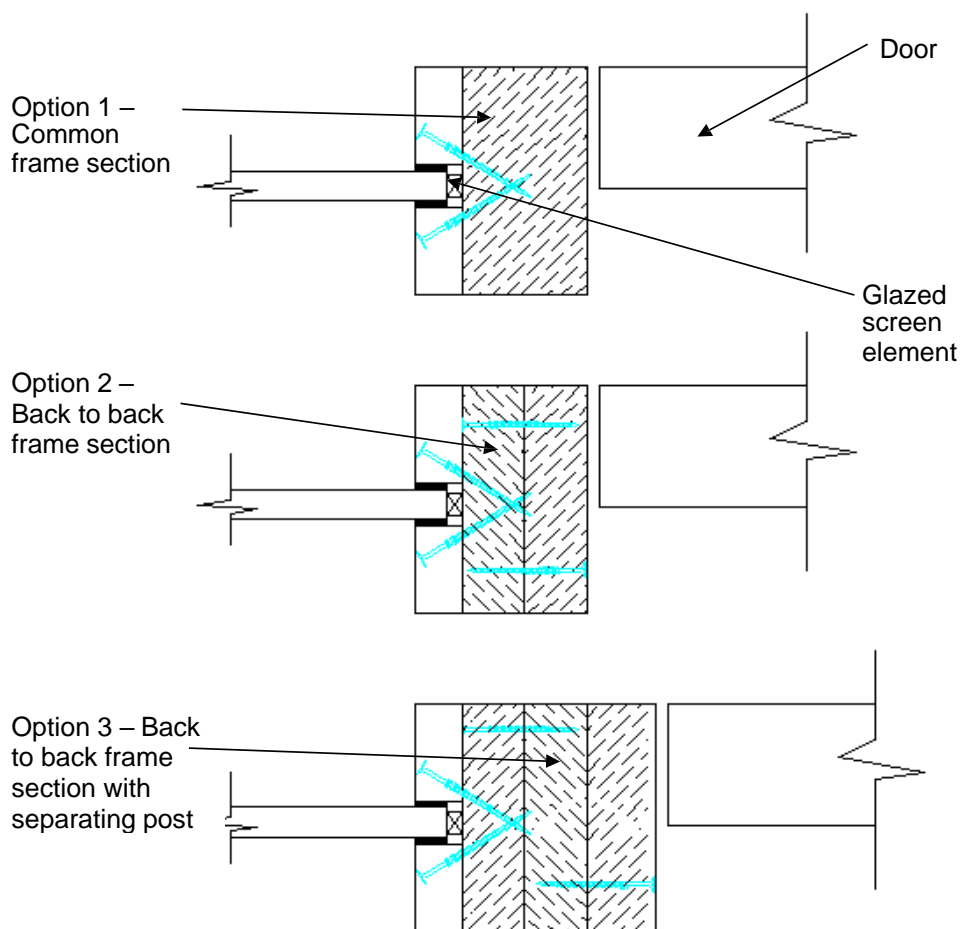
Pacific Rim Wood Ltd. Flamebreak 30 doorsets may be installed within screen assemblies incorporating glazed fanlights and/or side screens.

Details of the door frame and screen construction must comply with the specification contained in the following sections, determined by glass type.

MDF and softwood frame doorsets are not assessed for use in glazed fanlights or side screens.

10.2 Common Frame Sections – Glazed Screens

The following drawings depict possible constructions of common frame sections (as detailed in the sections below) for the screens and door frame jambs:



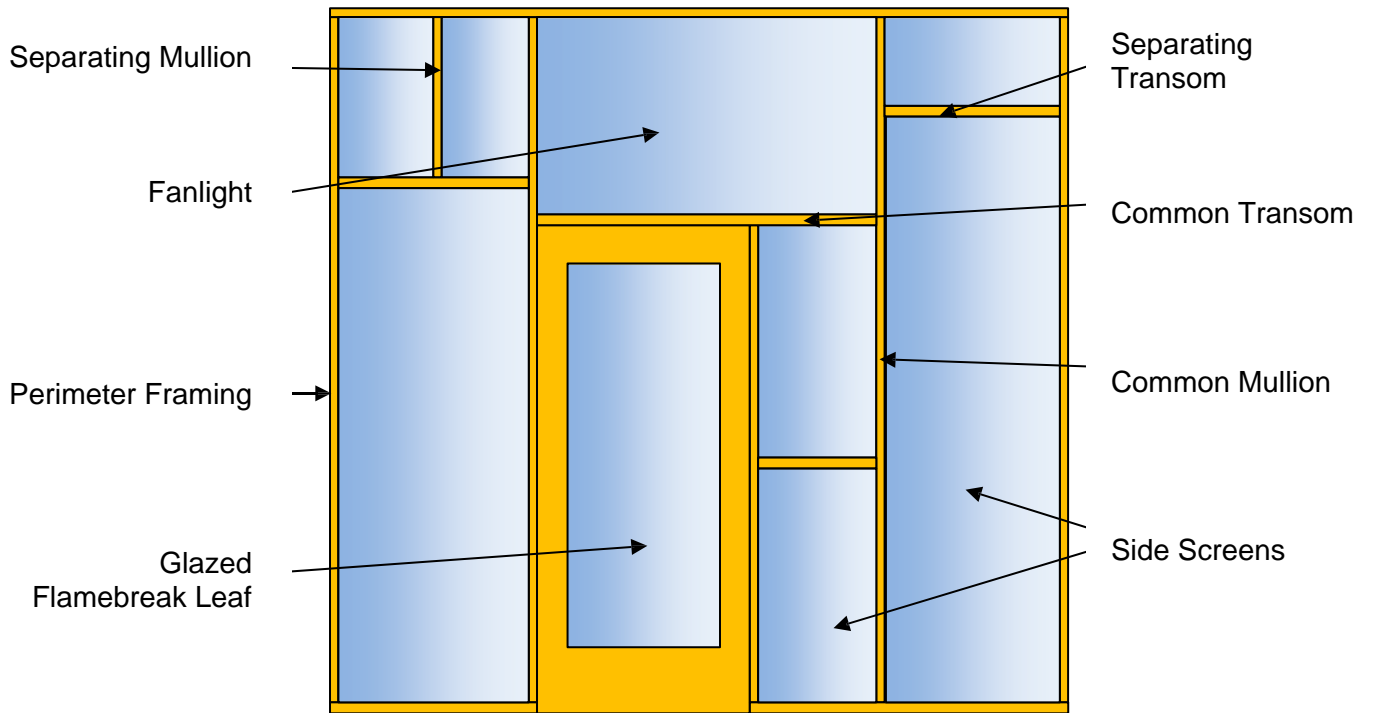
When using separate sections of timber, as shown above (option 2 and 3), each section must be suitably fixed to one another using appropriate steel screw fixings and glued using Urea Formaldehyde. Screws must be fixed at 600mm centres and locate to approximately 2/3 depth of the adjacent timber section. The overall frame section and material must match that given in this assessment for each glass type and glazing specification. Joints must be tight with no gaps.

It is permitted to include maximum 3mm (w) x 3mm (d) quirks at the junction of each timber section for option 2 and 3.

Drawing is representative of each type of common frame member, actual construction in terms of intumescent seal location and material, etc. must be as the text within this document specifies.

10.3 Screen Elevations

The following drawing depicts a possible door and glazed screen configuration. The diagram is for information only. All construction details to remain as specified herein.



10.4 Glazed Screen Specifications

The following sections provide a scope of approval for different glass types when used for glazing fanlights or side screens. Fanlights may be used in conjunction with side screens subject to the specification given for each of the glass types.

Unless stated in the following sections, all construction details for the Flamebreak doorset must remain as specified in the main assessment.

10.4.1 Pyroguard EW30 (7mm thick) – Pyroguard UK Ltd.

Based on test data contained within RF10070, the following specification is permitted:

Transom/mullion details.

- Minimum 75mm deep x 40mm thick softwood or hardwood (minimum density 510kg/m³). This timber section can be used for both door jambs and transoms above doors included within screens and for the perimeter framing of the screen and the transoms and mullions separating individual panes of glass within the fanlights and side screens.

Glazing details.

- 15mm high x 32mm deep hardwood beads (minimum density 640kg/m³). The bead shape may be square or incorporate a 10 – 15° chamfer
- 50mm long No. 6 - 8 steel wood screws at maximum of 70mm from corners and 200mm centres inserted at 30° to the plane of the glass
- 10mm x 2mm Interdens located between the glass and the beads
- 5mm high x 7mm wide x 40mm long hardwood or non-combustible setting blocks with 5mm expansion allowance to all edges.

Maximum single pane dimensions.

Screen Element		Height (mm)	Width (mm)
Fanlight	From:	1074	808
	To:	808	2600
Side screen		2500	1000

- The pane dimensions given above represent the maximum permitted width against maximum permitted height. Panes with smaller dimensions are acceptable.
- Transoms supporting single panes above 900mm wide must be centrally supported by at least one vertical mullion.

Multiple panes.

- The fanlights and side screens may comprise multiple panes of glass providing the total doorset and screen assembly does not exceed 2950mm high and the transom/mullion restrictions above are complied with.

Leaf configurations and screen dimensions:

- The total width of the screen assembly is unlimited.
- The screen assembly may only contain 1No. single or double leaf doorset.

10.4.2 Pyroguard EW30 MAXI (11mm thick) – Pyroguard UK Ltd.

Based on test data contained within RF10163, the following specification is permitted.

Transom/mullion details.

- Minimum 75mm deep x 40mm thick hardwood (minimum density 640kg/m³). This timber section can be used for both door jambs and transoms above doors included within screens and for the perimeter framing of the screen and the transoms and mullions separating individual panes of glass within the fanlights and side screens.

Glazing details.

- 20mm high x 30mm deep hardwood beads (minimum density 640kg/m³). The bead shape may be square or incorporate a 10 - 15° chamfer.
- 50mm long No. 6 - 8 steel wood screws at maximum of 70mm from corners and 200mm centres inserted at 30° to the plane of the glass.
- 10mm x 2mm Interdens located between the glass and the beads.
- 5mm high x 11mm wide x 40mm long hardwood or non-combustible setting blocks with 5mm expansion allowance to all edges.

Maximum single pane dimensions.

Screen Element		Height (mm)	Width (mm)
Fanlight	From:	967	2525
	To:	808	3000
Side Screen		2700	1500

The pane dimensions given above represent the maximum width against maximum height. Panes with smaller dimensions are acceptable.

Multiple panes.

- The fanlights and side screens may comprise multiple panes of glass providing the total doorset and screen assembly does not exceed 2950mm high and the transom/mullion restrictions above are complied with.

Leaf configurations and screen dimensions:

- The total width of the screen assembly is unlimited.
- The screen assembly may only contain 1No. single or double leaf doorset.

10.4.3 Pyroguard EI30 (15mm thick) – Pyroguard UK Ltd.

Transom/mullion details.

- Minimum 80mm deep x 40mm thick hardwood (minimum density 640kg/m³). This timber section can be used for both door jambs and transoms above doors included within screens and for the perimeter framing of the screen and the transoms and mullions separating individual panes of glass within the fanlights and side screens.

Glazing details.

- 20mm high x 23mm deep hardwood beads (minimum density 640kg/m³). The bead shape may be square or incorporate a 10 - 15° chamfer
- 50mm long No. 6 - 8 steel wood screws at maximum of 70mm from corners and 200mm centres inserted at 30° to the plane of the glass
- 7mm x 2mm Egopren glazing tape located between the glass and the beads
- 15mm x 2mm Kerafix Pan 200 edge seal fitted around edge of glass
- 3mm high x 15mm wide x 80mm long hardwood or non-combustible setting blocks with 5mm expansion allowance to all edges.

Maximum single pane dimensions.

Screen Element		Height (mm)	Width (mm)
Fanlight		350	2890
Side Screen	From:	2520	225
	To:	1141	1100

- The pane dimensions given above represent the maximum width against maximum height. Panes with smaller dimensions are acceptable
- Transoms supporting single panes above 1100mm wide must be centrally supported by at least one vertical mullion.

Multiple panes.

- The fanlights and side screens may comprise multiple panes of glass providing the total doorset and screen assembly does not exceed 2950mm high and the transom/mullion restrictions above are complied with.

Leaf configurations and screen dimensions.

- The total width of the screen assembly is unlimited
- The screen assembly may only contain 1No. single or double leaf doorsets.

10.4.4 Pyroshield 2 (6mm thick) – Pilkington Group Ltd.

Transom/mullion details.

- Minimum 80mm deep x 44mm thick softwood or hardwood (minimum density 510kg/m³). This timber section can be used for both door jambs and transoms above doors included within screens and for the perimeter framing of the screen and the transoms and mullions separating individual panes of glass within the fanlights and side screens.

Glazing details.

- 15mm high x 20mm deep hardwood beads (minimum density 640kg/m³) with an 18° chamfer
- 40mm long No. 6 - 8 steel wood screws at maximum of 50mm from corners and 150mm centres inserted at 45° to the glass
- 10mm x 2mm Interdens located between the glass and the beads
- 3mm high x 6mm wide x 40mm long hardwood or non-combustible setting blocks fitted at 300mm centres along bottom edge of glass with 3mm expansion allowance to all edges.

Maximum single pane dimensions.

Screen Element	Height (mm)	Width (mm)
Fanlight	810	1830
Side Screen	2040	485

- The pane dimensions given above represent the maximum permitted width against maximum permitted height. Panes with smaller dimensions are acceptable.

Multiple panes.

- The fanlights and side screens may comprise multiple panes of glass providing the total doorset and screen assembly does not exceed 2950mm high and the transom/mullion restrictions above are complied with.

Leaf configurations and screen dimensions.

- The total width of the screen assembly is unlimited
- The screen assembly may only contain 1No. single or double leaf doorset.

10.4.5 Pyrodur 30-104 (7mm thick) – Pilkington Group Ltd.

Based on test data contained within RF00138, the following specification is permitted.

Transom/mullion details.

- Minimum 80mm deep x 44mm thick hardwood (minimum density 640kg/m³). This timber section can be used for both door jambs and transoms above doors included within screens and for the perimeter framing of the screen and the transoms and mullions separating individual panes of glass within the fanlights and side screens.

Glazing details.

- 20mm high x 20mm deep hardwood beads (minimum density 640kg/m³) with a 15° chamfer
- 40mm long No. 6 - 8 steel wood screws at maximum of 50mm from corners and 150mm centres inserted at 30° to the glass
- 20mm x 2mm Interdens located between the glass and the beads.
- 3mm high x 6mm wide x 40mm long hardwood or non-combustible setting blocks fitted at 300mm centres along bottom edge of glass with 3mm expansion allowance to all edges.

Maximum single pane dimensions.

Screen Element	Height (mm)	Width (mm)
Fanlight	810	1670
Side Screen	2057	956

- The pane dimensions given above represent the maximum permitted width against maximum permitted height. Panes with smaller dimensions are acceptable.

Multiple panes.

- The fanlights and side screens may comprise multiple panes of glass providing the total doorset and screen assembly does not exceed 2950mm high and the transom/mullion restrictions above are complied with.

Leaf configurations and screen dimensions.

- The total width of the screen assembly is unlimited
- The screen assembly may only contain 1No. single or double leaf doorsets.

10.4.6 Pyrodur 60-10 (10mm thick) – Pilkington Group Ltd.

Based on test data contained within RF05036, the following specification is permitted.

Transom/mullion details.

- Minimum 80mm deep x 44mm thick hardwood (minimum density 640kg/m³). This timber section can be used for both door jambs and transoms above doors included within screens and for the perimeter framing of the screen and the transoms and mullions separating individual panes of glass within the fanlights and side screens.

Glazing details.

- 20mm high x 20mm deep hardwood beads (minimum density 640kg/m³) with a 15° chamfer
- 40mm long No. 6 - 8 steel wood screws at maximum of 50mm from corners and 150mm centres inserted at 30° to the glass
- 20mm x 2mm Interdens located between the glass and the beads
- 3mm high x 6mm wide x 40mm long hardwood or non-combustible setting blocks fitted at 300mm centres along bottom edge of glass with 3mm expansion allowance to all edges.

Maximum single pane dimensions.

Screen Element	Height (mm)	Width (mm)
Fanlight	810	1670
Side Screen	2057	956

The pane dimensions given above represent the maximum permitted width against maximum permitted height. Panes with smaller dimensions are acceptable.

Multiple panes.

- The fanlights and side screens may comprise multiple panes of glass providing the total doorset and screen assembly does not exceed 2950mm high and the transom/mullion restrictions above are complied with.

Leaf configurations and screen dimensions.

- The total width of the screen assembly is unlimited
- The screen assembly may only contain 1No. single or double leaf doorsets.

10.4.7 Pyrostop 30-10 (15mm thick) – Pilkington Group Ltd.

Based on test data contained within RF05037, the following specification is permitted.

Transom/mullion details.

- Minimum 95mm deep x 44mm thick hardwood (minimum density 640kg/m³). This timber section can be used for both door jambs and transoms above doors included within screens and for the perimeter framing of the screen and the transoms and mullions separating individual panes of glass within the fanlights and side screens.

Glazing details.

- 20mm high x 37mm deep hardwood beads (minimum density 640kg/m³). Can be square or chamfered
- 60mm long No. 6 – 8 steel wood screws at maximum of 50mm from corners and 150mm centres inserted at 45° to the glass
- 12mm x 3mm Hodgsons Sealants Firestrip 30 located between the glass and the beads
- 5mm high x 15mm wide x 40mm long hardwood or non-combustible setting blocks fitted at 300mm centres along bottom edge of glass with 5mm expansion allowance to all edges.

Maximum single pane dimensions.

Screen Element	Height (mm)	Width (mm)
Fanlight	733	1001
Side Screen	2870	1366

- The pane dimensions given above represent the maximum permitted width against maximum permitted height. Panes with smaller dimensions are acceptable.

Multiple panes.

- The fanlights and side screens may comprise multiple panes of glass providing the total doorset and screen assembly does not exceed 2950mm high and the transom/mullion restrictions above are complied with.

Leaf configurations and screen dimensions.

- The total width of the screen assembly is unlimited
- The screen assembly may only contain 1No. single or double leaf doorset.

10.5 Norsound Vision Glazing Systems – Fanlights & Side Screens

10.5.1 General

The following sections contain the essential installation requirements when timber framed doorsets are installed which include glazed fanlights and/or sidelights when utilising the Norsound Vision glazing systems.

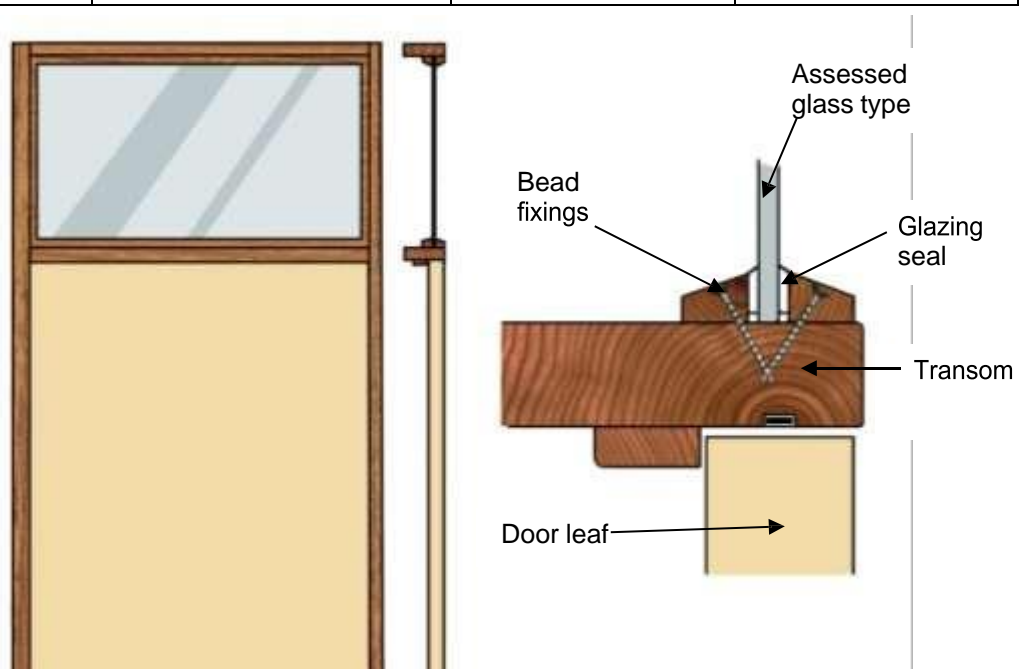
The glazing system and beads must meet the specification shown in sections 10.5.2 – 10.5.4.

The door frame and screen framing construction must comply with the specification shown in section 10.3.

The maximum assessed fanlight and side screen dimensions are detailed in the table below, subject to the following restriction.

- The glass must be able to demonstrate adequate performance when tested as a window or screen in accordance with BS 476 Part 22:1987 or BS EN 1634-1, at the pane dimensions to be installed.

Screen Element	Configuration	Height (mm)	Width (mm)
Fanlight	Single & double doorsets	≤600	Overall door width
Side Screen	Single & double doorsets	Overall door height	≤600



Note: Drawing is representative of doorset construction only; actual construction must be as the text within this document specifies.

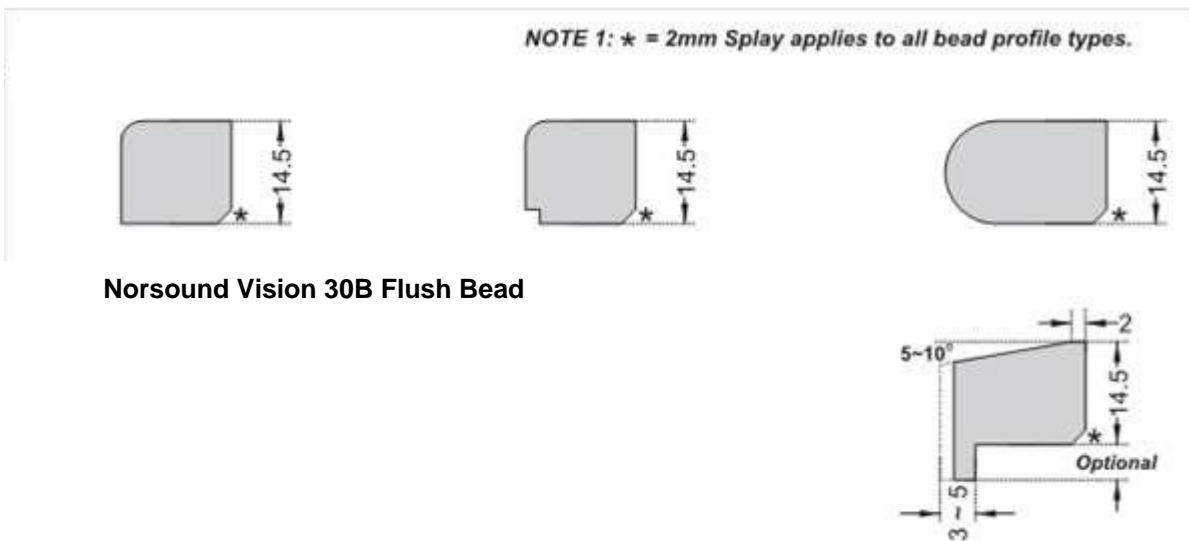
10.5.2 Glazing Beads & Installation – Norsound Vision Glazing System

Glazing beads and intumescent materials must be installed in line with the following sections.

System Name		Norsound Vision 30B	Norsound Vision 30T
Typical Installation			
Dimensions	Bead height (mm)	Nominally 14.5	Nominally 14.5
	Intumescent Seals	15 high x 3 thick	15 high x 3 thick + 'plug'
Aperture Liner		Not required	Not required

10.5.3 Norsound Vision 30B Applications

The following bead designs are assessed as acceptable for Norsound Vision 30B.



Notes:

1. Bead height must be nominally 14.5mm
2. The intumescent seal component of Norsound Vision 30B is 15mm high and is required to project 0.5mm above the sightline of the bead
3. Glazing beads must be retained in position with minimum, 40mm long x 1.5mm diameter steel pins or, minimum 40mm long No. 6 – 8 screws, inserted at 35 – 40° to the vertical at no more than 40mm from each corner and at 150mm maximum centres
4. Pneumatically fired pins are acceptable providing the pins meet the specification given above.

10.5.4 Glazing Bead Material – Norsound Vision Glazing System

All timber for glazing beads must be straight grained, joinery quality (MDF, softwood or hardwood as specified in the table below), free from knots, splits and checks.

Integrity Performance	Bead Profile	Material	Min. Density (kg/m ³)
30	All in section 10.5.3	Softwood	510
		Hardwood	
		MDF	700

11 Door Frames

11.1 Timber Based Door Frame Construction

Timber based door frames for the Flamebreak 30 designs referred to herein must be constructed to meet the following specification.

Material	Section Size ¹ (mm)	Min. Density (kg/m ³)
Softwood or hardwood	70 x 32 (excluding the stop)	450
MDF	70 x 30 (excluding the stop)	750

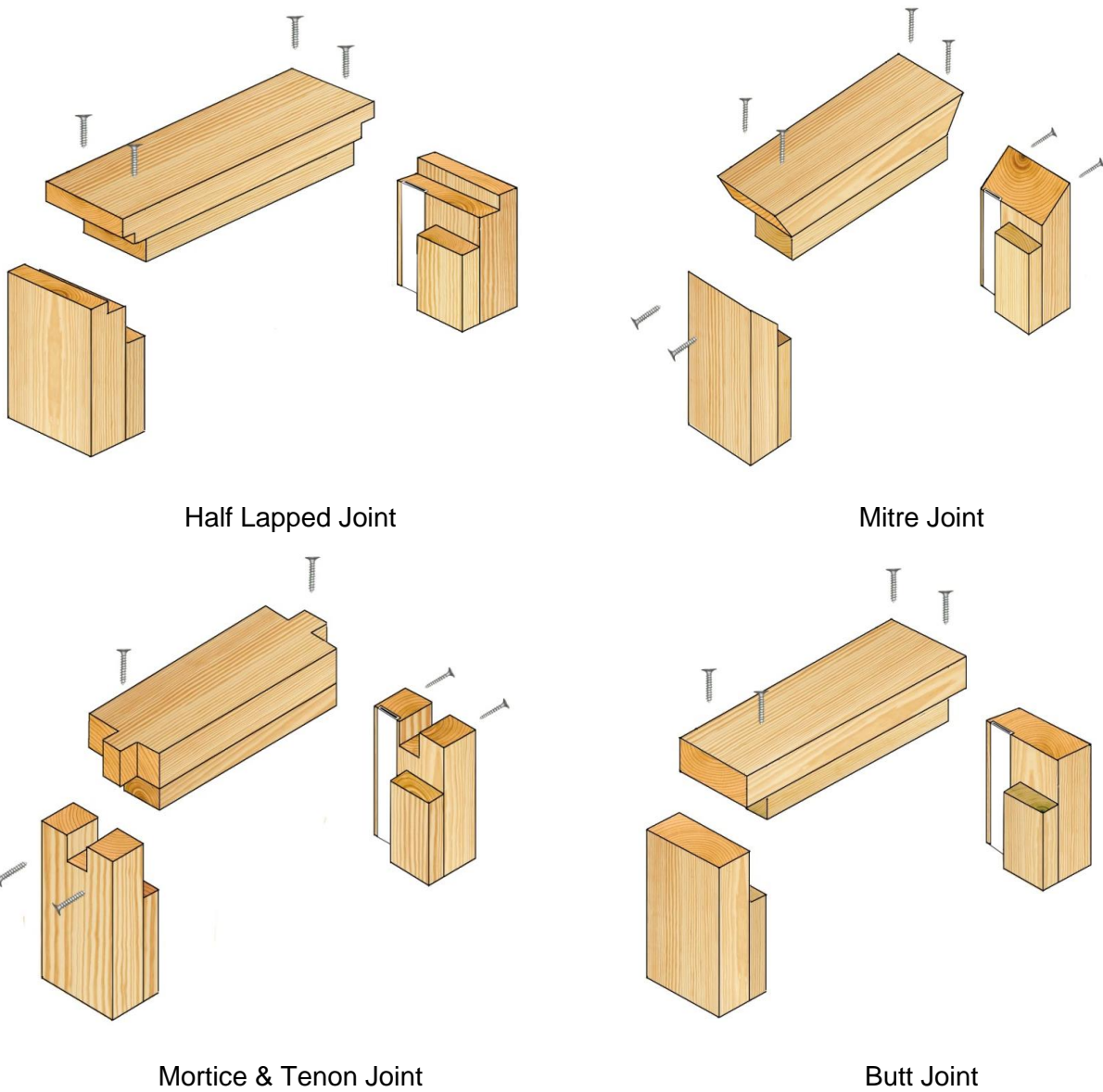
Notes:

1. If the doorset features a transomed overpanel, the door frame must be softwood or hardwood with a minimum section of 70mm x 32mm
2. All door frame timber must meet or exceed class J30 as specified in BS EN 942: 2007 (subject to adequate repair of any defects)
3. A 12mm deep planted stop is adequate for single acting leaf configurations, whilst double acting frames may be scalloped or square (see diagram below).
4. Rounded or rebated quirk edges to door frames are not permitted
5. For square frames only, in order to create a maximum 2mm rounded profile to the edges of square leaves, the maximum permitted radius to the corners of the leaf is 8mm (see diagram below)
6. Frame joints may be mortice and tenoned, mitred, half lapped or butted and with no gaps (see section 11.2). All jointing methods require mechanical fixing with the appropriate size ring shank nails or screws.

The following diagram depicts the assessed frame profiles and dimensions.

A = minimum 70mm; B = minimum 30 – 32mm (see table above); C = minimum 12mm R = radius from floor spring, 8mm maximum radius to create a maximum 2mm edge profiling.		
Standard	Scalloped	Profiled edges

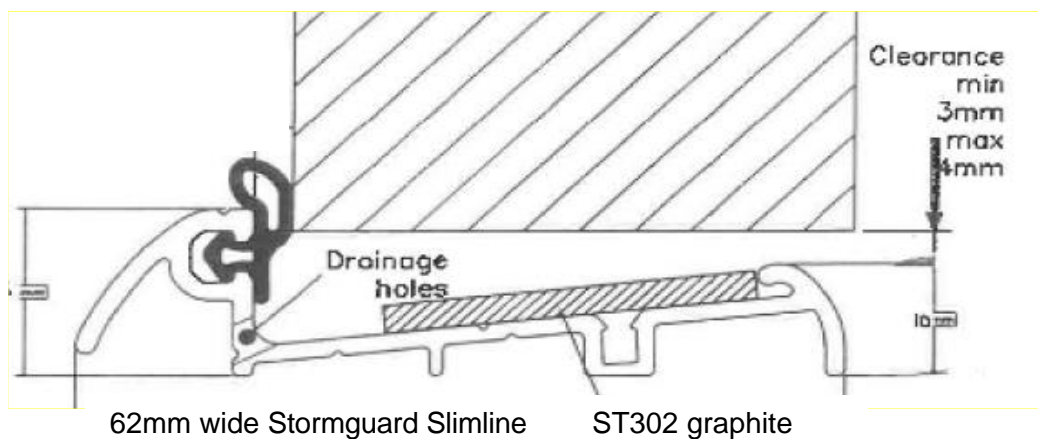
11.2 Door Frame Joints



See section 17.6 for sealing to structural opening specification.

11.3 Thresholds

Test reference 18-003111-PR04 incorporated the Stormguard Slimline protected with ST302 graphite liner fitted to the upper face of the threshold.



62mm wide Stormguard Slimline ST302 graphite

12 Facings

12.1 General

The primary facing material for the Flamebreak 30 doorset design is nominally 4mm or 6mm thick plywood or 6mm thick MDF. Facings at this thickness are deemed as being structural and hence substitutions for alternative facings are limited. However, further testing has also demonstrated adequate performance with alternative materials. The tested and assessed alternative facings are summarised as follows:

Facing Materials	Thickness (mm)	Min. Density (kg/m ³)
Plywood	4, 6, 9	520
Chipboard	4, 6, 9	500
MDF	6, 9	710

In all cases, the overall leaf thickness must remain a minimum of 44mm; therefore the core thickness will be increased or decreased proportionally (26 – 36.8mm thick) in relation to the facing thickness.

12.2 Decorative & Protective Facings

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

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

1. Metallic facings are not permitted except for push plates and kick plates
2. The door leaf thickness may be reduced by a total maximum of 0.5mm to each face (a maximum of 1mm in total) for calibration purposes, only in order to accommodate one of the additional facings shown in the table above
3. Materials must not conceal intumescent strips
4. PVC/Plastic laminates may not be applied to the edges of leaves, unless approved in section 12.5.

12.3 Face Fixed Mouldings

Decorative mouldings can be applied to the door leaf facing providing the following criteria is adhered to.

1. Are surface applied to the door
2. Are no higher than 30mm i.e. proud of the door
3. Are no wider than 50mm
4. Cover no more than 20% of the door leaf area
5. Are no closer than 80mm to the door leaf edge
6. The mouldings must be bonded in place using UF, PF, PVA, PVAC or PU glue
7. Mechanical fixings may be used, the tested 23 guage headless nails are acceptable, at a minimum of 50mm from the ends of mouldings and at no less than 200mm centres.

12.4 Grooves

Based on the results of WF381914, with no burn through of the leaf prior to 44 minutes, Flamebreak 30 doorsets may be grooved meeting the following specification.

Maximum permitted groove dimensions:

- 2mm deep x 10mm wide
- 3mm deep x 3mm wide 'V' shaped.

Grooves with smaller dimensions may be machined in the leaf faces, the limitations below will still apply.

Permitted Facing types	Density (kg/m ³)	Thickness (mm)
Plywood	520	4, 6 or 9mm
Chipboard	500	6 or 9mm
MDF	710	

Notes:

- Grooves may run to the leaf edges
- Horizontal grooves must be no closer than 100mm to the top and bottom of the door leaf
- Vertical grooves must be no closer than 100mm to the sides of the door leaf
- Grooves should be no closer than 100mm to each other vertically or horizontally grooves are permitted perpendicular to one another (permitted to intersect) providing all other details meet the specification given above
- Grooves must not run under glazing beads, where installed
- Provided the restrictions above are complied with, there is no restriction on the number of grooves permitted
- Feature grooves are not permitted with flush overpanel configurations.

12.5 PVC Edge Protectors & Post-Formed CS Group Acrovyn

12.5.1 CS Group Edge Protectors

The Pacific Rim Wood Ltd. Flamebreak 30 design has been assessed for use with CS Group edge protectors based on the supporting test evidence contained within Chilt/A11129 Revision E. CS Group edge protectors are supplied pre-formed with the approved intumescent material. The CS Group edge protectors must be used as part of a complete intumescent system and the required intumescent specification and leaf sizes are given in the relevant data sheets in section 6.2. CS Group edge protectors must only be fitted to new doorsets, i.e. they must not be retro-fitted to existing doorsets. CS Group must be contacted for precise installation and fixing details (www.c-sgroup.co.uk).

The Flamebreak design with 4mm plywood facings can be fitted with the proprietary edge protectors detailed in this section, up to the maximum dimensions stated in the CS Group headed data sheets in section 6.2. All other alternatively faced Flamebreak designs (see section 12.1) can be fitted with the proprietary edge protectors within the dimensions stated in the relevant data sheets in section 6.2., but cannot exceed the maximum leaf dimensions stated in section 6.2 for the particular Flamebreak design intended for use.

12.5.2 Yeoman Shield/Lorient PVCu Edge Protectors

The Pacific Rim Wood Ltd. Flamebreak 30 design has been assessed for use with the Yeoman Shield/Lorient PVCu edge protectors based on the supporting data contained within Chilt/A08001 Revision C and the following specification.

1. The Yeoman Shield/Lorient edge protectors must be used as part of a complete intumescent system and the required intumescent specification and leaf sizes are given in the relevant data sheet below
2. The Yeoman Shield/Lorient edge protectors must be fitted to vertical leaf edges only
3. It is permitted to fit the edge protectors to one or both vertical leaf edges of a door leaf
4. If Yeoman Shield/Lorient edge protectors are required at the meeting edges of double doorsets, they must be fitted to both meeting edges
5. Timber lippings must be fitted, as per the specification given in section 4.3 above
6. Timber lippings must be square, with no profiling permitted and containing no intumescent material
7. The Yeoman Shield/Lorient edge protectors must be fixed with 50mm long No. 6-8 steel wood screws, with a fixing no more than 150mm from the top and bottom of the edge protector and at maximum 200mm centres in between
8. The PVC elements must be adhered to the door leaf using PVA adhesive, as detailed in section 12.

The Flamebreak 30 design with 4mm (FF430) plywood facings may be fitted with the Yeoman Shield/Lorient edge protectors up to the maximum dimensions stated in the Yeoman Shield/Lorient headed data sheets below.

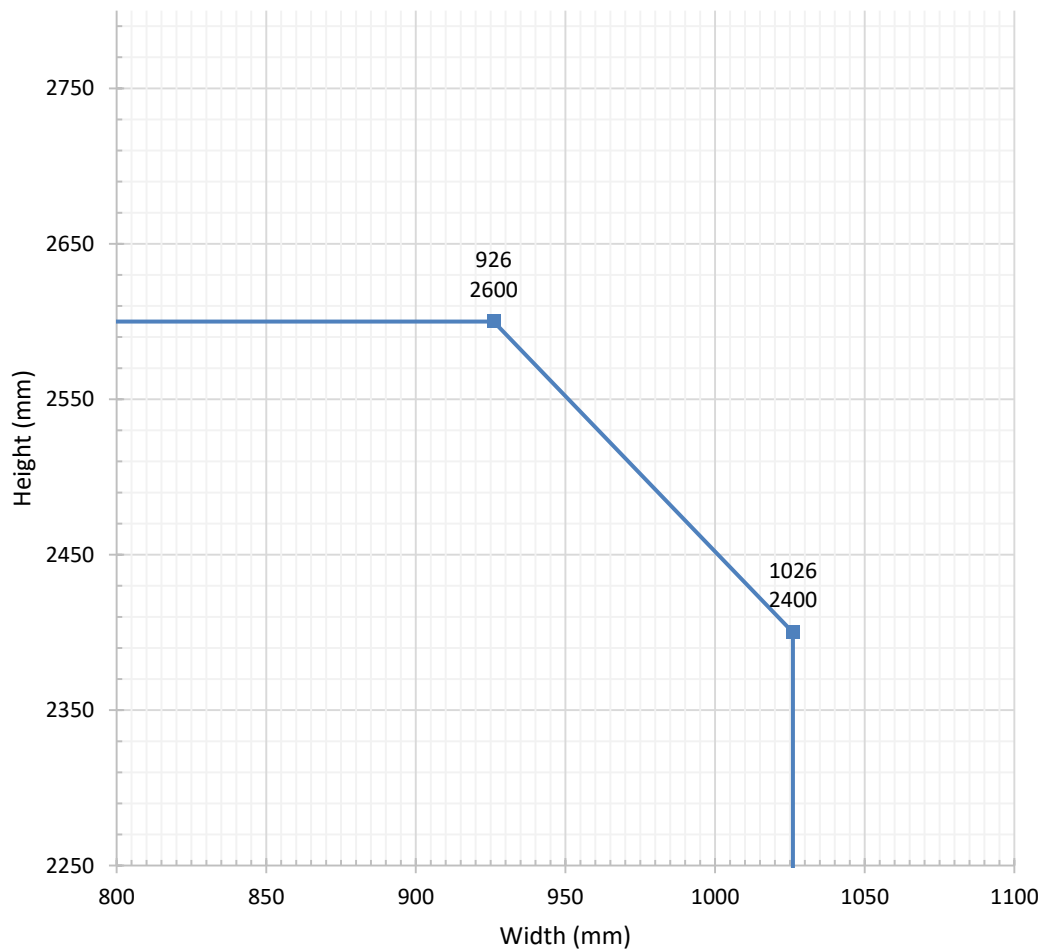
All other alternatively faced Flamebreak designs (see section 12.1) can be fitted with the proprietary edge protectors within the dimensions stated in the relevant data sheets below, but cannot exceed the maximum leaf dimensions given in the data sheet in the relevant section within section 6.2 for the particular Flamebreak facing design intended for use.

12.5.3 LSASD, ULSASD & DASD utilising Yeoman Shield/Lorient Edge Protectors

Latched & Unlatched, Single & Double Acting, Single Doorsets Using Yeoman Shield/Lorient Edge Protectors - Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
Y1 (Chilt/A08001 Revision C)	Type 617 –	Lorient Polyproducts Ltd.	Head: 1No. 1No. 20 x 4mm seal fitted centrally in the frame head. Jambs: 1No. 15 x 4mm fitted centrally in Yeoman Shield/Lorient PVCu edge protectors.

Latched & Unlatched, Single & Double Acting, Single Doorsets Using Yeoman Shield/Lorient Edge Protectors

—■ Intu. Spec. - Y1

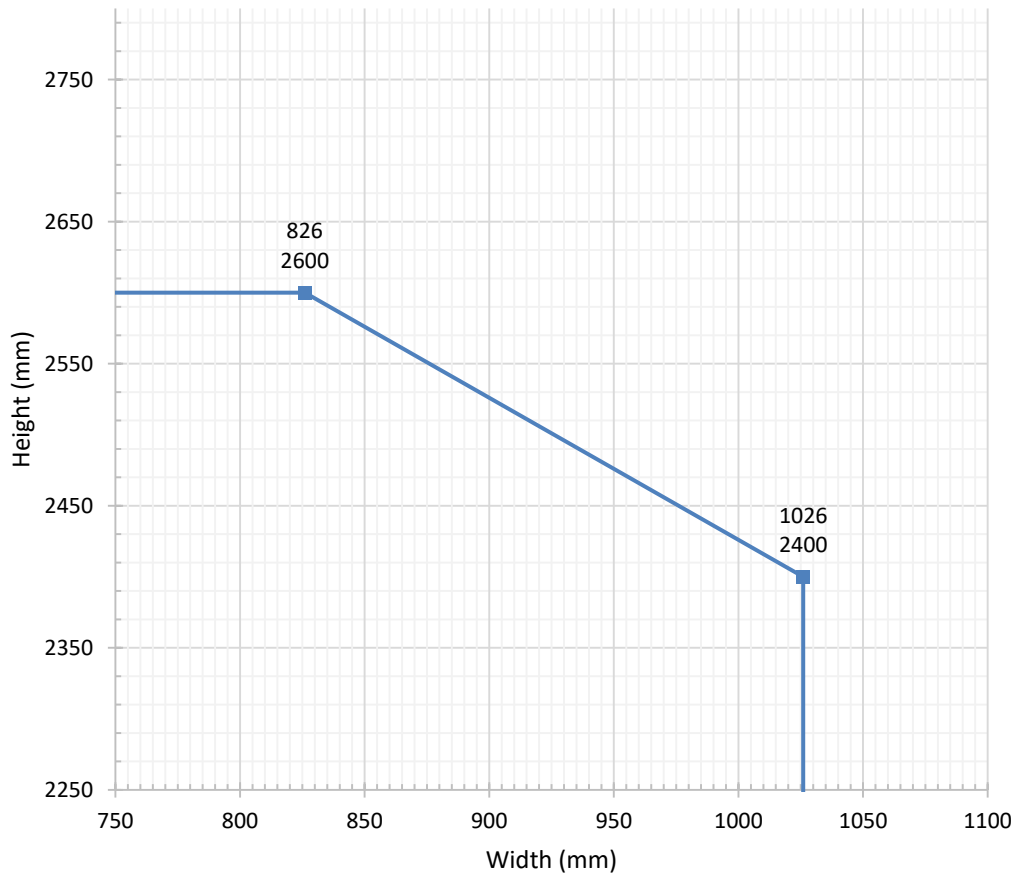


12.5.1 LSADD, ULSADD & DADD utilising Yeoman Shield/Lorient Edge Protectors

Latched & Unlatched, Single & Double Acting, Double Doorsets Using Yeoman Shield/Lorient Edge Protectors - Single Point Lock			
Intumescent Spec. Ref.	Type / Make	Manufacturer/ Supplier	Location, Size & Quantity
Z1 (Chilt/A08001 Revision C)	Type 617	Lorient Polyproducts Ltd.	<p>Head: 1No. 20 x 4mm seal fitted centrally in the frame head.</p> <p>Jamb: 1No. 15 x 4mm fitted centrally in Yeoman Shield/Lorient PVCu edge protectors.</p> <p>Meeting Edges: 1No. 15 x 4mm fitted centrally in the Yeoman Shield/Lorient PVCu edge protectors of both leaves.</p>

Latched & Unlatched, Single & Double Acting, Double Doorsets Using Yeoman Shield/Lorient Edge Protectors

—■— Intu. Spec. - Z1



12.5.2 Post-Formed CS Group Acrovyn

It is possible to encapsulate the Flamebreak 30 doorset design by post-forming the leaf in CS Group Acrovyn, based on the supporting test evidence in Chilt/RF11059 and the following specification.

1. CS Group Acrovyn must be wrapped around the vertical edges of the leaf only, i.e. the top and bottom of the leaf must remain exposed
2. The vertical edge detail prior to post-forming must either be lipped with 8mm thick PVC, or hardwood as detailed in this assessment (see section 4.3)
3. The maximum radius of the lipping at the corners of the vertical edges before post-forming must be 9mm, which provides for 11mm external radius after the CS Group Acrovyn has been applied
4. The intumescent detail as specified in section 12.5 and the relevant (CS Group headed) data sheets contained in section 6.2. of this assessment must be replicated
5. CS Group Acrovyn must be bonded to the leaf using 3M Scotch-Grip cement 10 contact adhesive, or equivalent
6. See relevant (CS Group headed) data sheets in section 6.2. of this assessment for maximum permitted leaf sizes
7. The maximum thickness of CS Group Acrovyn used must be 2mm, as per test evidence
8. The CS Group Acrovyn can be provided as pre-formed trays with dimensions to suit the proposed leaf sizes, as well as sheets for post-forming by the door manufacturer.

13 Intumescent Materials

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

Application	Location	Product/Manufacturer
Edge seals	Fitted in the frame jambs or leaf edges	1. PVC encapsulated Palusol 100 – Mann McGowan Ltd. 2. Pyroplex – Pyroplex Ltd. 3. Type 617 – Lorient Polyproducts Ltd. 4. ST104FO & ST154FO- Sealed Tight Solutions Ltd
Hinges	Under both blades (for leaves over 2400mm high)	1. 1mm Interdens – Dufaylite Developments Ltd. 2. 1mm MAP paper – Lorient Polyproducts Ltd. 3. 1mm Pyrostrip 300 – Mann McGowan Ltd. 4. 1mm Therm-A-Strip – Intumescent Seals Ltd.
Lock / latches	Under forend & keep for double doorsets or if the forend or keep > 150mm (h) up to the maximum assessed	5. 1mm G30 – Sealmaster Ltd. 6. 1mm NOR910 – Norsound Ltd. 7. 1mm Graphite gasket - Sealed Tight Solutions Ltd
Top pivots	Lining all sides of the mortices	1. 2mm MAP paper – Lorient Polyproducts Ltd. 2. 2mm Interdens – Dufaylite Developments Ltd. 3. 2mm G30 – Sealmaster Ltd. 4. 2mm Therm-A-Strip – Intumescent Seals Ltd.
Flush bolts	Lining all sides of the mortices	5. 2mm Therm-A-Flex – Intumescent Seals Ltd. 6. 2mm NOR920 – Norsound Ltd. 7. 1mm Graphite gasket - Sealed Tight Solutions Ltd
Cableways	Lining the base of the groove (see section 16.17)	1. 2mm MAP paper – Lorient Polyproducts Ltd. 2. 2mm Interdens – Dufaylite Developments Ltd. 3. 2mm G30 – Sealmaster Ltd. 4. 2mm Therm-A-Strip – Intumescent Seals Ltd. 5. 2mm Therm-A-Flex – Intumescent Seals Ltd. 6. 2mm NOR920 – Norsound Ltd. 7. 2mm CablePro - Sealed Tight Solutions Ltd

The seal specification for each doorset configuration is contained in section 6.2.

14 Adhesives

The adhesives used in construction are as follows.

Element	Product
Core	PVA
Lipping	Urea formaldehyde, resorcinol formaldehyde, PU
Facings	Melamine or PVA

15 Tested Hardware

The following hardware has been successfully incorporated in the tests on Pacific Rim Wood Ltd. Flamebreak 30 doorsets.

Element	Make/Type
Hinges	<ol style="list-style-type: none"> 1. Royde & Tucker H105 steel butt type hinges 2. Stainless steel butt type hinges
Closers	<ol style="list-style-type: none"> 1. Dorma TS71 overhead type door closer 2. Dorma TS73V overhead type door closer 3. Dorma TS83V overhead type door closer
Latches and Locks	<ol style="list-style-type: none"> 1. Henderson Hardware tubular mortice latch 2. E*S Hardware tubular mortice latch 3. Nemef latch 4. Winkhaus 3 pt lock ref: AV-2
Furniture	<ol style="list-style-type: none"> 1. Aluminium lever type handle 2. Stainless steel lever type handle

16 Additional & Alternative Hardware

16.1 General

The following section details the permitted scope and constraints for fitting hardware to this door design.

The parameters of this assessment always take precedence, including specified protection such as hardware gaskets, where alternative hardware to that tested is permitted in the following sections, Certifire approved hardware may be incorporated subject to the design, material and dimensional limitations identified within this assessment report and identified on the relevant Certifire certificate. This route cannot be used where only specific hardware options stated by the doorset manufacturer are permitted (i.e. where alternative hardware is not permitted).

16.2 Certifire

The Certifire third party certification scheme approves various items of hardware for different door types and different fire ratings and has its own set of requirements relating to that item of hardware.

Where the alternative hardware sections in this report allow alternatives to the tested hardware, Certifire approved hardware may be used as an alternative, subject to the following provisos:

- In all cases, the requirements of this report must take precedence.
- The hardware must comply with the requirements of the relevant section e.g. hinges.
- The hardware must comply with the limitations specified in terms of design, materials and dimensions.

16.3 CE Marking

Where newly purchased on the open market, the following items of hardware must also bear the CE Mark.

- Latches & Locks: Standard EN 12209;
- Electro-Mechanically Operated Locks: Standard EN 14846;
- Single Axis Hinges: Standard EN 1935;
- Controlled Door Closing Devices: Standard EN 1154;
- Electrically Powered Hold-Open Devices: Standard EN 1155;
- Door Co-ordinators: Standard EN 1158;
- Emergency Exit Hardware: Standard EN 179;
- Panic Exit Hardware: Standard EN 1125.

16.4 Automatic Closing

Alternative overhead face fixed closers not listed in section 15 must be Certifire approved for 30 minutes in ITT doorsets with solid timber door leaves. The use of concealed overhead closers is not permitted.

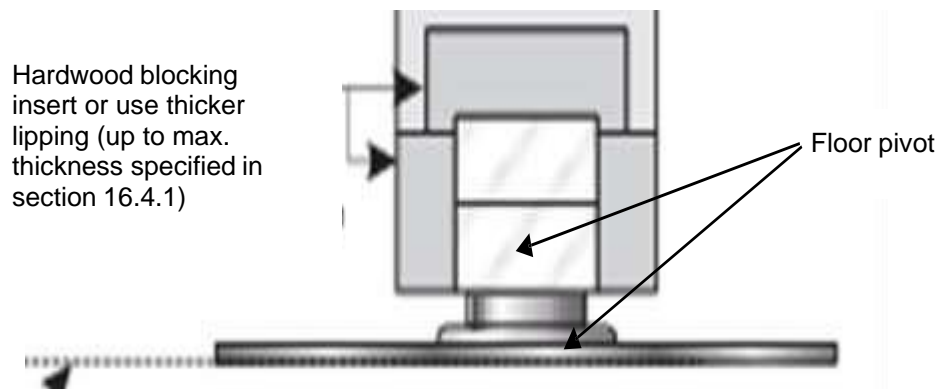
Notes: Top pivots to floorspring assemblies must be protected with 2mm thick intumescent gasket (see section 13) or alternatively the manufacturers tested intumescent gaskets.

16.4.1 Hardwood Blocking for Pivots

The following option is permitted for lipping the bottom of doors that are to receive pivot fixings and are to be used in severe duty locations (diagram below). It is not necessary to introduce additional blocking at the head of the door because of the presence of the integral top rail.

The hardwood insert may be a maximum of 15mm high by a length suitable for the hardware to be installed plus a maximum of 50mm (not full door width). The hardwood insert must be a maximum of 28mm wide and fitted centrally in the leaf leaving 8mm of leaf material on either face. The inserted block must be bonded on all contact faces using adhesives approved for the application of lippings (see section 14). Alternatively lippings in accordance with details shown in section 4.3 may be used.

Cross Section through Bottom of Leaf fitted onto Floor Spring and Pivot



16.5 Latches & Locks

Latches and locks must either be as tested, or alternatively Certifire approved latches and locks with the following specification are acceptable.

Element	Specification
Maximum forend & strike plate dimensions	235mm high by 24mm wide by 4mm thick
Maximum body dimensions	165mm high by 100mm wide by 18mm thick
Intumescent protection	See section 13
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel, stainless steel or brass (melting point $\geq 800^{\circ}\text{C}$)
Location	Between 750mm and 1200mm from the threshold

16.5.1 Winkhaus AV2 Multipoint Lock

The tested Winkhaus 3 pt Autofire multipoint lock may be utilised with the Flamebreak 430 design only, stiles and bottom rail may be removed as tested in 18-003111-PR04, the head rail must remain in place to the full dimensions shown in section 4.3, the locks must be installed with the tested intumescent protection detailed below. The lock must be kept locked at all 3 locking points when not in active use.

Element	Specification (mm)
Forend	1770 high by 20 wide
Centre Lock Keep	234 high x 24 wide
Top & Bottom Keeps	174 high x 24 wide
Top & Bottom Lock Bodies	113mm high by 42mm wide by 16mm thick
Lock Cylinder	A lock cylinder must always be installed
Intumescent protection	Encasing all lock bodies, and top and bottom hook bodies – 1mm thick STS graphite gasket Under all lock keeps – 1mm thick STS graphite gasket Under Forend – Not required
Materials	All parts essential to the lock must remain as tested
Location	Centre lock nib to be installed between 950mm and 1100mm from the threshold
Leaf Edge Seals	ST154FO- Sealed Tight Solutions Ltd only
Maximum Leaf Size (mm)	See section 6.2.21
Configurations	Latched, single acting, single leaf only

Based on the results of WF393276B the Winkhaus Trulock Pyro 3pt latch may also be used. This product does not auto engage at all 3 locking points. The Flamebreak design has been successfully tested with single point latches, as discussed in section 16.5, and the AV2 which has identical case sizes and forend dimensions. It is therefore our assessment that installation of the Trulock Pyro would not be expected to be the cause of premature integrity failure.

16.6 Hinges

Flamebreak 30 leaves must be hung on

- A minimum of 2 hinges for leaves below 1500mm high with hinges at top and bottom positions shown in table below
- A minimum of 3 hinges for leaves below 2400mm high
- A minimum of 4 hinges for leaves below 3000mm high
- A minimum of 5 hinges for leaves above 3000mm high.

Hinges must either be as tested, or alternatively Certifire approved hinges with the following specification and positioning are acceptable.

Element		Specification	
Blade height		90 - 120mm	
Blade width (excluding knuckle)		30 - 35mm	
Blade thickness		2.5 - 4mm	
Fixings		Minimum of 4No. 38mm long fully threaded 'twinfast' or chipboard screws per blade	
Materials		Steel, stainless steel or brass (melting point $\geq 800^{\circ}\text{C}$)	
Hinge positions	Leaf dimensions <2400mm	Top	120 - 180mm from the head of the leaf to the top of the hinge
		2 nd	150 - 250mm from bottom of top hinge to top of second to central between top and bottom hinges
		Bottom	150 - 250mm from the foot of the leaf to the bottom of the hinge
	Leaf dimensions >2400mm	Top	120 - 180mm from the head of the leaf to the top of the hinge
		2 nd	150 - 250mm from bottom of top hinge to top of second to central between top and 3 rd hinge
		3 rd	Equispaced between 2 nd and bottom hinge
		Bottom	150 - 250mm from the foot of the leaf to the bottom of the hinge
	Intumescent protection		See section 13

It is also permitted to use screw fixings as tested and supplied with the hinges approved for the Pacific Rim Wood Ltd. Flamebreak 30 design at 30 minutes fire resistance.

16.6.1 Safehinge™ ALUmax

The Safehinge ALUmax system is assessed within Chilt/A12005 Revision C for use in a range of timber based doorset construction types for both 30 and 60 minutes integrity performance. Chilt/A12005 Revision C details door frame, intumescent seal and installation requirements for use of the ALUmax system, which must be complied with in full where the ALUmax system is proposed for use with the Pacific Rim Wood Ltd. Flamebreak 30 design for 30 minutes fire resistance. Where specific details in Chilt/A12005 Revision C are different to those herein, whichever is the superior specification must be utilised.

Permitted configurations are limited to LSASD, ULSASD, DASD, LSADD, ULSADD and DADD, at the maximum leaf sizes shown in sections 6.2.22 & 6.2.23.

The use of Safehinge concealed overhead closers is not permitted.

16.7 Pull Handles

Handles (including 'D' shaped bolt through handles) may be fixed or bolted through the door leaf, providing they are steel or brass and the length is limited to 1200mm between the fixing points. No additional intumescent protection is required provided that the hole for the bolt through the leaf is tight.

Providing the handles are limited in height and are fitted as described, the handle will have negligible influence on the deflection of the leaf and integrity performance of the door core.

16.8 Push Plates/Kick Plates

Steel, stainless steel or brass plates are permitted up to a maximum of 20% of the door leaf area if mechanically fixed and a maximum of 30% if bonded with a contact or other thermally softening adhesive. Plates must not return around the door edges.

It is necessary to limit the area of the metal push/kick plate to limit the influence of the plate on the distortion of the leaf as the plate begins to heat in fire test conditions.

16.9 Door Selectors

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. See also section 4.3.5.

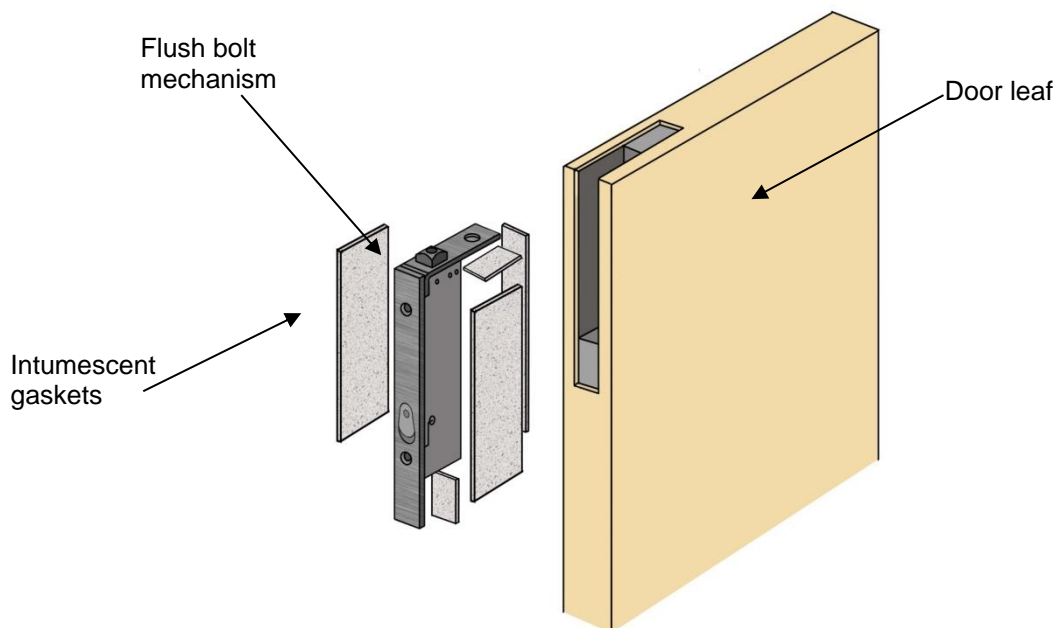
16.10 Flush Bolts

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

- Up to 210mm long x 20mm deep x 20mm wide*

Flush bolts must be steel or brass and the mortice must be as tight to the mechanism as is compatible with its operation. All edges of the mortice must be protected with intumescent gaskets as specified in section 13.

Alternatively, the hardware manufacturers tested gaskets may be used. See diagram below for example of intumescent protection to flush bolt.



16.11 Door Security Viewers

Given the integrity performance of the door core designs, door security viewers with brass or steel bodies of a diameter less than or equal to 15mm may be used provided that the through-hole is bored tight to the case of the viewer (maximum tolerance +1mm). Lenses must be glass and the item must be bedded into a tested intumescent material/mastic.

16.12 Panic Hardware

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

16.13 Surface-Fixed Barrel Bolts

It is permitted to fit a surface-fixed barrel bolt to the top closing corner of a double leaf providing the item does not require removal of material from the leaf or door frame and does not interfere with the perimeter intumescent seals. The item must be no longer than 450mm.

16.14 Pyroplex Air Transfer Grilles

Based on the test evidence generated in WF146520 the following Pyroplex air transfer grilles have been assessed as acceptable for use with the Flamebreak 30 door leaf designs.

The grilles must be fitted 110mm from the edge of the door leaf and 80mm apart if more than one grille is to be fitted. The area occupied by the air transfer grille(s) must be deducted from the area of glazing and/or panelling, if both elements are fitted. The grilles may be fitted up to a maximum height of 2200mm from the threshold.

Grilles cannot be fitted within a recessed panel (i.e. must only be fitted into full thickness core area/rail).

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

The Pyroplex air transfer grilles must be installed in accordance with the manufacturer's installation details, which include a 6mm thick hardwood aperture liner and Pyroplex intumescent mastic applied around the perimeter of the grille. Full details can be obtained from Pyroplex Ltd.

16.15 Environmental Seals

Silicon based flame retardant acoustic, weather and dust seals (e.g. Lorient LAS1007, LAS1206, LAS1206K, LAS1010, LAS1212, LAS1212K, LAS1215, IS1511, IS7025, IS7060, Norseal NOR710, NOR720, NOR510; Fire & Acoustic Seals Ltd. FAS35, FAS39, FAS Trident, FAstragal or Sealed Tight Solutions ST1009) may be fitted to this doorset design without compromising the performance, providing their fitting does not interfere with the activation of the intumescent seals or hinder the self-closing function of the leaves.

16.16 Threshold Seals

The following types of automatic threshold drop seals have all been tested within timber based doorsets of 44mm thickness without compromising the integrity performance of the doorset and may therefore be recessed in to the bottom rail of leaves to this design.

Manufacturer	Product Reference
Norsound Ltd	NOR810, NOR810S & NOR810dB+
Lorient Polyproducts	IS8010s
Raven Products	RP8Si
Athmer	Schall-Ex Duo L-15
Sealed Tight Solutions	STS422 & STS422GT
Fire & Acoustic Seals	FAS45 & FAS810S

16.17 Cable-Way

Based on the integrity performance of the doorset construction, with no burn-through of the core material, we consider it acceptable to allow the provision for a concealed cable-way to facilitate electro-magnetic closing/latching mechanisms. The cable-way must be concealed in the following way:

1. A hole drilled centrally through the leaf of maximum 10mm diameter
2. The cable for the electronic closing/latching mechanisms must be no more than 2mm smaller in diameter than the hole through the leaf
3. The cable for the electronic closing/latching mechanism must be PVC encased
4. Cable ways are only permitted for use with latched, single leaf, single acting doorsets with maximum leaf dimensions of 2100mm (h) x 900mm (w)
5. The hole must be located below 1500mm from the threshold and must be spaced a minimum of 90mm from any apertures within the leaf, e.g. glazing, air transfer grilles or letter plates, etc.

This approval is subject to the hardware manufacturer having the appropriate test evidence for the product for use with this type of 30 minute construction. Test evidence generated in steel doorsets is not acceptable. Any tested intumescent gaskets for the lockset, closing mechanism, receiver plate, cable loops, etc. must be replicated.

16.18 Identification Plates

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

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

It is also permitted to fit aluminium (max. thickness 2mm) or PVC (max. thickness 3mm) identification plates, complying with HTM 58 – Internal Doorsets, HTM Building Component Series, NHS Estates. The signage must not exceed 45mm diameter and can be fitted flush with the leaf face a minimum of 50mm from any edge.

16.19 Letter Boxes/Plates

Letter boxes/plates may be fitted providing the product can demonstrate contribution to the required performance of this type of 30 minute doorset design, when tested to BS 476 Part 22:1987 or BS EN 1634-1 and installed at the proposed location, within a timber based doorset of comparable thickness. Margins to the leaf edges must remain as specified for glazing.

17 Installation

17.1 General

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

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

17.2 Door Gaps

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

Location	Dimensions
Door edge gaps	A minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud of each other or from the door frame by more than 1mm
Threshold	10mm between bottom of leaf and top of floor covering ¹

Note:

1. Tolerances are for fire resistance performance. Refer to section 19 for smoke control tolerances.

17.3 Onsite Leaf Adjustment

Door leaves may be altered as follows.

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

17.4 Door Frame Installation

The following figures indicate the acceptable door frame installations. Please note that the fire-stopping element is provided in the below 3D models as a generic red coloured seal. For further clarification of the approved fire-stopping systems see section 17.6.

The figures below show the wall as a steel stud partition, where the steel stud is full depth of the wall void and the steel stud includes a timber ground as defined in the fire test methods BS EN 1634-1:2014 + A1:2018, other wall constructions are considered later. The timber ground is to be fitted to the head and full height of the vertical studs adjacent to each jamb.

The face of the door is level with the face of the wall.

Permitted Installations	
	<p>Instances where the door frame and the wall of the same depth such that architraves are fitted flush to both faces. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see door frame section. Architraves requirements are documented in the fire-stopping section of this report.</p>
	<p>Instances where the wall thickness is greater than the door frame depth. In this scenario timber architraves of minimum 18mm thick must be fitted to both faces, fitted with a minimum 15mm overlap to the door gap, other than when the architrave abuts the wall.</p>
	<p>Split frames are permitted providing that both frame sections are secured to the wall in accordance with section 17.5. Furthermore, the main frame section (from which the door is hung) must be constructed to at least the minimum door frame section size (width and depth) as per the requirements noted in this report – see door frame section. The extension piece must be constructed using the same timber species as the main frame section.</p>

Note:

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

17.5 Fixings

The positioning of installation fixings in height should be planned to avoid conflicts with hardware, sealing systems and other building elements.

- A top fixing must be located within 100mm from the underside of the head
- A bottom fixing must be located 100mm from the bottom of the jamb
- Intermediate fixings must be located at centres of not more than 600mm.

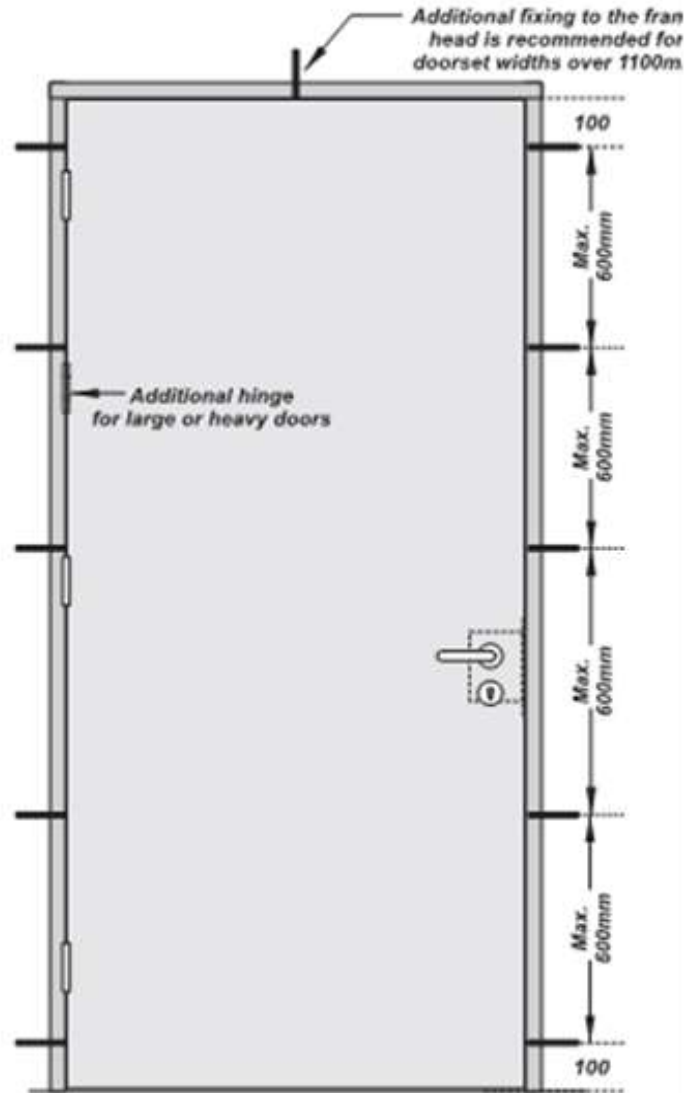
The minimum number of fixings in height must be:

- Doorset height up to 2000mm = 4 fixings
- Doorset height 2000 – 2500mm 2350mm = 5 fixings
- Add 1No. additional fixing for each further 500mm increase in door height.

Notes:

- The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 40mm
- For storey height doorsets a top fixing must be provided within 100mm from the underside of the frame head with a further top fixing positioned 100mm from the underside of the transom rail (or bottom edge of the over panel if a flush overpanel design is used)
- It is not necessary to fix the frame head, although packers must be inserted. However, for doorset widths in excess of 1100mm the use of an additional fixing at centre width of the doorset at the head position is recommended
- MDF frames are more flexible than timber frames. To reduce the risk of frame distortion during fixing it is strongly recommended that the dimension for fixing centres between intermediate fixings is reduced from 600mm to a maximum of 500mm.

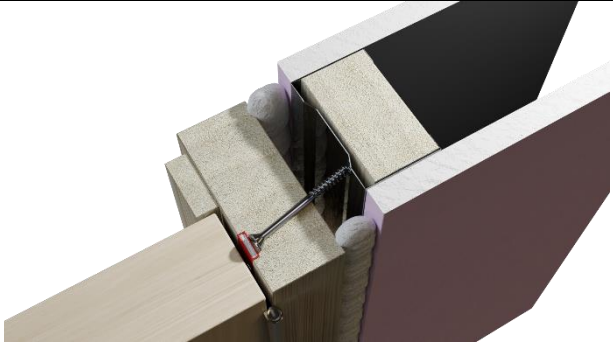
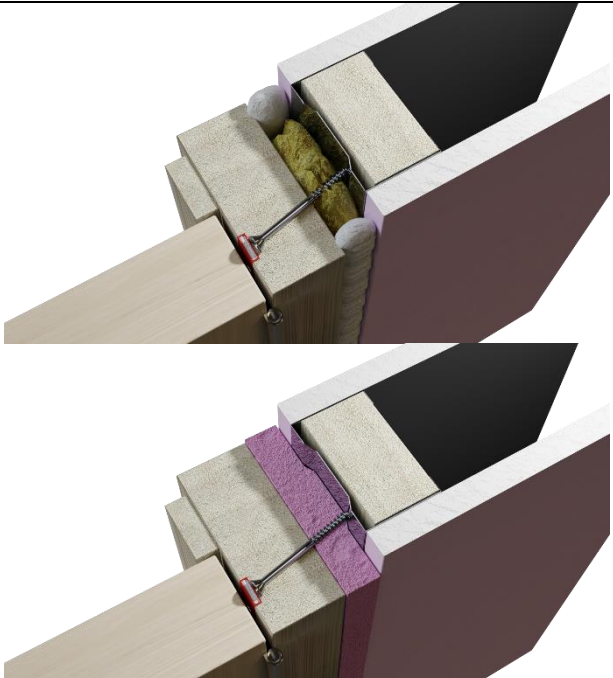
See following diagram for illustration on fixings for a typical timber door frame doorset installation.

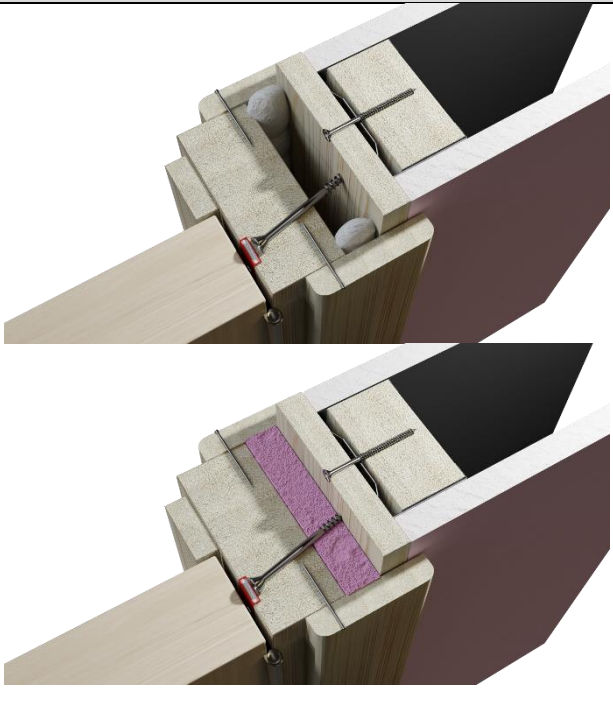


Timber frame fixing locations illustrated.

17.6 Firestopping

The fire-stopping 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	This should not occur as it is practically not possible to apply a fire-stopping material into a gap of this size.	N/A
3 – 10	Gap must be sealed on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476 Part 22:1987 or BS EN 1634-1. Timber architraves of a minimum 15mm thick must be fitted to both faces, fitted with a minimum 15mm overlap to the door gap.	
10 – 20	Gap must be tightly packed with mineral fibre capped on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476 Part 22: 1987 or BS EN 1634-1 or full depth expanding PU foam, fire tested for this application to BS 476 Part 22:1987 or BS EN 1634-1. Timber architraves of a minimum 15mm thick must be fitted to both faces, fitted with a minimum 15mm overlap to the door gap.	

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

17.7 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.

17.8 Wall types, Structural Opening & Fixity

For walls that remain rigid during fire exposure (brickwork or blockwork, for example) the opening should 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.

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

It must therefore be capable of staying in place and intact for a minimum of 30 minutes. For single leaf doorset without sidepanels, the frame jambs only are to be fixed to the supporting construction using steel fixings at 600mm maximum centres and maximum of 150mm from corner. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm. It is not necessary to fix the frame head, although packers must be inserted.

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

In 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.

18 Insulation

Insulation performance may be claimed for Pacific Rim Wood Ltd. Flamebreak 30 doorset designs meeting the following criteria.

Type	Details
Partially insulating	Doorsets incorporating up to 20% of non-insulating glazing
Fully insulating	Unglazed doorsets or doorsets including 30 minute insulating glazing (see section 8.1)

19 Smoke Control Guidance

Fire doorsets required to provide an ambient temperature smoke control function will need to fit smoke seals, or combined intumescent/smoke seals, which have been tested in accordance with one of the following test methods:

- BS 476-31.1: 1983; *Fire tests on building materials and structures, Section 31.1 Method of measurement under ambient temperature conditions*
- BS EN 1634-3: 2004; *Fire resistance tests for door and shutter assemblies —Part 3: Smoke control doors and shutters.*

In order for the doorset to provide the smoke leakage performance demonstrated by the smoke leakage test evidence, the orientation and position of the smoke seals, any interruptions, door edge gaps, and the type and configuration of the doorset must be consistent with the details tested. Additionally, any other components installed where smoke leakage may occur, such as glazing, hardware, or sealing between the frame and structural surround, must also be taken into account.

The tested leakage rate will be expressed in the test reports as the volume of air leakage through the complete specimen, per linear metre of door gap, per hour ($m^3/m/hr$), which is measured at the pressure differences stated in the relevant standard e.g. 10Pa, 25Pa and 50Pa. The test reports will also state the tested threshold arrangement (i.e. taped or fitted with a threshold seal).

The fitting of smoke seals must not compromise the fire resistance performance of the doorset designs assessed within this field of application. Smoke seals that are fitted to fire resisting doorsets must therefore have suitable fire resistance test evidence that demonstrates the performance of the seal in fire test conditions, when tested as part of a complete doorset, to the relevant test standard (e.g. BS 476 Part 22: 1987 or BS EN 1634-1). The configuration and location of the seal in the fire test evidence must align with that tested for smoke leakage.

Smoke seals can compromise the fire resistance performance of door designs by, for example, preventing the door leaf from closing fully within the frame reveal or igniting if the seal is fitted to a door design without insulation performance. It is therefore recommended that fire test evidence is sought that directly supports the use of the smoke seal with the door design assessed herein, or, where cascaded evidence is being relied upon, the smoke seal manufacturer is contacted to verify that the fire test evidence for the seal is applicable to the door design assessed herein.

Note: For doorsets tested to BS EN 1634-3: 2004, the leakage rate is measured at positive and negative pressure differences of 10Pa, 25Pa, and 50Pa. The same 25Pa positive and negative pressure difference is used for the BS 476-31.1:1983 test method. Therefore, if tested to BS 476-31.1:1983, the designs summarised herein would be expected to provide the same leakage rate as the results when they were tested to BS EN 1634-3: 2004, at 25Pa.

20 Conclusion

If the Pacific Rim Wood Ltd. Flamebreak 30 door leaf designs, constructed in accordance with the specifications documented in this global assessment, were to be tested in the appropriate configuration in accordance with BS 476 Part 22:1987, it is our opinion that they would provide a minimum of 30 minutes integrity and insulation, subject to section 18.

21 Declaration by the Applicant

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

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

Signed:



Name:

SHAUN HANNAN

For and on behalf of: Pacific Rim Wood Ltd.

22 Limitations

The following limitations apply to this report.

- 1) This field of application addresses itself solely to the elements and subjects discussed and do not cover any other criteria. 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. 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.

23 Validity

- 1) The field of application is initially valid until 22nd December 2025, after which time it must be submitted to Warringtonfire for technical review and revalidation.
- 2) This field of application report is not valid unless it incorporates the declaration given in Section 21, duly signed by the applicant.

Signature:		
Name:	A M Winning*	S Bailey*
Title:	Senior Product Assessor	Senior Product Assessor

* For and on behalf of Warringtonfire.

Appendix A Performance Data

23.1 Test Report 18-003111-PR04

The referenced test report, the essential details of which are summarised below is presented as primary test data for the Flamebreak 430 design incorporating a Winkhaus AV-2 auto-locking 3-pt lock.

Date of test	23 rd October 2018
Identification of test body	Rosenheim IFT GmbH, Theodor-Gietl-Strasse 7-9, D-83026, Rosenheim. EG reference No: 0757
Sponsor	Pacific Rim Wood Ltd
Tested Product	A latched, single acting, single leaf, timber based doorset.
Summary of test specimen	<p>Leaf dimensions: 2150 (h) x 926 (w) x 44 (t).</p> <p>Core: Leaf comprised of a Flamebreak '430', all edges of the leaf were lipped with 8mm (t) Sapele of nominal density 640kg/m³ fixed to all edges, stiles and bottom rail were removed; head rail remained in place as described in section 4.3. Facings were 4mm thick Plywood.</p> <p>Door frame: European Redwood at 32mm thick, nominal density 510kg/m³ with MDF architrave on both faces.</p> <p>Threshold: Stormguard Slimline protected with ST302 graphite liner.</p> <p>Intumescent Seals: 1No. 15 x 4mm STS 154FO PVC encased intumescent strip was fitted centrally into the frame head and jambs. 1mm thick STS graphite sheet 'ST Graphite' was fitted encasing the hook bolt bodies and behind the striker plates with STS 'ST30 graphite lock kit protecting the centre lock body.</p> <p>Hardware: 4No. Union steel lift off hinges ref: 605, together with a Winkhaus AV-2 auto-locking 3-pt lock with an ERA FAB & Fix zinc handleset and UAP Kinetica cylinder. A surface mounted Eclipse 28730 overhead door closer, was fitted to the exposed face of the leaf.</p> <p>The doorset was oriented to open in towards the furnace.</p> <p>Glass: 'Pyrobelite' IGU comprised of 7mm (t) Pyrobelite/8mm (t) steel spacer/6.8mm (t) laminate glass with Pyrobelite oriented to the fire risk side.</p> <p>Glazing system: STS 105GT either side of the glass protecting hardwood beads 25 (w) x 16mm (h) with a 5 x 5mm bolection return, beads fixed with 50mm long steel pins installed at 50mm from corners and at 150mm centres, aperture lined with ST302 liner.</p>
Test Standard	BS 476 Part 22:1987
Performance	Integrity: 34; Insulation: 29

23.2 Test Report WF403587 Specimen A

The referenced test report, the essential details of which are summarised below, is supporting data for the door design being considered for assessment in this report. This test demonstrates the performance of the Flamebreak 30 design opening away from the heating conditions of the furnace.

Date of test	20 th August 2018
Identification of test body	Warringtonfire Testing UKAS ref: 1762
Sponsor	Sealed Tight Solutions Ltd
Tested Product	Unlatched, single acting, double leaf, timber based doorset.
Summary of test specimen	<p>Leaf dimensions: 2040 (h) x 826 (w) x 44 (t).</p> <p>Core: Leaf comprised of a Flamebreak '430', all edges of the leaf were lipped with 6mm (t) Sapele of nominal density 640kg/m³. Facings were 4mm thick Plywood.</p> <p>Door frame: European Redwood at 30mm thick, nominal density 510kg/m³ with Redwood architraves on both faces.</p> <p>Intumescent Seals: 1No. 15 x 4mm STS 154FO PVC encased intumescent strip was fitted centrally into the frame head and jambs. No other intumescent materials were fitted.</p> <p>Hardware: 3No. Jedo steel bearing butt hinges ref: 102, together with a Herbine lever operated mortice latch with a 235mm high forend, disengaged for the test. A surface mounted Synergy s800 EN2-5 overhead door closer, was fitted to the unexposed face of the leaf.</p> <p>The doorset was oriented to open away from the furnace.</p>
Test Standard	BS 476 Part 22:1987
Performance	Integrity: 47 Insulation: 47

23.3 Test Report WF381914 Specimen B

The referenced test report, the essential details of which are summarised below, is primary data for the door design being considered for assessment in this report when used with Sealed Tight Solutions leaf edge seals. Specimen B in this test supports assessment of the Flamebreak 30 doorset constructions, in latched and unlatched single acting, single and double leaf doorsets.

Date of test	6 th April 2017
Identification of test body	Exova Warringtonfire Fire (now trading as Warringtonfire Testing) UKAS ref: 1762
Sponsor	Sealed Tight Solutions Ltd, Units 1B & 1C Princes Court, Low Prudhoe Industrial Estate, Prudhoe, Northumberland, NE42 6PL
Tested Product	Specimen B comprised an unlatched, single acting, double leaf, timber based doorset.
Summary of test specimen	<p>Leaf dimensions: 2155 (h) x 936/680 (w) x 44 (t). Core: both leaves comprised of Flamebreak 430, all edges of the leaves were lipped with 10mm (t) Sapele of nominal density 640kg/m³. Facings were 4mm thick Plywood with 2 deep x 10 wide grooves running to the leaf edge. Door frame: European Redwood at 32mm thick, nominal density 510kg/m³ with MDF architrave on both faces. Intumescent Seals: 1No. 15 x 4mm STS 154FO PVC encased intumescent strip was fitted centrally into the frame head and jambs, with 2No 10 x 4mm STS 104FO fitted 10mm apart, 5mm either side of the centreline in one meeting edge. 1mm thick STS graphite sheet was fitted under all hinge blades, encasing the latch body, under the latch forend and keep and protecting the flush bolts Hardware: 3No. Eurospec steel bearing butt type hinges per leaf, together with a lever operated mortice latch with a 230mm high forend, disengaged for the test. A surface mounted Arrone AR1500 overhead door closer, was fitted to the exposed face of the leaves with Zoo Hardware ZAS03SS flush bolts in one meeting edge at head and threshold. The doorset was oriented to open in towards the furnace.</p>
Test Standard	BS 476 Part 22:1987
Performance	Specimen B: Integrity: 44; Insulation: 44

23.4 Test report RF98033

The referenced test report, the essential details of which are summarised below, is the primary data for the Flamebreak design utilising Lorient Polyproducts Ltd Type617 seals without lippings installed.

Date of test	14 th April 1998
Identification of test body	Warringtonfire (originally Chiltern international fire)
Sponsor	Pacific Rim Wood Ltd
Summary of test specimen	<p>Dimensions of leaf: 2135mm (H) x 915mm (W) x 45mm (T)</p> <p>Core/Lipping Flamebreak leaf with top and bottom rails fitted ; No lipping fitted</p> <p>Intumescent 1No. Lorient Polyproducts LP2004 (20x4) fitted centrally on meeting edges on right leaf</p> <p>1No. Lorient Polyproducts LP2004 (20x4) fitted centrally to frame reveal head.</p> <p>1No. Lorient Polyproducts LP2004 (20x4) fitted centrally frame reveal vertical edges.</p> <p>Frame/Facings European redwood 70mm (W) x 32mm (T) with 12.5mm Deep x 24mm wide stop &12mm (T) plasterboard Architrave</p> <p>6mm thick Far Eastern Hardwood Plywood facings fixed with melamine based adhesive</p> <p>Hardware 3No. Royde & Tucker H101 lift off type Hinges 100mm x 30mm (blade size)</p> <p>1No. Dorma Door Controls (TS73V) Overhead Door Closer 220mm x 60mm</p> <p>1No. Henderson Hardware 63mm (L) Tubular mortice Latch (Disengaged)</p> <p>Aluminium Lever Handles 102mm (H) x 38mm (W).</p> <p>Hardware protection</p> <p>Glazing Pilkington Pyroshield 6mm thick fitted centrally 150mm from the head of the door leaf, overall sight size (472mm x 472mm) overall aperture size (500mm x 500mm)</p> <p>Beading Sapele beading with a 15° bevel 22mm deep x 13.5mm (H) plus a 5mm (H) bolection return</p> <p>40mm (L) steel pin beading fixings at 150mm centres fixed at nominally 35° to the glass.</p> <p>Expansion allowance 2.5mm on all edges.</p> <p>Doorset orientated to open towards heating conditions</p>
Test Standard	BS 476: Part 22:1987
Performance	Integrity: 36 Minutes Insulation: 36 Minutes

23.5 Test report RF98075

The referenced test report, the essential details of which are summarised below, is the primary data for the Flamebreak design utilising Lorient Polyproducts Ltd Type617 seals with lippings installed on vertical and top edges.

Date of test	21 st August 1998
Identification of test body	Warringtonfire(originally Chiltern International Fire)
Sponsor	Pacific Rim Wood Ltd
Tested Product	2No. Unlatched, single acting, single leaf Doorset A- left leaf Doorset B- right leaf
Summary of test specimen	<p>Dimensions of leaf-Doorset A 2055mm (H) x 865mm (W) x 44mm (T) Doorset B 2135mm (H) x 916mm (W) x 44mm (T)</p> <p>Core/Lipping Doorset A: Flamebreak 430 leaf with top rail fitted; 10mm (T) Sapele Lippings on vertical and bottom edges. Doorset B Flamebreak 430 leaf with top and bottom rails fitted; 10mm (T) Sapele Lippings on vertical and bottom edges.</p> <p>Intumescent Both Doorsets frame head & Jambs fitted with Lorient Polyproducts LP1504 intumescent (15x4) fitted centrally</p> <p>Frame/Facings Both doorsets European Redwood head & jambs 70mm (T) x 32mm (W), European redwood planted stops 12mm (D), plasterboard architrave 12.5mm (T), non-combustible threshold 4mm thick Far Eastern Hardwood Plywood facings fixed with melamine based adhesive</p> <p>Hardware Doorset A 3No. Royde & Tucker H105 lift off type Hinges 100mm x 32mm (blade size) Located 150mm,940mm,1725mm from the head of door leaf 1No. Dorma Door Controls (TS73V) Overhead Door Closer 233mm x 60mm fitted to exposed face as per manufacturer's instructions 1No. Henderson Hardware 63mm (L) Tubular mortice Latch (Disengaged) (60mm x 38mm) fitted 1055mm from the head of the leaf centre of the nib Aluminium Lever Handles 102mm (H) x 38mm (W). fitted 1055mm from the centre of the handle</p> <p>Doorset B 3No. Royde & Tucker H105 lift off type Hinges 100mm x 32mm (blade size) fitted 150mm,975mm, 1805mm from the head of the door leaf. 1No. Dorma Door Controls (TS73V) Overhead Door Closer 233mm x 60mm fitted to exposed face as per manufacturer's instructions 1No. Henderson Hardware 63mm (L) Tubular mortice Latch (Disengaged) (60mm x 38mm) fitted 1135mm from the head of the leaf to centre of the nib Aluminium Lever Handles 102mm (H) x 38mm (W). fitted 1135mm from the head of the leaf to the centre of the handle</p> <p>Hardware Protection Both doorsets 2No. Lorient Polyproducts Ltd LP1504 15mm x 4mm intumescent on frame reveal. Fully interrupted around hinges.</p> <p>Glazing None</p>

	Doorset orientated to open towards heating conditions	
Test Standard	BS 476 Part 22:1987	
Performance	Integrity Doorset A: 31 Minutes Insulation Doorset A: 31 Minutes	Integrity Doorset B: 33 Minutes Insulation Doorset B: 33 minutes

23.6 Test report RF00044

The referenced test report, the essential details of which are summarised below, is the primary data for the Flamebreak design with stiles and rails but without lippings.

Date of test	8 th May 2000
Identification of test body	Warringtonfire
Sponsor	Pacific Rim Wood Ltd
Summary of test specimen	<p>Dimensions of leaf: 2080mm(H) x 915mm x44mm (T)</p> <p>Core/ Lipping Flamebreak 430 leaf with top and bottom rails, and stiles fitted; no lippings installed.</p> <p>Intumescent 2No.Lorient Polyproducts LP1504 intumescent strip on head & jambs fitted centrally in rebate of frame</p> <p>Frame/Facings 70mm (W) x 32mm (T) European redwood frame, weight nominal density 510kg/m³ with 12mm deep pinned stop, 15mm European redwood architrave.</p> <p>Hardware 3No. Royde &Tucker HI Load lift off hinges 100mm x35mm (blade size) fitted 150,1040 and 1820mm from the head of the leaf.</p> <p>1No. Dorma Door Controls TS73 Overhead Closer 233mm x 60mm footprint, fitted to exposed face as per manufacturer's instructions.</p> <p>Henderson hardware 63mm tubular mortise latch 57mm x 26mm forend size, fitted 1080mm from the head of the leaf to the centre of the nib (disengaged during test)</p> <p>Aluminium lever handle, (100mm x 38mm) fitted 1080 mm from the head of leaf.</p> <p>Hardware Protection hinge blade fully interrupts intumescent seal.</p> <p>Doorset orientated to open towards heating conditions</p>
Test Standard	BS 476 Part 22:1987
Performance	Integrity: 31 minutes Insulation: 31 minutes

23.7 Test report RF00046

The referenced test report, the essential details of which are summarised below, is the primary data for the Flamebreak design without stiles and with lippings on vertical edges only.

Date of test	12 th May 2000
Identification of test body	Warringtonfire(Originally Chiltern International Fire)
Sponsor	Pacific Rim Wood Ltd
Summary of test specimen	<p>Dimensions of leaf: 2135mm (H) x 835mm (W) x 44mm (T)</p> <p>Core/ Lipping Flamebreak leaf with top and rails fitted; no stiles fitted; 10mm (T) Sapele Lippings vertical edges only.</p> <p>Intumescent 3No. Lorient Polyproducts LP2004 (20mm x 4mm) intumescent strip</p> <p>Frame/Facings 70mm (W) x 32mm (T) European redwood frame, weight nominal density 510kg/m³ with 12mm deep pinned stop, 15mm European redwood architrave, 9mm (T) MDF facings fixed with melamine</p> <p>Hardware 3No. Royde &Tucker HI Load lift off hinges 100mm x35mm (blade size) fitted 150,990 and 1835mm from the head of the door</p> <p>1No. Dorma Door Controls TS73 Overhead Closer 233mm x60mm footprint, fitted to exposed face as per manufacturer’s instructions.</p> <p>Henderson hardware 63mm tubular mortise latch 57mm x 26mm forend size, fitted 1140mm from the head of the leaf to the centre of the nib</p> <p>Aluminium lever handle, (100mm x 35mm) fitted 1100mm from the head of leaf.</p> <p>Frame fixings Both doorsets European Redwood head & jambs 72mm (W) x 32mm (T), European redwood planted stops 12mm (D), European redwood architrave 15mm (T), non-combustible threshold</p> <p>Glazing Pilkington Pyroshield 6mm (T) Glazing, located 150mm from the leaf head and 150mm from the hanging edge. Sight Size (570mm x 570mm), Overall aperture Size (600mm x 600mm), expansion allowance 2mm on all edges.</p> <p>Beading Sapele, MC 11%,with a 15mm chamfer (15mm (H) x 21mm (D) + a 5mm (D) bolection return, located around perimeter of glass on both faces.</p> <p>Beading fixing 40mm long steel pins located at 150mm centres at 45° to the face the glass.</p> <p>Doorset orientated to open towards heating conditions</p>
Test Standard	BS 476 Part 22:1987
Performance	Integrity: 32 minutes

23.8 Test report RF00098

The referenced test report, the essential details of which are summarised below, is the primary data the Flamebreak design with stiles and top rail and without lippings.

Date of test	31 st May 2000	
Identification of test body	Warringtonfire (Originally Chiltern International Fire)	
Sponsor	Pacific Rim Wood Ltd	
Tested Product	Doorset A - Left leaf Doorset B- Right Leaf	
Summary of test specimen	<p>Dimensions of leaf: Doorset A- 2080mm (H) x 916mm (W) x 44 mm (T), Doorset B -2080mm (H) x 860mm (W) x 44mm (T)</p> <p>Core/ Lipping Doorset A- Flamebreak leaf, no Lippings fitted Doorset B Flamebreak leaf, 8mm (T) Sapele Lippings on vertical edges only fixed with Cascamite</p> <p>Intumescent Doorset A- 2No. Lorient Polyproducts LP1504 intumescent seal (15x4) fitted centrally in frame reveal. Doorset B- 2No. Lorient Polyproducts LP204 intumescent seal (20x4) fitted centrally in the frame reveal.</p> <p>Frame/Facings 70mm (T) x 32mm (W) European redwood Head & jambs, weight nominal density 510kg/m³ with 13mm deep planted stop, 19mm (T) Softwood architrave, 6mm (T) MDF facings fixed with melamine adhesive.</p> <p>Hardware Both Doorsets- 3No. Royde &Tucker HI Load lift off hinges 100mm x30mm (blade size) fitted 150, 965 and 1880mm from the head of the door 1No. Dorma Door Controls TS73 Overhead Closer 233mm x60mm footprint, fitted to exposed face as per manufacturer's instructions. Henderson hardware 63mm tubular mortise latch 57mm x 26mm forend size, fitted 1080mm from the head of the leaf to the centre of the nib Aluminium lever handle, (100mm x 35mm) fitted 1045mm from the head of leaf</p> <p>Hardware Protection Both Doorsets- intumescent seal fully interrupted by hinge blade</p> <p>Glazing None</p> <p>Doorset orientated to open towards heating conditions</p>	
Test Standard	BS 476 Part 22:1987	
Performance	Integrity A: 32 minutes Insulation A: 32 minutes	Integrity B: 33 minutes Insulation B: 33 minutes

23.9 Test report RF00166

The referenced test report, the essential details of which are summarised below, is the primary data for the Flamebreak design comparing similar specimens lipping and unlipped.

Date of test	8 th January 2001
Identification of test body	Warringtonfire(Originally Chiltern International Fire)
Sponsor	Pacific Rim Wood Ltd
Tested Product	Doorset A - Left leaf Doorset B- Right Leaf
Summary of test specimen	<p>Dimensions of leaf: Doorset A- 2440mm(H) x 1220mm (W) x 44mm (T) Doorset B- 2390mm (H) x 1154mm (W) x 44mm (T)</p> <p>Core/ Lipping Doorset A- Flamebreak 430. No Lippings fitted Doorset B- Flamebreak 430, Sapele Lippings on all edges fixed with Cascamite.</p> <p>Intumescent Doorset A- 1No. Lorient Polyproducts LP2504 (25x4) mm fitted centrally into the frame reveal. Doorset B- 1No. Lorient Polyproducts LP2504 (25x4) mm fitted centrally into the frame reveal.</p> <p>Frame/Facings Doorset A&B: Head and jambs: Sapele 70mm (W) x 32mm (T) Stops: Sapele- Planted (Pinned) 12.5mm (D) Architrave- Sapele 55mm (W) x 18mm (T) Threshold- non-combustible.</p> <p>Hardware Doorset A- 4No. Royde & Tucker H101 Lift-off type Hinges (100mm x 35mm) blade size fitted 150,822, 1445, and 2116mm from the head of the leaf. 1No. Dorma Door Controls TS83V Overhead Closer.(293x60) fitted to the exposed face of the leaf as per manufacturer's Instructions Henderson hardware 63mm Tubular Mortise latch Disengaged during test (57x26) forend size fitted 1440mm from the head of the leaf to the centre of the nib. Aluminium Lever Handles (100mm x 38mm) face plate fitted 1440 from the head of the leaf to the centre of the spindle.</p> <p>Doorset B- 4No. Royde & Tucker H101 Lift-off type Hinges (100mm x 35mm) blade size fitted 150,845, 1443, and 2098mm from the head of the leaf. 1No. Dorma Door Controls TS83V Overhead Closer.(293x60) fitted to the exposed face of the leaf as per manufacturer's Instructions Henderson hardware 63mm Tubular Mortise latch Disengaged during test (57x26) forend size fitted 1390mm from the head of the leaf to the centre of the nib. Aluminium Lever Handles (100mm x 38mm) face plate fitted 1390 from the head of the leaf to the centre of the spindle.</p> <p>Hardware Protection Doorset A- Intumescent seal partially interrupted around Hinges with 2mm running continuous past hinge Doorset B- Intumescent seal fully interrupted around hinges.</p> <p>Doorset orientated both leaves are to open towards heating conditions.</p>

Test Standard	BS 476 Part 22:1987	
Performance	Integrity A: 37 minutes Insulation A: 37 minutes	Integrity B: 41 minutes Insulation B: 41 minutes

23.10 Test report RF04011

The referenced test report, the essential details of which are summarised below, is supporting data for Flamebreak design utilising graphite seals with lippings on all edges.

Date of test	21 st January 2004
Identification of test body	Warringtonfire(Originally Chiltern International Fire)
Sponsor	Benson Ltd
Summary of test specimen	<p>Dimensions of leaf: 1976mm (H) x 758mm (W) x 44mm (T)</p> <p>Core/ Lipping Pacific Rim Wood Ltd. Flamebreak leaf, lippings on all edges.</p> <p>Intumescent PVC encased graphite product reference unknown or identified by sponsor on head of frame reveal (20x4) mm fitted centrally within the frame reveal.</p> <p>PVC encased graphite product reference unknown or identified by sponsor on head of frame reveal (10x4)mm</p> <p>Frame/Facings Head & Jambs- European Redwood 38mm (T) x 114mm (W)</p> <p>Stops- European Redwood 38mm (T) x 114mm (W)</p> <p>Architrave- 16mm (T)</p> <p>Threshold- Non-Combustible</p> <p>Hardware 3No. Stainless steel bearing butt Hinge product reference unknown or identified by sponsor 101mm (H) x 32mm (W) blade size, fitted 150, 902 and 1652mm from the head of the leaf.</p> <p>1No. Dorma door controls TS73V overhead closer.</p> <p>1No. Nemeff latch engaged during test 235mm x 20mm wide forend size, fitted 1090 from the head of the leaf to the centre nib.</p> <p>1No. eclipse stainless steel lever type with rose 45° fitted appropriate to the latch.</p> <p>Hardware Protection Intumescent seal fully interrupted by hinge blade.</p> <p>Doorset orientated to open towards heating conditions.</p>
Test Standard	BS 476 Part 22:1987
Performance	Integrity: 31 minutes Insulation:31 minutes

23.11 Test report RF05041

The referenced test report, the essential details of which are summarised below, is presented as supporting data with specimen having stiles removed & lipped on vertical edges only with rebated meeting edges.

Date of test	16 th August 2005
Identification of test body	Warringtonfire (originally Chiltern international fire)
Sponsor	Pacific Rim Wood Ltd
Summary of test specimen	<p>Dimensions of leaf: 2041mm (H) x 825mm (W) x 44mm (T)</p> <p>Core/Lipping: Flamebreak 430 leaf with top rail and stile on lock edge only; 10mm (T) Sapele Lippings on vertical and bottom edges.</p> <p>Intumescent Lorient Polyproducts Intumescent LP1004 10mm X 4mm fitted centrally in the rebate of each leaf. Lorient Polyproducts Intumescent LP2004 20mm x 4mm fitted centrally in the frame reveal.</p> <p>Frame/Facings European Redwood 70mm (W) x 32mm (T) Head & Jambs, European redwood 20mm (W) x 12mm (D) planted stops, Rock fibre fire stopping, European redwood 18mm (T) architrave, non-combustible threshold 4mm (T) plywood Facings.</p> <p>Hardware 3No. Royde & Tucker HI Load lift off hinges 100mm x30mm (blade size) fitted 150, 955 and 1760mm from the head of the door 1No. Dorma Door Controls TS73 Overhead Closer 233mm x60mm footprint, fitted to exposed face as per manufacturer's instructions. E*S 63mm tubular mortise latch 57mm x 26mm forend size, fitted 1040mm from the head of the leaf- disengaged. Aluminium lever handle, (100mm x 35mm) fitted appropriate to the latch.</p> <p>Hardware Protection Intumescent seal fully interrupted around Hinges Dufaylite Interdens 1mm (T) fitted under each hinge blade on both the leaf and the frame. Dufaylite Interdens fitted under the latch forend and under latch keep.</p> <p>Frame fixings 3No. 80mm (L) Steel wood screws per Jamb. Doorset orientated to open towards heating conditions</p>
Test Standard	BS 476 Part 22:1987
Performance	Integrity: 39 Minutes Insulation: 39 Minutes

23.12 Test report R08100

The referenced test report, the essential details of which are summarised below, is presented as supporting data with specimen utilising P.U glueline for lipping, large glazed apertures – ply and MDF faces.

Date of test	23 rd July 2008
Identification of test body	Warringtonfire (originally Chiltern international fire)
Sponsor	Pacific Rim Wood Ltd
Tested Product	Doorset A – Left specimen ULSADD Doorset B – Right specimen ULSASD
Summary of test specimen	<p>Dimensions of leaf: Doorset A – 2100mm (H) x 900/350mm (W) x 44mm (T) Doorset B- 2100mm (H) x 900mm (W) x 44mm (T)</p> <p>Core/ Lipping Pacific Rim Wood Ltd Flamebreak FF630 (MDF faces). Sapele Lippings 8mm (T) on all edges. Doorset B Pacific Rim Wood Ltd Flamebreak 430 (Plywood faces), Sapele Lippings 8mm (T) on all edges.</p> <p>Intumescent Doorset A- Lorient Polyproducts LP2004 Type 617 intumescent 20mm x 4mm fitted centrally in the meeting edge of left leaf Lorient Polyproducts LP2004 Type 617 intumescent 20mm x 4mm fitted centrally in the frame reveal Doorset B Lorient Polyproducts LP1504 Type 617 15mm x 4mm intumescent fitted centrally in the frame reveal.</p> <p>Frame/Facings European Redwood 70mm (D) x 32mm (T) Head & Jambs, European redwood 12mm (D) x 14mm (W) planted stops, Mann McGowan Fabrications Ltd Pyromas intumescent acrylic mastic, European redwood 18mm (T) architrave, non-combustible threshold.</p> <p>Hardware Both Doorsets Royde & Tucker HI Load lift off hinges 100mm x30mm (blade size) fitted 150, 1000 and 1820mm from the head of the door 1No. Dorma Door Controls TS73 Overhead Closer 233mm x60mm footprint, fitted to exposed face as per manufacturer’s instructions. E*S 63mm tubular mortise latch 57mm x 26mm forend size, fitted 1040mm from the head of the leaf Aluminium lever handle, (100mm x 35mm) fitted appropriate to the latch. - disengaged.</p> <p>Hardware Protection Doorset A- intumescent fully interrupted around hinges. Lorient Polyproducts MAP paper 1mm (T) fitted under the Hinge blade. Lorient Polyproducts MAP paper 1mm (T) fitted Around the Body of the latch. Lorient Polyproducts MAP paper 1mm (T) fitted under the latch Forend Lorient Polyproducts MAP paper 1mm (T) fitted under the Latch Keep</p>

	Doorset B- Lorient Polyproducts MAP paper 1mm (T) fitted under Hinge Blade. Lorient Polyproducts MAP paper 1mm (T) fitted around the Body of the latch. Lorient Polyproducts MAP paper 1mm (T) fitted under Latch forend Lorient Polyproducts MAP paper 1mm (T) fitted under Latch Keep. Intumescent fully interrupted by Hinge blade on frame and Jamb Frame fixings- 3No. steel Woodscrews per Jamb 80mm (L). Glazing- Pilkington Pyroshield 7mm (T) glass 1040mm (H) x 700mm (W) overall Aperture size Beading Sapele 20mm (H) x 22mm deep including a 5x5mm bolection return and 20° chamfer Doorset orientated to open towards heating conditions	
Test Standard	BS 476 Part 22:1987	
Performance	Integrity: 39 Minutes Insulation: 39 Minutes	Integrity: 51 Minutes Insulation: 0 minutes

23.13 Test report RF08116

The referenced test report, the essential details of which are summarised below, is the supporting data with specimen utilising 10 x 4 Pyroplex seals with ply and MDF faces.

Date of test	1 st September 2008	
Identification of test body	Warringtonfire(Originally Chiltern international Fire)	
Sponsor	Pyroplex Limited	
Summary of test specimen	<p>Core/ Lipping Doorset A- Pacific Rim Wood Ltd Flamebreak FF630 (MDF faces), 8mm (T) Sapele Lippings on vertical edges only. Doorset B- Pacific Rim Wood Ltd F Flamebreak 430 (plywood faces). Sapele Lippings on vertical edges only.</p> <p>Both Doorsets: Intumescent- Pyroplex 8500 Rigid box seal 10mm x 4mm fitted centrally in the frame reveal</p> <p>Hardware: 3No. Royde and Tucker Hi Load 101 lift off type hinge 100mm x 35mm Fitted 150mm, 950mm and 1760mm from the head of the leaf. 1No. Dorma UK Ltd TS71 overhead type closer 233mm x 60mm footprint size Fitted on the exposed face as per the manufacturer's instructions 1No.Euro Star steel tubular mortise latch 57mm x 26mm Fitted 1045mm from the head of the leaf 1No.Aluminium lever type handle 100mm x 38mm (footprint size) Fitted appropriate to the latch</p> <p>Hardware Protection Around hinges- Hinge blade fully interrupts seal on frame jamb. Around latch keep- Latch keep fully interrupts seal on frame jamb.</p> <p>Frame fixings 3No. steel woodscrews per jamb 100mm (L) Doorsets orientated to open towards heating conditions</p>	
Test Standard	BS 476 Part 22:1987	
Performance	Specimen A	Specimen B
	Integrity: 45 Minutes Insulation: 45 Minutes	Integrity: 35 Minutes Insulation: 35 Minutes

23.14 Test report RF08118

The referenced test report, the essential details of which are summarised below, is the primary data for the Flamebreak design - specimen comprised ply face leaves with flush overpanel and rebated head junction using Pyroplex seals.

Date of test	3 rd September 2008
Identification of test body	Warringtonfire (originally Chiltern international fire)
Sponsor	Pyroplex Limited
Summary of test specimen	<p>Dimensions of leaf: 2400mm (H) x 1000mm (W) x 44mm (T)</p> <p>Core/ Lipping Pacific Rim Wood Ltd Flamebreak 430 with rebated Sapele lippings on head of leaf only.</p> <p>Overpanel Pacific Rim Wood Ltd Flamebreak 430 with rebated Sapele lippings on bottom edge only.</p> <p>Intumescent Pyroplex Rigid Box 8500 10mm x 4mm fitted centrally in the rebate of the leaf.</p> <p>2No. Pyroplex Rigid Box 8500 10mm x 4mm fitted centrally 10mm apart in the meeting edge of the right leaf only.</p> <p>2No. Pyroplex Rigid Box 8500 10mm x 4mm fitted centrally 10mm apart in the frame reveal.</p> <p>No. Pyroplex Rigid Box 8500 10mm x 4mm fitted centrally in the rebate of the Overpanel.</p> <p>Frame/Facings Head and jambs European redwood 32mm (T) x 70mm Deep, Nominal weight density 510kg/m³,</p> <p>Hardware 3No. Royde and tucker Hi- Load 101 lift of type hinge 100mm x35mm blade size fitted 150mm, 1135mm and 2120mm from the head</p> <p>1No Dorma Door Controls ltd TS71 overhead type closer 233mm x 60mm footprint size fitted to the exposed face as per manufactures instructions</p> <p>1No. Eurospec tubular steel mortise latch 57xmm 26mm fitted 1400mm from the head of the leaf</p> <p>1No. Aluminium lever type handle 100mm x 38mm footprint size</p> <p>Hardware Protection Around hinges, hinge blade fully interrupts first seal and partially interrupts second seal with 3mm left continuous.</p> <p>Frame fixings 4No. steel woodscrews per jamb</p> <p>Doorset orientated to open towards heating conditions</p>
Test Standard	BS 476 Part 22:1987
Performance	Integrity: 41 minutes Insulation: 41 minutes

23.15 Test report RF10149

The referenced test report, the essential details of which are summarised below, is the supporting data for ply faced Flamebreak doorsets with light weight core material.

Date of test	6 th October 2010
Identification of test body	Warringtonfire (Originally Chiltern international fire)
Sponsor	Pacific Rim Wood Ltd
Tested Product	Doorset A –left leaf; Doorset B- Right leaf
Summary of test specimen	<p>Dimensions leaf: left leaf 2130mm(H) x 900mm(W) x 44mm(T) Right leaf 2130m (H) 896mm (W) x 44mm (T)</p> <p>Core/ Lipping Both leaves Pacific Rim Wood Ltd Flamebreak 430 leaf, 8mm Sapele lipping on vertical edges, 20mm (T) Sapele lipping on head with a 14mm deep rebate.</p> <p>Overpanel Pacific Rim Wood Ltd Flamebreak 430 - 400mm (H) x 1800mm (W) x 44mm (T), 20mm (T) Sapele Lipping on bottom edge only with 14mm deep rebate</p> <p>Intumescent 2No. Pyroplex 8500(FO) Rigid Box seals 10mm x 4mm fitted 10m apart 7mm from the exposed face. Pyroplex 8500 (FO) Rigid Box seal 10mm x 4mm fitted centrally in the rebate of the lipping 2No. Pyroplex 8500 (FO) Rigid box seal 10mm x 4mm fitted 10mm apart, 8mm from the exposed face 1No. Pyroplex 8500 (FO) Rigid box seal on Overpanel fitted in the rebate of the lipping.</p> <p>Hardware 3No. Royde and tucker Hi- Load 101 lift of type hinge 100mm x35mm blade size fitted 150mm, 1000mm and 1850mm from the head 1No Dorma Door Controls ltd TS71 overhead type closer 232mm x 58mm footprint size fitted to the exposed face as per manufactures instructions 1No. Eurospec tubular steel mortise latch 57xmm 26mm fitted 1115mm from the head of the leaf 1No. Aluminium lever type handle 100mm x 38mm footprint size.</p> <p>Hardware Protection Around Hinges, hinge blade fully interrupts 1st seal and partially interrupts 2nd with 6mm remaining continuous. Around latch forend, latch forend fully interrupts both seals in edge of right leaf.</p> <p>Glazing left leaf only-Pilkington Pyroshield 2 6mm (T) fitted 135mm from the leaf head, 170mm from the closing edge. Sight size 620mm (H) x 515mm (W) Overall aperture size 650mm (H) x 545mm (W) Expansion allowance 2-3mm all round</p> <p>Beading Sapele 20mm (H) x 22mm (Deep) including a 5mm x 5mm bolection return and a 20° chamfer</p> <p>Doorset orientated to open towards heating conditions</p>
Test Standard	BS 476 Part 22:1987
Performance	Integrity: 33 minutes Insulation: 33 minutes

23.16 Test report RF11026

The referenced test report, the essential details of which are summarised below, is the primary data for the Flamebreak design - specimen comprised ply face leaves with no perimeter stiles or rails.

Date of test	25 th January 2011
Identification of test body	Warringtonfire (Originally Chiltern international fire)
Sponsor	Pacific Rim Wood Ltd
Summary of test specimen	<p>Dimensions of leaf: 2761mm (H) x 1236mm (W) x 44mm (T)</p> <p>Core/ Lipping Pacific Rim Wood Ltd Flamebreak 430 Doorblank, Sapele Lippings on all edges.</p> <p>Intumescent Lorient Polyproducts Ltd LP2504 type 617 25m x 4mm fitted 10mm from the exposed face.</p> <p>Hardware 4No. Royde and tucker Hi- Load 101 lift of type hinge 100mm x 35mm blade size fitted 150mm, 927mm, 1706mm and 2482mm from the head</p> <p>1No Dorma Door Controls ltd TS83V overhead type closer 293mm x 60 mm footprint size fitted to the exposed face as per manufactures instructions</p> <p>1No. standard tubular steel mortise latch 57xmm 26mm fitted 1761mm from the head of the leaf</p> <p>1No. Aluminium lever type handle 100mm x 38mm footprint size.</p> <p>Hardware Protection Around hinges, hinge blade fully interrupts the seal in the frame reveal.</p> <p>Under hinge blade, Dufaylite Interdens 1mm (T) fitted under the hinge blade on frame and leaf.</p> <p>Around latch keep, latch keep fully interrupts seal in the frame reveal</p> <p>Doorset orientated To open towards heating conditions.</p>
Test Standard	BS 476 Part 22:1987
Performance	<p>Integrity: 39 minutes</p> <p>Insulation: 39 minutes</p>

23.17 Test report RF10128

The referenced test report, the essential details of which are summarised below, is supporting data for Flamebreak doorsets incorporating the Norsound NOR810S threshold dropseal.

Date of test	7 th October 2010
Identification of test body	Warringtonfire (Originally Chiltern international Fire)
Sponsor	Norseal Ltd
Summary of test specimen	<p>Dimensions of leaf: Doorset A ULSASD - 2100mm (H) x 1000mm (W) x 44mm (T) Doorset B ULSADD - 2696mm (H) x 445/950mm (W) x 54mm (T)</p> <p>Core/ Lipping Doorset A graduated density particleboard 38mm (T), nominal weight density 630kg/m³, 6mm (T) Sapele Lippings on all edges. Doorset B graduated density Particleboard 44mm (T), Nominal weight density 630kg/m³, 6mm (T) Sapele Lippings on all edges.</p> <p>Intumescent Doorset A, Norseal Ltd NOR810S drop down seal 13mm (W) x 20mm (H) fitted centrally in the bottom edge of the leaf. Pyroplex Rigid box seal 8700 (FO) 15mm x 4mm fitted centrally in the frame head and jamb reveals Norseal Ltd 710 single flipper perimeter seal 11mm x 10mm fitted in the frame reveal butted up to the stop</p> <p>Doorset B: 2No Lorient Polyproducts Ltd LP1504 type 617 15mm x 4mm fitted 7mm and 32mm from the exposed face (Closing edge of right leaf only) 2No Lorient Polyproducts Ltd LP1504 type 617 15mm x 4mm fitted 7mm and 32mm from exposed face in frame reveals</p> <p>Hardware Doorset A 3No. Royde and tucker H102 bearing butt hinge 100mm x 35mm blade size fitted 150mm, 993mm and 1835mm from the head 1No Dorma Door Controls ltd TS83V overhead type closer 293mm x 60 mm footprint size fitted to the exposed face as per manufactures instructions 1No. Ingersol Rand Sashlock and Euro profile cylinder 235mm x 20mm forend size fitted 950mm from the threshold of the leaf 1No. Aluminium lever type handle 100mm x 38mm footprint size.</p> <p>Doorset B 4No. Royde and tucker H102 bearing butt hinge hinges 100mm x 35mm blade size fitted 150mm, 872mm, 1594mm and 2396mm from the head of leaf 1No Dorma Door Controls ltd TS83 overhead type closer 293mm x 60 mm footprint size fitted to the exposed face as per manufactures instructions 1No. Ingersol Rand Sashlock and Euro profile cylinder 235mm x 20mm forend size fitted 950mm from the threshold of the leaf</p>

	<p>1No. stainless steel lever type handle 52mm (rose size) 1No. Allart stainless steel flush bolt 900mm x 19mm fitted at the top of the left leaf edge 1No. Allart stainless steel flush bolt 203mm x 19mm fitted at the bottom of the left leaf edge Hardware Protection Doorset A Around hinges, hinge blade fully interrupts seal in frame reveal Under hinge blade, 1mm (T) Interdens fitted under the hinge blade on frame and leaf Under latch forend, Norseal 2.0-100 x 30 R/SA graphite type 2mm (T) fitted under the latch forend Around latch keep, latch keep fully interrupts seal in frame reveal. Under latch keep, Norseal 2.0-100x30 R/SA graphite type 2mm (T) fitted under the latch keep Doorset B Around hinges, hinge blade fully interrupts 1st seal and partially interrupts 2nd seal with 10mm remaining continuous. Under hinge blade 1mm (T) Interdens fitted under the hinge blade on frame and leaf. Around latch forend, latch forend partially interrupts both seals with 10mm of each remaining continuous. Under latch forend, Norseal 2.0 -100x30R/SA graphite type 2mm (T) fitted under the latch forend Under latch keep Norseal 2.0 -100x30R/SA graphite type 2mm (T) fitted under the latch keep Under flush bolts Norseal 2.0 -100x30R/SA graphite type 2mm (T) fitted under the flush bolts Glazing Doorset A only CGI International Ltd Pyroguard 7.2mm (T) fitted 420mm from the leaf head, 195mm from the closing edge Sight size 1145mm (H) x 150mm (W) Overall aperture size 1200mm (H) x 200mm (W) Expansion allowance 2-3mm all round Beading Sapele 31mm (H) x19.5mm (Deep) including a 4.5mm x 7mm bolection return and 19° chamfer Beading fixings 60mm (L) steel pins fitted 50mm from corners at 150mm centres and at 30° to the face of the glass Doorset orientated To open towards heating conditions</p>	
Test Standard	BS 476 Part 22:1987	
Performance	Integrity Doorset A: 44 minutes Insulation:44 minutes	Integrity Doorset B: 65 minutes Insulation: 65 minutes

23.18 Test report Warres 316266

The referenced test report, the essential details of which are summarised below, is the supporting data for doorsets installed in softwood framed glazed screen, both incorporating the Lorient Polyproducts Ltd System 36 Plus glazing system.

Date of test	6 th March 2012
Identification of test body	Warringtonfire (Originally Chiltern international Fire)
Sponsor	Lorient Polyproducts
Summary of test specimen	<p>Overall dimensions of specimen: 1490mm (H) x 1490mm (W)</p> <p>Door Leaf: 1394mm (h) x 671.5mm (w) comprised a core of particleboard 44mm (T), installed with 3mm nominal gaps to frame</p> <p>Intumescent Lorient Polyproducts Limited LP1504DS intumescent seal to door frame fitted into a groove in the door frame head and jambs</p> <p>Frame/Facings Softwood frame, density 500-550kg/m³, 45mm x 95mm overall size,</p> <p>Hardware 2No. Royde and Tucker H207 Butt Hinges</p> <p>Hardware Protection None</p> <p>Frame fixings frame fixed to aperture with Steel woodscrews and plastic plugs with calcium silicate board packers</p> <p>Glazing:</p> <p>Glass in screen C3S Securiglass, Pyroacet, 6mm (T) Glass size- 663mm x1386mm, Aperture size 677mm x 1400mm</p> <p>Glass in door, Pilkington UK Ltd, Pyro-Tuf 6mm (T), Glass size 460mm x 1182mm, Aperture size 474mm x 1196mm.</p> <p>Glazing beading Glazing beads to screen Lorient Polyproducts Limited Sapele hardwood 600 kg/m³, fixed with 40 mm long steel pins at 200 mm centres</p> <p>Glazing beads to door Lorient Polyproducts Limited Sapele hardwood 600 kg/m³, fixed with 40 mm long steel pins at 200 mm centres</p> <p>Glazing system to screen and door Lorient Polyproducts Limited System 36/6 Plus, 2 No. hardwood blocks, 4 mm x 10 mm x 10 mm to bottom edge only</p> <p>Doorset orientated to open towards heating conditions</p>
Test Standard	BS 476: Part 20: 1987
Performance	Integrity: 33 minutes at glazing in door leaf

Supplementary Data

Report No.	Configuration	Leaf Size (mm)	Test Standard	Performance (mins)
RF09105 (A: 20x4mm & B: 15x4mm Pyroplex)	A: ULSASD	2145 x 927 x 44	BS EN 1634-1	35
	B: ULSASD	2145 x 927 x 44		
A07051 Rev. B (Lorient Type 617 seals)	Various	Various	BS 476: Part 22: 1987	30 & 60
WF137714 (Pyroplex glazing system)	Indicative	990 x 900 x 44	BS 476: Part 20: 1987	41
WF139878 (Pyroplex glazing system)	Indicative	990 x 990 x 44	BS 476: Part 20: 1987	29 (failure attributed to glass not glazing system)
A11129 Rev. A (CS Group acrovyn & door edge protectors)	Various	Various	BS 476: Part 22: 1987	30
IF12011 (Norsound Vision 30)	Indicative	1052 x 1020 x 44	BS 476: Part 20/22: 1987	39
IF13061 (Norsound Universal 30)	Indicative	1052 x 900 x 64	BS 476: Part 20/22: 1987	96
A12161 (Norsound Vision fanlights & side screens)	Various	Various	BS 476: Part 22: 1987	30 & 60
IF13014 (Norsound NOR910 & NOR920)	Indicative	A: 1268 x 279 x 44	BS 476: Part 20/22: 1987	A: 48
		B: 1262 x 279 x 54		B: 74
A08001 Rev. C (Yeoman Shield/Lorient PVCu edge protectors)	Various	Various	BS 476: Part 22: 1987	30 & 60
RF10070 (Pyroguard EW30)	LSASD + Glazed screen	2040 x 915 x 44 Screen: 2950 x 2950	BS EN 1634-1 & BS EN 1363-1	33
RF10163 (Pyroguard EW30 MAXI)	ULSASD + Glazed screen	2040 x 926 x 44 Screen: 2950 x 2950	BS EN 1634-1 & BS EN 1363-1	37
RF00138 (Pyrodur 30-104)	ULSADD + Glazed screen	2147 x 850/850 x 44	BS EN 1634-1 & BS EN 1363-1	32
RF05036 (Pyrodur 60-10)	ULSASD + Glazed screen	2133 x 1037 x 54 Screen: 3000 x 3000	BS EN 1634-1 & BS EN 1363-1	64
RF05037 (Pyrostop 30-10)	ULSASD + Glazed screen	2130 x 1035 x 44 Screen: 3000 x 3000	BS EN 1634-1 & BS EN 1363-1	43
CF5140 (Pyroclear 30-001)	Certifire Certificate	Various	BS 476 Part/22: 1987	30
Chilt/A12005 Revision C (Safehinge ALUmax)	Various	Various	BS 476 Part 22: 1987	30 & 60
WF393276 B (Winkhaus Trulock)	ULSASD Fan and sidelight	2147 x 1001 x 44 Screen: 3000 x 3000	BS476 Part22: 1987	37

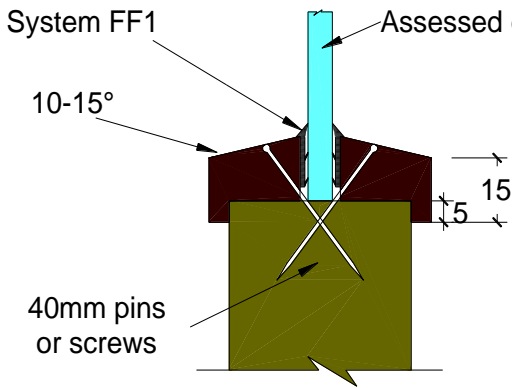
Appendix B

Revisions

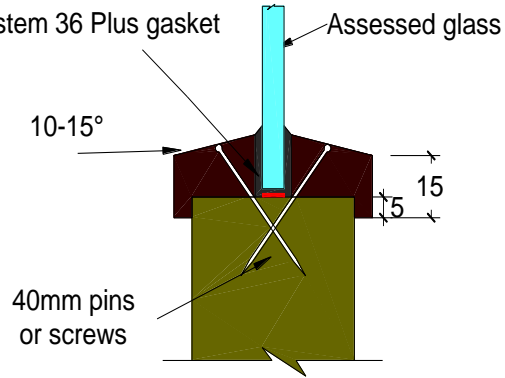
Revision	Warringtonfire Reference	Date	Description
A	FEA/F00125	01.08.00	Inclusion of additional test evidence to justify the use of further facing materials. Recalculation of maximum approved leaf dimensions and justification for the alteration of leaf size.
B	Chilt/A01032	26.02.01	1. Inclusion of test evidence RF00166 and re-calculation of size range. 2. Assessment of facing range for 2440 x 1220 maximum leaf size. Assessment of softwood door frames for 2440 x 1220 maximum leaf size.
C	Chilt/A02194	04.10.02	Revalidation for a further five year period and minor alterations to the report format.
D	Chilt/A04051	09.06.04	Inclusion of test evidence from RF04011 including feature grooves and 6mm lippings.
E	Chilt/A05159	08.09.05	Revalidation for a further five year period and inclusion of test evidence from RF05041 including rebated meeting edges and alternative thickness' of face materials.
F	Chilt/A07168	20.08.07	Inclusion of Lorient Type 617 intumescent seals and revalidation for 5 years.
G	Chilt/A08228	04.12.08	Inclusion of PU gluelines for lipping doors, glazed apertures to 1.44m ² , MDF door frames, coverage for 10 x 4 Pyroplex seals (design limitations apply), overpanels with a flush and rebated junction, Lorient Type 617 written into a separate Flamebreak document, addition of Pyroplex glazing system 30054 based on WF137714, addition of Pyroplex glazing system based on WF30049.
H	Chilt/A09152	22.12.09	Technical review and update of assessment format; evidence from test RF09105 to BS EN 1634-1 incorporated into document - Lorient Type 617 perimeter seals and large single leaf doors with Pyroplex seals. Amendment to facing thickness.
I	Chilt/A09152 Rev I	22.07.10	Edit to intumescent gaskets required for flush bolts and top pivots.
J	Chilt/A11055	04.04.11	Technical review and update of assessment. Evidence from test RF10149 and RF11026 has been included to permit reduced core density and large leaf sizes without perimeter framing. Assessment validated for a further 5 years.

K	Chilt/A13247	24.03.14	Technical review and update of assessment, with a further five year's validity. Inclusion of CS Group acrovyn & edge protectors, Lorient System 36/6 Plus, Pilkington Pyroclear 30-001 glass, Norsound Vision & Universal 30 glazing systems, Norsound Vision fanlights & side screens, CGI Pyroguard EW30, EW MAXI & EI30 glass for side screens and fanlights, Pilkington Pyroshield 2, Pyrodur 30-104, Pyrodur 60-10 and Pyrostop 30-10 glass for side screens and fanlights, Norsound intumescent edge seals, Norsound threshold seals, identification plates & an alternative perimeter intumescent seal specification using Pyroplex with double leaf doorsets.
L	CNA/F14088	22.04.14	Inclusion of updated Norsound Universal glazing diagrams, amendment to max permitted glass thickness for Norsound Vision glazing system, amendment to thickness of Norsound intumescent gasket required for flush bolts and inclusion of additional Norsound threshold seals
M	396630	23.02.18	Update to new format, technically reviewed and revalidated, Include clarification to lipping sections. Section 9.1 amended and 9.1.1 added, clarification of concealed closers, inclusion of Yeoman Shield/Lorient PVCu edge protectors including additional data sheets
N	417524	14.12.20	Update to EN15725 format. Addition of test data for AV2 lockset, grooved facings and STS leaf edges seals.
O	502946	02.08.21	Addition of STS glazing system, Winkhaus Trulock, alternative overpanel fixing method and Safehinge ALUmax hinges.

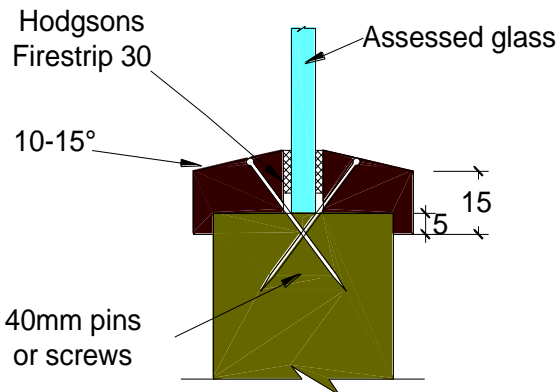
Appendix C Proprietary 30 Minute Glazing Systems



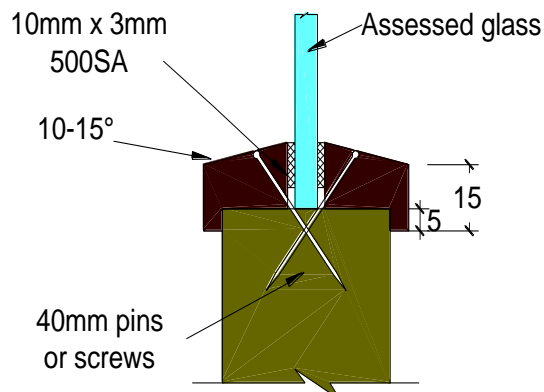
System FF1
 Lorient Polyproducts Ltd



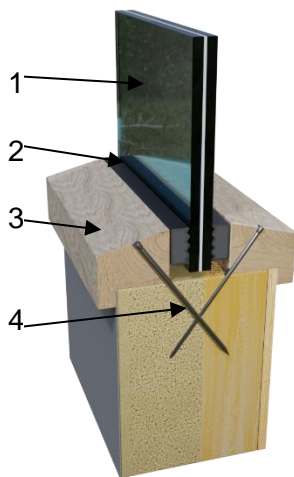
System 36 Plus
 Lorient Polyproducts Ltd



Firestrip 30
 Hodgsons Sealants Ltd



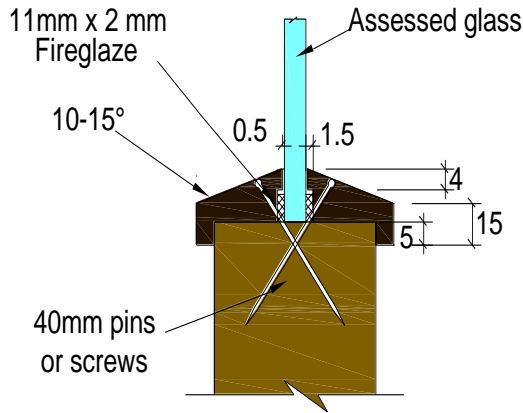
Pyroglaze 30
 Mann McGowan Ltd



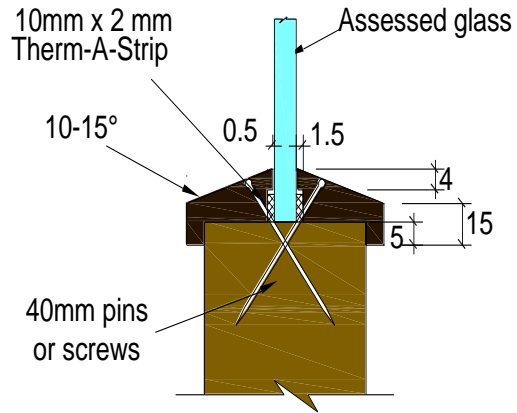
ST105GT Sealed Tight Solutions

Key:

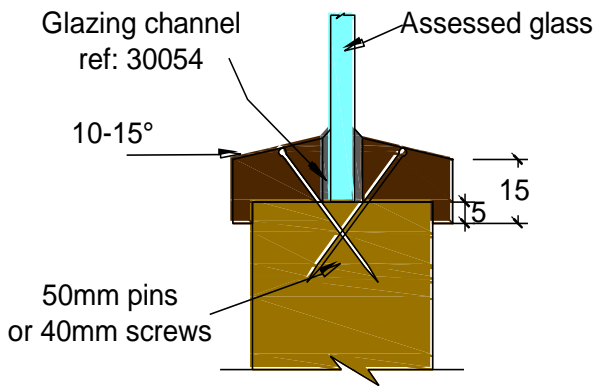
- (1) Assessed glass
- (2) Sealed Tight Solutions 10 x 3mm or 9 x 5mm 105GT(3) glazing tape fitted between the glass and beads on both faces.
- (3) Hardwood beading measuring 20mm high with width to suit glass type, including a minimum 5mm x 5mm bolection return and a 19° chamfer, fitted around the glazing apertures on both faces.
- (4) 38mm pins or 40mm screws



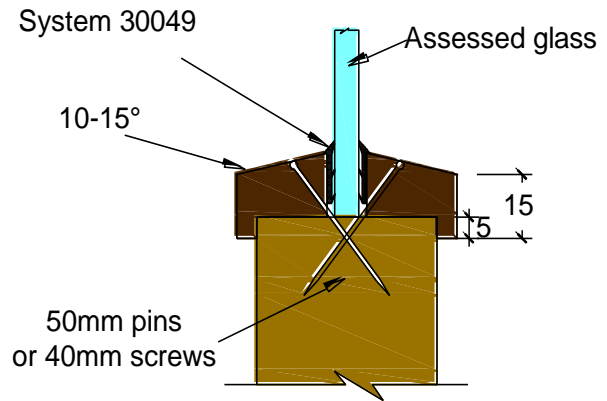
Fireglaze
Sealmaster Ltd



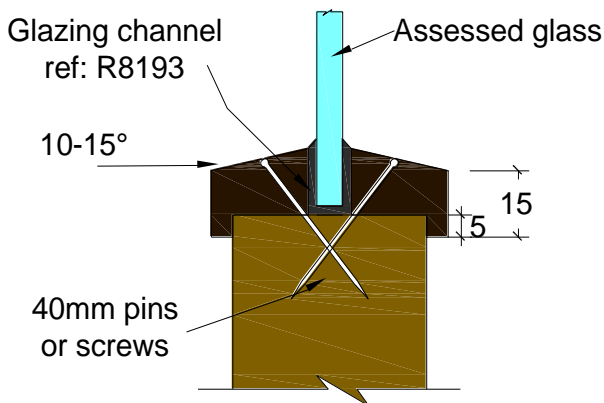
Therm-A-Strip
Intumescent Seals Ltd



Pyroplex Ltd



Pyroplex Ltd



Pyroplex Ltd

Assessed Square Glazing Bead Profiles

The following square bead profile may be used as an alternative to the splayed beads detailed in the glazing system diagrams above - refer to section 8 for glazing system and glass restrictions.

