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Title

Field of Application for:

Flamebreak 660 and FF660 Doorsets

For 60 minutes Fire Resistance to BS 476: Part 22: 1987

Report No.:

FEA/F02141 Revision K

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Prepared for:

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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 60-minute fire resisting doorset designs that comprise either Flamebreak 660 or Flamebreak FF660 door blanks. Door blank constructions are manufactured by P.T. Kutai Timber of Indonesia.

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

This Field of Application has been written using appropriate test evidence generated at UKAS accredited laboratories, to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturers stated door design and is summarised in 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) ‘Guide to Undertaking Technical Assessments of the Fire Performance of Construction Products Based on Fire Test Evidence’. The aim of the PFPF guidelines is to give confidence to end-users that assessments that exist in the UK are of a satisfactory standard to be used for building control and other purposes.

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

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

2 Proposal

It is proposed to consider the fire resistance performance of doorsets manufactured using the specified proprietary Flamebreak 660 and FF660 door blank designs, for 60 minutes fire resistance integrity performance (and where appropriate insulation performance), if the doorset designs were to be tested to the requirements of BS 476-22: 1987, *Methods for determination of the fire resistance of non-loadbearing elements of construction.*

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

2.1 Assumptions

- All densities referred to in this document are based upon an assumed moisture content of 10-12%.
- It is assumed that unless otherwise documented in the field of application sections of this report, the doorset subject to this report will be constructed in accordance with the test evidence referred to herein.

3 Test Data

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

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

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

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

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

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

4 Technical Specification

4.1 General

The technical specification for the proposed door assembly is given in the following sections and is based on the test evidence for the door designs, summarised in Appendix A.

4.2 Intended Use

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

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

4.3 Door Leaf

Doorset designs constructed using the Flamebreak 660 and FF660 door blanks can include various design features:

1. Glazing
2. Various hardware options
3. Decorative facings
4. Edge Protectors
5. Overpanels, Fanlights & Sidelights

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

Section 5 gives the description of the two blank types in terms of composition and density etc.

4.4 Door Frames

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

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

4.5 Doorset Configurations

4.5.1 General

The evaluation of the leaf size for each door blank design and associated doorset configuration is based on the tests listed in Appendix A and takes into account:

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

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

1. A test on a double doorset is more onerous than a test on a single doorset
2. A test on an unlatched doorset is more onerous than a test on a latched doorset as the leading edge is unrestrained and will deflect more in fire test conditions
3. A test on an unlatched single acting doorset is considered to be equivalent to a double acting doorset, due to the known deflection of an unlatched single acting doorset towards the furnace conditions i.e., away from the door stop.
4. A doorset with transomed overpanel is considered to perform comparably to a similar doorset without an overpanel. This is because the transom structurally separates the overpanel from the doorset.

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

Doorsets with reduced height and width dimensions from those tested are deemed to be less onerous. Therefore, doors with dimensions less than those given in the leaf size envelopes (for the relevant intumescent specification) in the following sections are covered and may be manufactured, see section 5.2 for permitted trimming specifications.

4.5.2 Configuration

4.5.2.1 Flamebreak 660

The table below shows the permitted configurations for doorsets constructed using the Flamebreak 660 door blank design, with the abbreviation and full description of each configuration.

Doorset Configurations – Flamebreak 660		
Depiction	Abbreviation	Description
	LSASD	Latched Single Acting Single Doorset
	ULSASD	Unlatched Single Acting Single Doorset
	DASD	Double Acting Single Doorset
	LSADD	Latched Single Acting Double Doorset
	ULSADD	Unlatched Single Acting Double Doorset
	DADD	Double Acting Double Doorset

4.5.2.2 Flamebreak FF660

The table below shows the permitted configurations for doorsets constructed using the Flamebreak FF660 door blank design, with the abbreviation and full description of each configuration.

Doorset Configurations – Flamebreak FF660		
Depiction	Abbreviation	Description
	LSASD	Latched Single Acting Single Doorset

4.5.3 Orientation

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

4.5.4 Envelopes for Leaf Dimensions

Appendix D details the door leaf envelopes which indicate the permitted leaf sizes for the listed configurations based on the perimeter intumescent and door blank type.

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

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

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

5 General Description of Leaf Construction

5.1 Door Blank Construction

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

5.1.1 Flamebreak 660

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

Element		Species/type	Configuration (all dims in mm)	Min. Density (kg/m³)
Core – 3 layers	**Outer layers**	Parasorianthes falacateria or Albisia falcatta	Vertically orientated 13.5 thick x 45 wide lamels	180 - 360
	Inner layer	'Mixed tropical hardwood'	Horizontally orientated 15 thick x 28 wide lamels	480
Stiles		Agathis or 'mixed tropical hardwood' in 2 lamels	35 wide (total) x 42 thick, incorporating a 9 x 9 tongue located into the core material	Agathis – 480 'Mixed tropical hardwood' - 610
Top Rail		Agathis or 'mixed tropical hardwood' in 3 lamels	75 wide (total) x 42 thick, incorporating a 9 x 9 tongue located into the core material	Agathis – 480 'Mixed tropical hardwood' – 610
Bottom Rail		Agathis or 'mixed tropical hardwood' in 3 lamels	35 wide (total) x 42 thick, incorporating a 9 x 9 tongue located into the core material	Agathis – 480 'Mixed tropical hardwood' – 610
Facings		Plywood	6 thick	520
Lippings – all edges		Hardwood (excluding Beech (*Fagus sylvatica*))	Varies [1]	640

Notes:

1. Flamebreak 660 must be lipped on all edges (see section 5.3)
2. For permitted leaf size adjustment of Flamebreak 660 see section 5.2 (section 11.6 gives information on leaf adjustment postproduction)
3. The permitted leaf size envelopes and intumescent specifications for Flamebreak 660 are given in appendix D
4. The minimum leaf thickness after calibration is 53mm (i.e., a maximum of 0.5mm from both sides).
5. The minimum leaf thickness after finishes applied is 54mm.

5.1.2 Flamebreak FF660

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

Element		Species/type	Configuration (all dims in mm)	Min. Density (kg/m³)
Core – 3 layers	**Outer layers**	Parasorianthes falacateria or Albisia falcatta	Vertically orientated 13.5 thick x 45 wide lamels	180 - 360
	Inner layer	'Mixed tropical hardwood'	Horizontally orientated 15 thick x 28 wide lamels	480
Stiles		Agathis or 'mixed tropical hardwood' in 2 lamels	35 wide (total) x 42 thick, incorporating a 9 x 9 tongue located into the core material	Agathis – 480 'Mixed tropical hardwood' - 610
Top Rail		Agathis or 'mixed tropical hardwood' in 3 lamels	75 wide (total) x 42 thick, incorporating a 9 x 9 tongue located into the core material	Agathis – 480 'Mixed tropical hardwood' - 610
Bottom Rail		Agathis or 'mixed tropical hardwood' in 3 lamels	35 wide (total) x 42 thick, incorporating a 9 x 9 tongue located into the core material	Agathis – 480 'Mixed tropical hardwood' - 610
Facings		MDF	6 thick	750
Lippings – all edges		Hardwood (excluding Beech (*Fagus sylvatica*))	Varies [1]	640

Notes:

1. Flamebreak FF660 must be lipped on all edges (see section 5.3)
2. For permitted leaf size adjustment of Flamebreak FF660 see section 5.2 (section 11.6 gives information on leaf size adjustment postproduction)
3. The permitted leaf size envelopes and intumescent specifications for Flamebreak FF660 are given in appendix D
4. The minimum leaf thickness after calibration is 53mm (i.e., a maximum of 0.5mm from both sides).
5. The minimum leaf thickness after finishes applied is 54mm.

5.2 Leaf Size Adjustment During Manufacturing – Flamebreak 660

5.2.1 Flamebreak 660

As noted in section 5.1, as standard Flamebreak 660 is manufactured with stiles and rails as part of the construction. Test reference RF02055 has proven that Flamebreak 660 can be trimmed as described in the table below and still achieve fire resistance performance. Door leaves may be altered as follows prior to the machining for hardware.

Pre-Machining Leaf Size Adjustment Specification	
Element	Reduction
Leaf	The size of the leaf may be reduced in height or width without restriction for manufacturing purposes (subject to specific restrictions given in the notes below this table), providing the head rail remains in position and is trimmed no more than 3mm for calibration purposes. The finished leaf must be lipped on all edges in accordance with section 5.3
Timber Lipping	The timber lipping thickness can be reduced after it has been glued in place, providing it is not reduced below the minimum stated in section 5.3

Notes:

1. Recessed automatic drop-down seals must be fitted into a full width bottom rail
2. Edge mounted recessed flush bolts must be fitted into full width stiles
3. Locksets must be mounted into full width stiles for double leaf configurations

5.2.2 Flamebreak FF660

As noted in section 5.1, as standard Flamebreak FF660 is manufactured with stiles and rails as part of the construction. The Flamebreak FF660 has been tested in RF05042 to show that the leaf can be reduced in dimensions but with more restrictions than the Flamebreak 660 design. Door leaves may be altered as follows prior to the machining for hardware.

Pre-Machining Leaf Size Adjustment Specification	
Element	Reduction
Leaf	The head rail and stiles must not be removed when constructing doorsets using the Flamebreak FF660 design. Prior to lipping the stiles can be reduced by maximum 5mm and the head rail reduced by maximum 3mm. The bottom rail can be removed completely for leaf height adjustment (subject to specific restrictions given in the note below this table). The finished leaf must be lipped on all edges in accordance with section 5.3
Timber Lipping	The timber lipping thickness can be reduced after it has been glued in place, providing it is not reduced below the minimum stated in section 5.3

Notes:

1. Recessed automatic drop-down seals must be fitted into a full width bottom rail

5.3 Timber Lipping – Flamebreak 660 and Flamebreak FF660

The testing documented in appendix A has generally been undertaken using 8-10mm thick lippings applied to all edges using species at varying densities. A number of different adhesives have also been used to seal the lippings.

On the above basis, Flamebreak 660 and Flamebreak FF660 door blanks must be lipped with the following specification, for all leaf types and solid panels (overpanels), where appropriate.

Timber Lipping Specification for Flamebreak 660 and Flamebreak FF660 door blanks		
Material	**Size (mm)**	**Min Density (kg/m^3)**
Hardwood (not Beech *fagus species*) which must be straight grained, joinery quality, free from knots, splits and checks.	Flat = 10 – 15 thick with a maximum of 2mm profiling permitted at corners of lipping (see section 7.1.3)	640
	Rounded = 12 – 17 thick with a radius matching the distance between leaf edge and floor pivot (see section 7.1.2)	
	Rebated = Not permitted	

Notes:

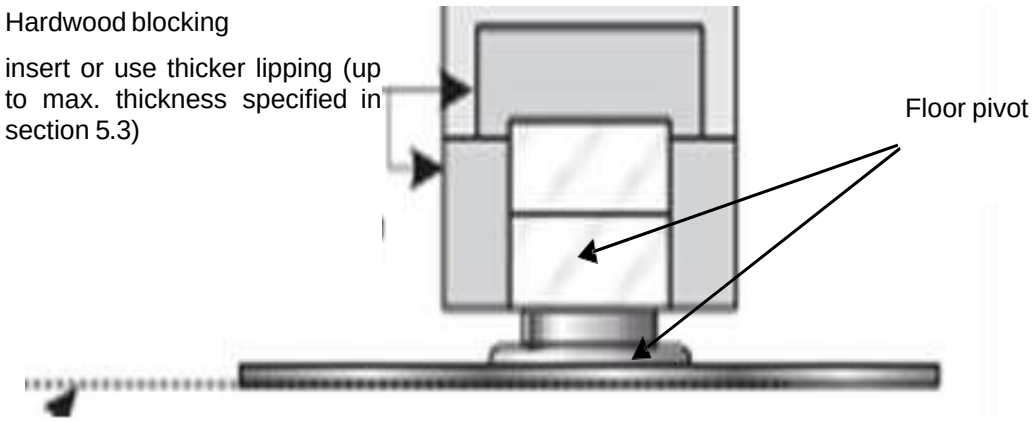
1. All doorsets to this design must be lipped on all four edges.
2. Lippings along the vertical edges must over-run the lippings along the horizontal edges
3. The use of rebated meeting stiles for double doorsets is not approved
4. The use of doorset designs with flush overpanels is not approved

5.3.1 Hardwood blocking for pivots – Flamebreak 660

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 intention of the insert is to surround the pivot in the bottom of the door leaf.

The hardwood (minimum density 640kg/m^3 excluding Beech (Fagus species)) insert must be nominally 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 nominally 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 9). Alternatively, lippings in accordance with details shown in section 5.3 may be used.

Cross Section through Bottom of Flamebreak 660 fitted onto Floor Spring and Pivot



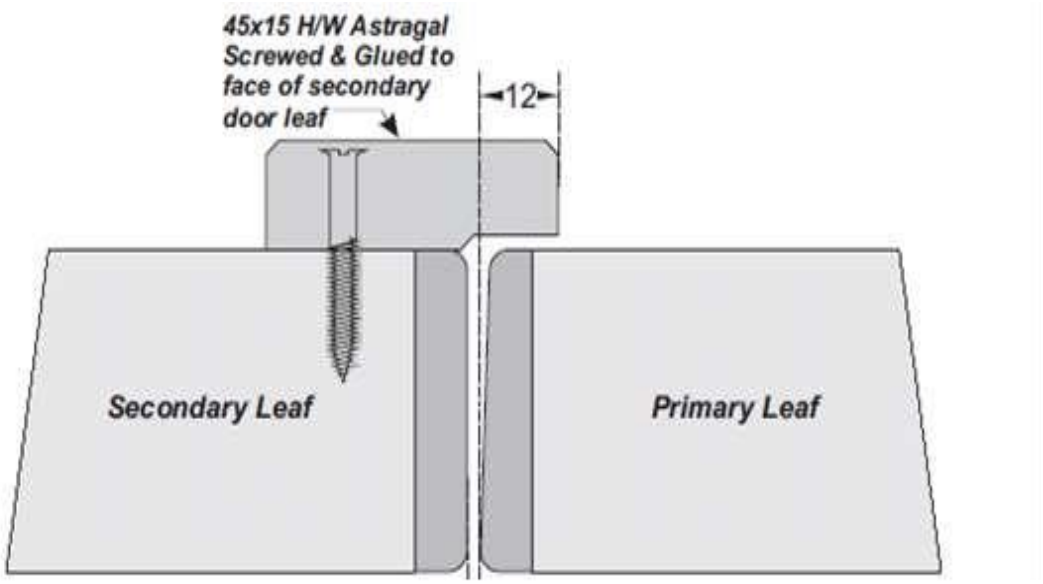
5.3.2 Meeting Stile Astragals – Flamebreak 660

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.

The 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 timber for the astragal must be hardwood (excluding Beech (Fagus sylvatica)) of the same minimum density being used for the lipping material. See following diagram:



5.4 Edge Protectors

5.4.1 CS Edge Protectors

The Pacific Rim Wood Flamebreak 660 design has been assessed for use with the CS Group edge protectors based on the supporting test evidence contained within Chilt/A11130 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 Appendix D. CS Group must be contacted for precise installation and fixing details (www.c-sgroup.co.uk).

The Flamebreak 660 design can be fitted with the CS Group edge protectors up to the maximum dimensions stated in the CS Group headed data sheets in Appendix D.

5.4.2 Yeoman Shield/Lorient PVCu Edge Protectors

The Pacific Rim Wood Flamebreak 660 design has been assessed for use with the Yeoman Shield/Lorient PVCu edge protectors based on the supporting data contained within Chilt/A08001 Revision D 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 sheets in Appendix D.
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.
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 5.3 above.
6. 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

The Flamebreak 660 design can be fitted with the Yeoman Shield/Lorient edge protectors up to the maximum dimensions stated in the Yeoman Shield/Lorient headed data sheets in Appendix D.

5.5 Decorative & Protective Facings – Flamebreak 660 and FF660

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

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

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

Notes:

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

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

5.5.1 Post-Formed CS Group Acrovyn

It is possible to encapsulate the Flamebreak 60 doorset design by post-forming the Flamebreak 660 door blanks in CS Group Acrovyn, based on the supporting test evidence contained within Chilt/A11130 Revision E 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 be lipped with 8mm thick hardwood as detailed in this assessment (see section 5.3).

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 the relevant (CS Group headed) data sheets contained in Appendix D 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 Appendix D 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.

6 Glazing within the Leaf

6.1 General

The testing conducted on the Flamebreak 660 and FF660 door designs has demonstrated that they are capable of tolerating glazed apertures, whilst providing a margin of over performance. For example, test reference RF02055 included a glazed aperture 600mm high x 600mm wide. Glazing is therefore acceptable within the following parameters.

The maximum assessed glazed area for all configurations is 0.72m².

6.2 Assessed Glazing Systems

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

Glazing System	Manufacturer	Max. Area (m^2)
1. Therm-A-Glaze 60	Intumescent Seals Ltd.	0.72
2. Fireglaze 60	Sealmaster Ltd.	0.72
3. System 90+	Lorient Polyproducts Ltd.	0.72
4. System 36 Plus[1]	Lorient Polyproducts Ltd.	0.72
5. System 63[2]	Lorient Polyproducts Ltd.	0.72
6. RF1	Lorient Polyproducts Ltd.	0.72
7. Pyroglaze 60	Mann McGowan Ltd.	0.72
8. FG60	Pyroplex Ltd.	0.64
9. Norsound Vision 60[3]	Norsound Ltd.	0.66
10. Norsound Universal60[4]	Norsound Ltd.	0.52

Notes:

1. System 36 Plus must only be used with the 14 – 16mm thick glass types listed in section 6.3 below, i.e., glass types 7, 8 & 9 from the table in section 6.3 below.
2. Only suitable for use with circular apertures and the Pyroshield 2 glass product listed in the table below (section 6.3).
3. See section 6.9 below for additional scope.
4. See section 6.10 below for additional scope.

6.3 Assessed Glass Products

Assessed glass types are as follows:

Glass Type	Manufacturer	Thickness (mm)	Max. Area
1. Pyroshield 2	Pilkington Group Ltd.	6 & 7	0.72
2. Pyran S	Schott Glass Ltd.	6	0.72
3. Pyrostem	Pyroguard UK Ltd.	6	0.60
4. Pyroclear 60-001[1]	Pilkington Group Ltd.	6	0.72
5. Pyrodur 60-10	Pilkington Group Ltd.	10	0.72
6. Pyrobelite 12	AGC Flat Glass Europe	12	0.72
7. Contraflam 60	Vetrotech St. Gobain Ltd.	14	0.72
8. Pyrostop 30-10	Pilkington Group Ltd.	15	0.72
9. Pyrobel 16	AGC Flat Glass Europe	16	0.72
10. Pyrostop 60-101[2]	Pilkington Group Ltd.	23	0.72
11. Pyroguard 60-23[3]	Pyroguard UK Ltd.	23	0.72
12. Pyrobel 25[4]	AGC Flat Glass Europe	25	0.72

Notes:

1. See section 6.5 below for details.
2. See section 6.6 below for details.
3. See section 6.7 below for details.
4. See section 6.8 below for details.
5. 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.
6. Glass types 10 – 12 are fully insulating for 60 minutes in terms of the criteria set out in BS 476: Part 20: 1987.

6.4 Glazing Beads and Installation

Glazing beads must be from hardwood (excluding Beech (Fagus sylvatica)) as specified in the following table:

Material	Profile	Application	Min. Density (kg/m^3)
Hardwood*	Splayed	All proprietary systems detailed in section 6.2 & shown in Appendix C & all glass types listed in section 6.3	≥640
Hardwood*	Square	Proprietary systems 1 – 2 as specified in section 6.2 & glass types 5 – 9 listed in section 6.3	≥640

See Appendix C for square and splayed bead profile options. A 6 – 10mm thick square aperture liner is permitted for use with square beads providing it is constructed from hardwood (excluding Beech (Fagus sylvatica)) of minimum density 640kg/m^3 and glued in position using an adhesive type specified for the lippings (see section 9).

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 60mm long steel pins or 60mm long No. 6 – 8 screws, inserted at 35 – 40º to the vertical, at no more than 50mm from each corner and at 150mm maximum centres. Pneumatically fired pins are acceptable providing they meet the specification given in section 6.4.1 below.

Glazed openings must not be less than 100mm from any door edge. Multiple apertures are acceptable within the permitted glazed area, with a minimum dimension of 80mm between apertures. Aperture shape is not restricted, providing the glazing system and beads are compatible with that shape.

* Timber for glazing beads must be straight grained, joinery quality hardwood (excluding Beech (Fagus sylvatica)), free from knots, splits and checks.

Sectional drawings detailing the tested and approved proprietary glazing systems are contained in Appendix C.

6.4.1 Glazing Pins for Glazing Within Leaf

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

Option 1 – Round, Oval & Rectangular Pins

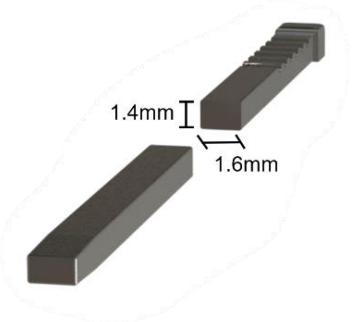
The following dimension of pin has been approved for round, oval and rectangular shaped pins which are hand applied:

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

Option 2 – Gun (Pneumatically) Fired Rectangular Pins

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

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



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

6.5 Pyroclear 60-001 (6mm thick) – Pilkington Group Ltd

The following limitations will apply to Pilkington Pyroclear 60-001 glass type tested in RF12077:

1. Hardwood (min. density 640kg/m³) excluding Beech (Fagus sylvatica) glazing beads 25mm high x 25mm deep including a 5mm x 5mm bolection return and a 20º chamfer.
2. Beads must be retained in position with 50mm long x 2mm diameter steel pins or 50mm long No. 6 – 8 steel screws, inserted at 45º 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 6.4.1 above.
3. 20mm x 5mm Kerafix Flexit seal compressed to 4mm and fitted between the bead and the glass on both faces.
4. 54mm x 2mm Palusol ELSA 1000 glazing liner must be fitted lining the full width of the glazing aperture.
5. 10mm x 2mm Interdens must be fitted on top of the Palusol glazing liner, underneath the edge of the glass in between the beads.
6. The glass must be fitted with maximum 12mm edge cover and allowing for 8mm expansion on all edges.
7. Aperture shape is not restricted, providing the glazing system and beads are compatible with that shape.
8. Timber for glazing beads must be hardwood (excluding Beech (Fagus sylvatica)), straight grained, joinery quality, free from knots, splits and checks.
9. Glazed openings must not be less than 100mm from any edge, with a minimum dimension of 100mm between apertures.
10. Multiple apertures are permitted, subject to point 9 above.

6.6 Pyrostop 60-101 (23mm thick) – Pilkington Group Ltd

The following system must be used with the Pilkington 23mm Pyrostop glass type tested in RF05035:

1. Hardwood (min. density 640kg/m³) excluding Beech (Fagus sylvatica) glazing beads 20mm high x 17.5mm deep including a 5mm x 5mm bolection return.
2. Beads must be retained in position with 60mm long No. 6 – 8 steel screws, inserted at 30º to the vertical, at no more than 50mm from each corner and at 150mm maximum centres.
3. 20mm x 3mm Hodgsons Sealants Firestrip 60 fitted between the bead and the glass on both faces.
4. 50mm x 2mm Norseal flexible glazing liner must be fitted around the perimeter of the glazing aperture.
5. The glass must be fitted with maximum 5mm edge cover and allowing for 5mm 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 (excluding Beech (Fagus sylvatica)), 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 100mm between apertures
9. Multiple apertures are permitted, subject to point 8 above.

6.7 Pyroguard 60-23 (23mm thick) – Pyroguard UK Ltd

The following system must be used with the Pyroguard UK Ltd. 23mm Pyroguard glass type based on Certifire certificate No CF 437 :

1. Hardwood (min. density 640kg/m³) excluding Beech (Fagus sylvatica) glazing beads 30mm high x 16mm deep including a 5mm x 5mm bolection return and a 20° chamfer.
2. Beads must be retained in position with 63mm long No. 6 – 8 steel screws, inserted at 40 – 45º to the vertical, at no more than 50mm from each corner and at 150mm maximum centres.
3. 25mm x 2.5mm Sealmaster Fireglaze tape (as glazing tape) fitted between the bead and the glass on both faces.
4. 54mm x 2.5mm Sealmaster Fireglaze tape (as aperture liner) must be fitted lining the glazing aperture.
5. The glass must be fitted with maximum 15mm edge cover and allowing for 5mm 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 (excluding Beech (Fagus sylvatica)), 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 100mm between apertures.
9. Multiple apertures are permitted, subject to point 8 above.

6.8 Pyrobel 25 (25mm thick) – AGC Flat Glass Europe

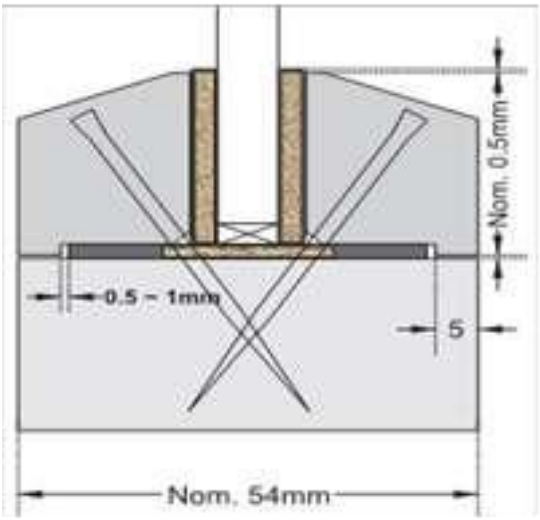
The following system must be used with the AGC Flat Glass Europe 25mm Pyrobel glass type tested in RF05126:

1. Hardwood (min. density 640kg/m³) excluding Beech (Fagus sylvatica) glazing beads 30mm high x 17.5mm deep including a 5mm x 5mm bolection return and a 20° chamfer.
2. Beads must be retained in position with 60mm long No. 6 – 8 steel screws, inserted at 30º to the vertical, at no more than 50mm from each corner and at 150mm maximum centres.
3. 25mm x 2mm Superwool X607 fitted between the bead and glass on both faces.
4. 2mm thick Sealmaster GL60 intumescent liner around perimeter of glazing aperture.
5. The glass must be fitted with maximum 21mm edge cover and allowing for 4mm 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 (excluding Beech (Fagus sylvatica)), 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 100mm between apertures.
9. Multiple apertures are permitted, subject to point 8 above

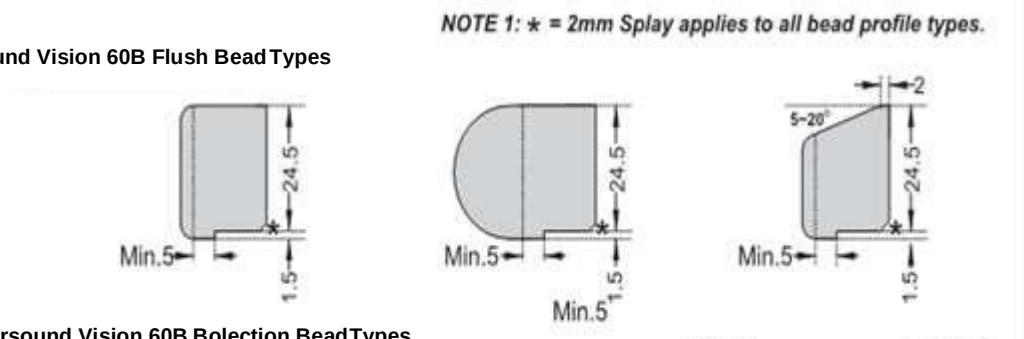
6.9 Norsound – Norsound Vision 60B & 60T

The Norsound Ltd. glazing system assessed in Chilt/A12161 Rev B has the following scope of application in addition to that described in sections 6.1 – 6.4.

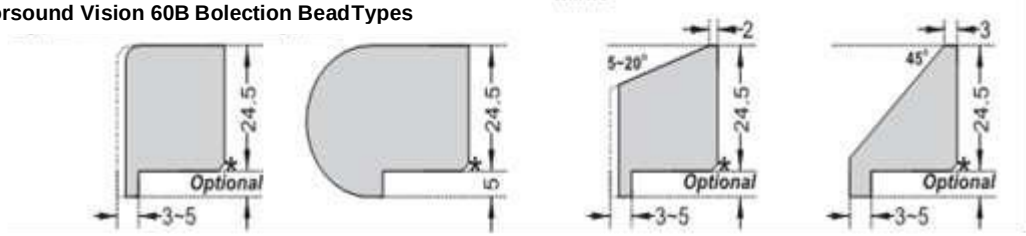
The Norsound Vision 60B is illustrated below:



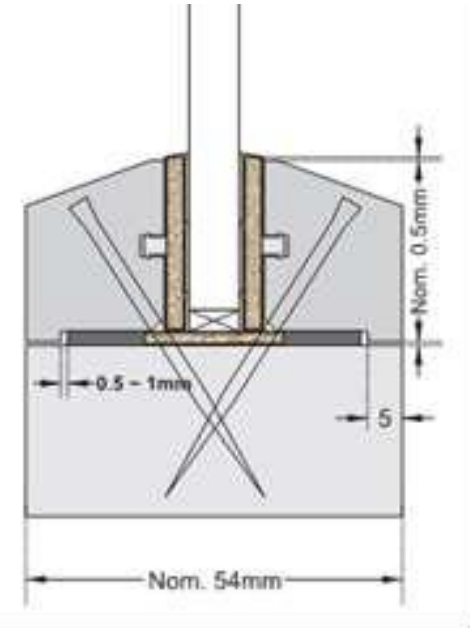
Norsound Vision 60B Flush Bead Types



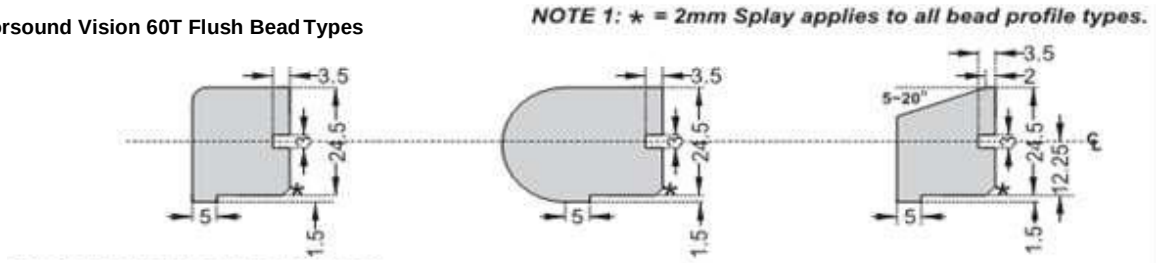
Norsound Vision 60B Bolection Bead Types



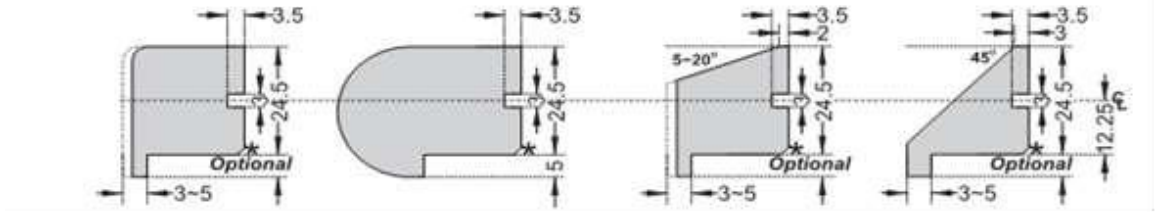
The Norsound Vision 60T is illustrated below:



Norsound Vision 60T Flush Bead Types



Norsound Vision 60T Bolection Bead Types



1. For flush style beads, the bead height must be nominally 26mm with a minimum rebate of 1.5mm. For bolection style beads, the bolection returns must be a minimum of 5mm high and project a minimum of 3mm from the leaf face.
2. The intumescent seal component of Norsound Vision 60B is 25mm high and is required to project 0.5mm above the sightline of the bead.
3. Glazing aperture must be lined with the Norsound 5202LNR liner which is supplied at 52mm wide and may be reduced to a minimum of 42mm wide – liner must be fitted centrally in the glazed aperture.
4. Glazing beads must be retained in position with minimum 50mm long x 2mm diameter steel pins, or 50mm long No. 6 – 8 screws, inserted at 35 – 40º to the vertical at no more than 50mm from each corner and at 150mm maximum centres.
5. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.4.1 above.

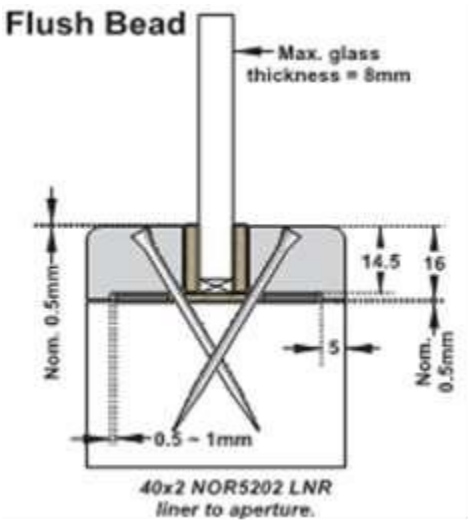
The bead type and permitted glass types must meet the following specification:

Bead Type	Material	Min. Density (kg/m^3)	Permitted Glass Types
Square flush	Straight grained, joinery quality hardwood (excluding Beech (*Fagus sylvatica*)), free from knots, splits and checks	640	1 – 3 (see section 6.3)
Bolection	Straight grained, joinery quality hardwood (excluding Beech (Fagus sylvatica)), free from knots, splits and checks	640	1 – 9 excluding 4 (see section 6.3)

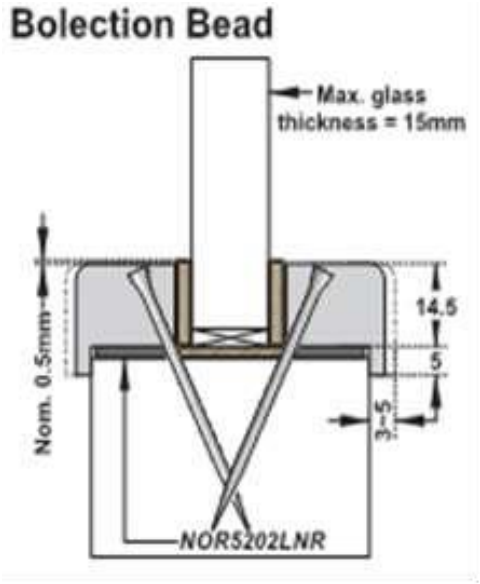
6.9.1 Norsound Ltd – Norsound Vision 60 Slimline

The Norsound Ltd. Vision 60 Slimline glazing system has the following scope of application to that described in sections 6.1 – 6.4.

The Norsound Vision 60 Slimline with flush square beads is illustrated below:

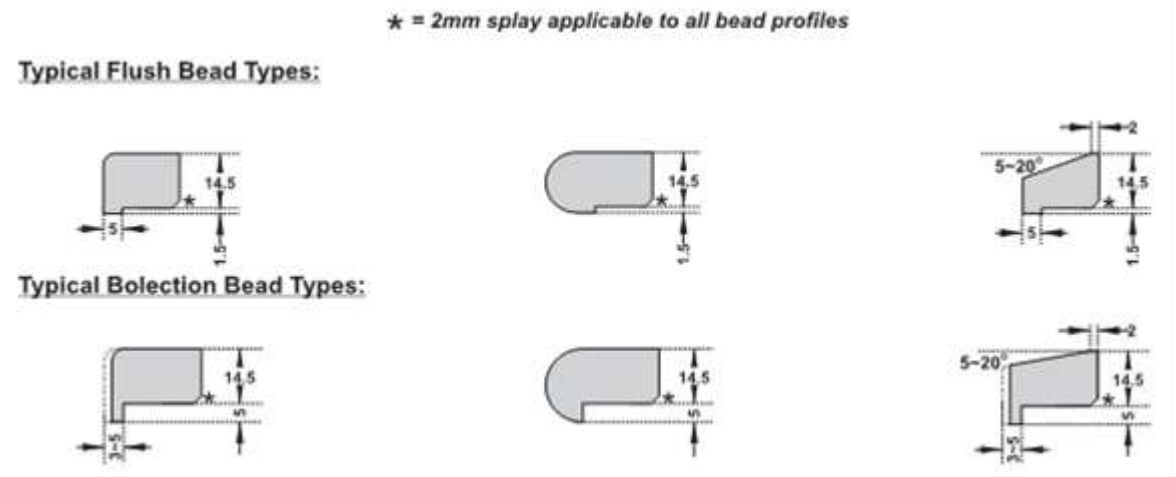


The Norsound Vision 60 Slimline with bolection beads is illustrated below:

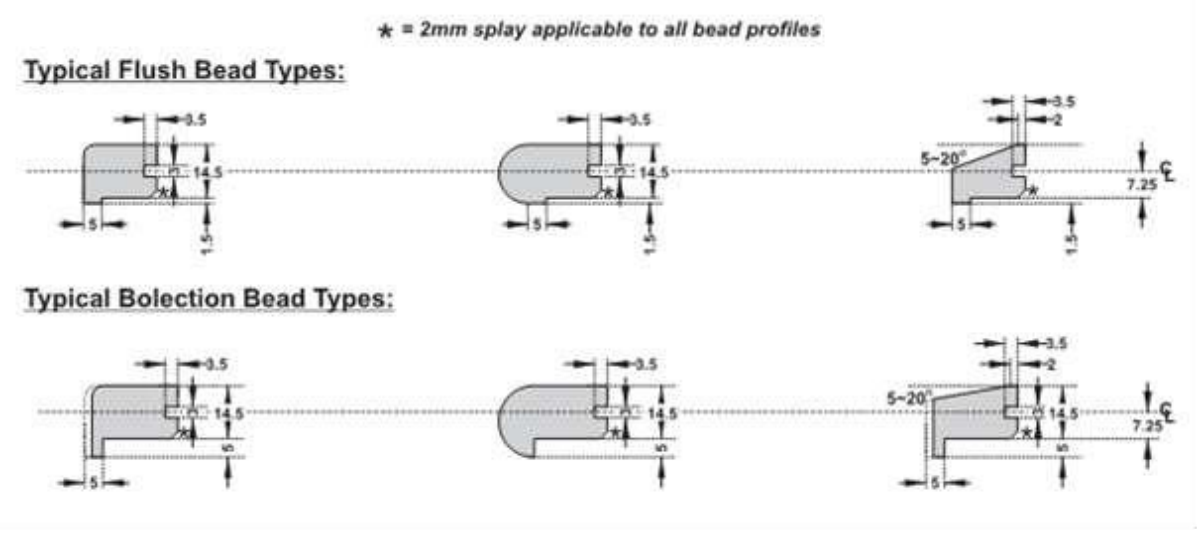


6.9.2 Norsound Ltd – Norsound Vision 60B & 60T Slimline Applications

The following bead designs are assessed as acceptable:



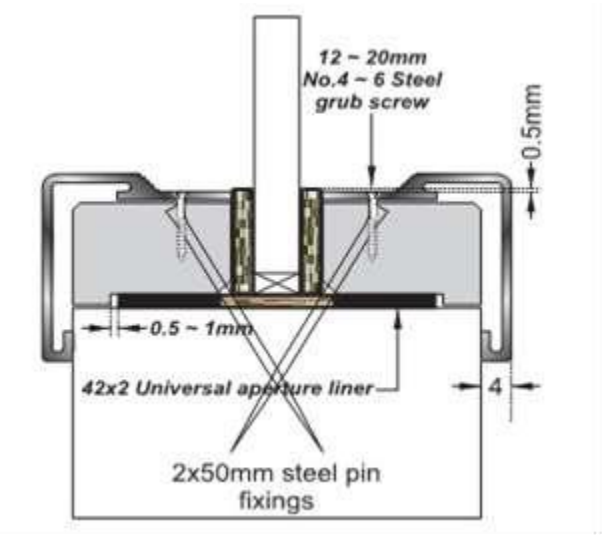
Norsound Vision 60T Slimline may utilize the same range of bead shapes:



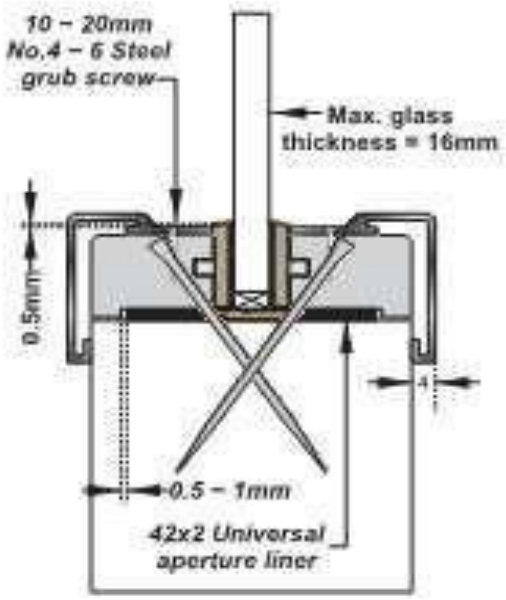
6.10 Norsound Ltd. – Norsound Universal 60B & 60T

The Norsound Ltd. Universal glazing system has the following scope of application in addition to that described in sections 6.1 – 6.4.

The Norsound Universal 60B is illustrated below:



The Norsound Ltd. Universal 60T glazing system has the following scope of application in addition to that described in sections 6.1 – 6.4. The Norsound Universal 60T is illustrated below:



1. The core bead height must be nominally 14.5mm wide with a 1.5mm rebate.
2. The intumescent seal component of Norsound Universal 60B and 60T is 15mm high and is required to project 0.5mm above the sightline of the bead.
3. Glazing aperture must be lined with the Norsound 5202LNR liner which is supplied at 52mm wide and may be reduced to a minimum of 42mm wide – liner must be fitted centrally in the glazed aperture.
4. The position of the groove in the rear of the bead is therefore critical for installation of Norsound Universal 60T
5. Glazing beads must be retained in position with minimum 50mm long x 2mm diameter steel pins or, minimum 50mm long No. 6 – 8 screws, inserted at 35 – 40º to the vertical at no more than 40mm from each corner and at 150mm maximum centres.
6. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.4.1 above.
7. The Norsound Universal aluminium section cladding the timber bead must be secured to the core bead by use of 3No. 10 – 12mm No. 4 grub screws per length.

The bead material must meet the following specification and can be used with glass types 1 – 3 and 5 – 9 listed in section 6.3.

Material	**Min. Density** (kg/m^3)
Straight grained joinery quality hardwood (excluding Beech (*Fagus sylvatica*)), free from knots, splits & checks	640

7 Door Frame Construction

7.1 General

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

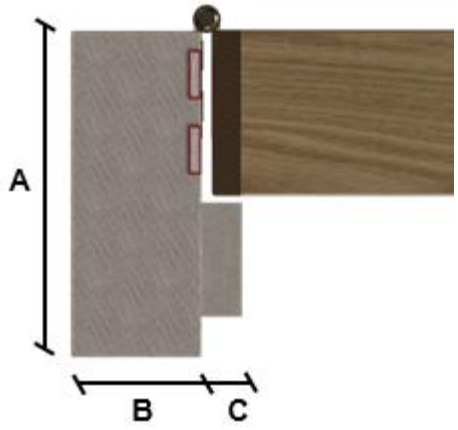
Frame specification				
Frame type	Material	Minimum section size (mm)	Minimum density (kg/m^3)	Acceptable leaf type
1	Hardwood: All door frame timber must meet or exceed class J30 as specified in BS EN 942: 2007 (subject to adequate repair of any defects). The use of Beech (*Fagus species*) is NOT permitted.	Frame: 70 (d) x 32 (w) (excluding stop) Stop: 12 (w) (integral or planted on)	640	Flamebreak 660 and Flamebreak FF660

Note:

Specific design features such as fanlights and sidelights may require an increase in frame section size beyond that stated in the table above.

7.1.1 Standard frame detail

The diagram below shows detail of the standard frame construction. Minimum section is permitted in two sizes subject to hardware size and the use of transom overpanel.



A: Frame depth = 70mm minimum

B: Frame width = 32mm minimum

C: Stop width = 12mm minimum

Minimum section size when using a transom overpanel:

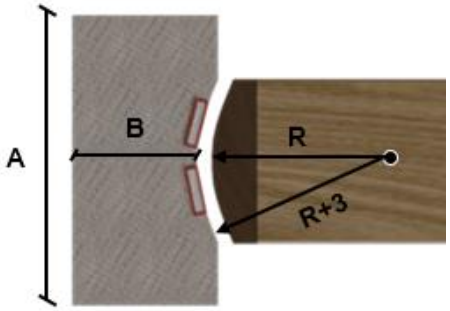
A: Frame depth = 70mm minimum

B: Frame width = 32mm minimum

C: Stop width = 12mm minimum

7.1.2 Scalloped frame detail – Flamebreak 660

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



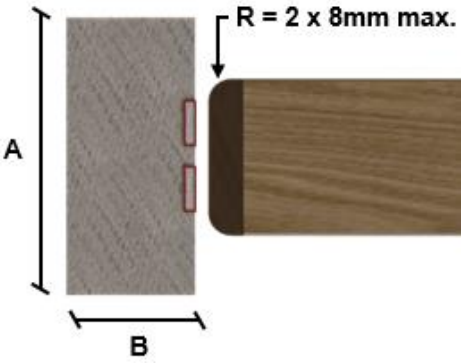
A: Frame depth = 70mm minimum

B: Frame width = 32mm minimum

R: Radius from floor spring or pivot

7.1.3 Square frame detail for double acting doorsets – Flamebreak 660

The diagram below shows detail of the square frame construction for the closing edge of a double acting doorset. Where utilising square frames for double acting doorsets, the maximum radius to the corners of the leaf is 8mm.



A: Frame depth = 70mm minimum

B: Frame width = 32mm minimum

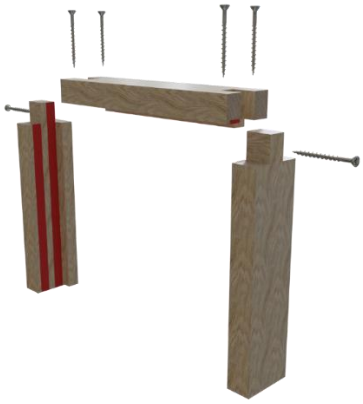
R: Maximum 8mm to create a maximum 2mm edge profiling to each edge.

7.2 Door Frame Joints

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

Double Rebated Joint

Mitre Joint



Mortice & Tenon Joint

Butt Joint

Trenched or Half Lapped Joint

8 Overpanels, Fanlights & Sidelights

8.1 Solid overpanels

8.1.1 Framed on all edges (transomed)

Overpanels of the same construction as the door leaves have been assessed as acceptable for use with doorsets constructed using the Flamebreak 660 and Flamebreak FF660 door blanks, providing they are separated from the leaf head(s) by a transom and fixed within a frame on all edges. This assessment is made on the basis of the performance of the door blanks when used as door leaves which have more freedom to deflect and distort in fire test conditions.

For solid panels constructed using the Flamebreak 660 and Flamebreak FF660 door blanks:

- Overpanels of the same construction as the door leaf/leaves may be used when separated by a transom. If the perimeter stiles and rails are still in position the panels do not need to be additionally lipped when used as an over panel. If the framing has been removed for the purpose of constructing the overpanel, the panel must be lipped on all edges. The overpanel must be fully contained within the door frame (see following diagram).
- A transom is required to separate the leaf head(s) from the overpanel and must be to the same specification as the door frame, as described in the table in section 7.1.
- Transom joints must utilise one of the following methods: mortice and tenon joints or butt joints (see section 7.2). Either method requires joints to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws. Butt joints must be additionally bonded with urea formaldehyde.
- Joints are required to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws.
- Solid overpanels must be fixed screwing through the rear of the frame with steel screws passing at least 30mm into the centre line of the overpanel. Fixings must be no more than 100mm from each corner and a maximum of 250mm centres in between
- The frame to overpanel junction is permitted to have a maximum 1mm gap tolerance.

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

The intumescent seals specified for the jambs in the relevant data sheet in Appendix D must also be fitted to all four edges of the panel. The seals may be fitted either in the panel edges or alternatively in the frame reveal.

Maximum panel dimensions are given as below:

Assembly Element		**Height** (mm)	**Width** (mm)
Overpanel	Single Doorsets	2000	Overall doorset width
	Double Doorsets	1500	Overall doorset width

8.1.1.2 Fitted within rebated frame section

Solid overpanels fitted into rebated frame sections such that the panel butts up against the upstand of the rebate (the rebate can be created from solid or by the use of planted stop), must have intumescent seals as specified for the jambs in the relevant data sheet in appendix D, fitted to all four edges of the panel. The seals may be fitted either in the panel edges or alternatively in the frame reveal.

Maximum panel dimensions are given as below:

Assembly Element		**Height** (mm)	**Width** (mm)
Overpanel	Single Doorsets	2000	Overall doorset width
	Double Doorsets	1500	Overall doorset width

8.2 Glazed Fanlights & Sidescreens

It is our assessment that Flamebreak 60 doorsets may include glazed fanlights or side screens. This section is for doors with a fanlight or single sidescreen; for doorsets in glazed screens see section 8.3. The timber frame and glazing beads must be hardwood (excluding Beech (Fagus sylvatica)) with a minimum density of 640kg/m^3, whilst the frame section must be a minimum of 70mm x 44mm. Other details of the door frame construction must comply with the specification contained in section 7.

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

- The glazing system and 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:

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

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

8.3 Doorsets in glazed screens

Based upon the available test evidence, referenced RF05036, there are 2No approved framing options that may be employed when fitting doorsets in glazed screens. These are described below. In both scenarios, the following limitations apply:

- Frame sections must be hardwood (not Beech *fagus species* minimum density 640kg/m^3).
- The maximum height and width of the overall assembly is 2950mm.
- The centreline of the glass, where used, must be aligned with the centreline of the timber frame.
- The assembly may only contain either 1No single leaf door or 1No pair of doors.
- The assemblies may comprise multiple apertures with glass providing the total doorset and screen assembly does not exceed that noted above and the transom/mullion details in the following sections are complied with. Individual panels of glass must comply with the limitations noted in section 8.3.3
- Joints must be tight with no gaps
- Approved glass types are given in section 8.3.3

8.3.1 Combination Frames

This method combines the door frame members with the side screen and fanlight frame members as illustrated in the example below:

Example of combination frame arrangement

When constructing a doorset assembly using combination frames the following limitations apply:

- The minimum frame section size (excluding integral/planted glazing beads or stop sections) must be 80mm deep x 44mm wide, for all frame sections.
- The common hanging jamb/screen mullion must run continuously full height of the door and overpanel/fanlight.

8.3.2 Jointed Door Frames & Fanlights/Sidelights

This method combines the door frame members with the side screen and fanlight frame members as illustrated in the example below:

Example of jointed frame

When constructing a doorset assembly using the jointed framing system method, the following limitations apply:

- Separate sections of timber must be suitably fixed to one another using appropriate steel screw fixings and glued using one of the adhesives approved for the lipping in the adhesive section of this report.
- Screws must be fixed at maximum 600mm centres and penetrate to approximately 2/3rd depth of the adjacent timber section.
- The minimum overall frame section size at jointed frames (excluding integral/planted glazing beads or stop sections) must be 80mm deep x 64mm wide, created using equal width sections. See the relevant sections below for specific requirements in relation to integral/planted beads and stops.
- A framing section not abutting another may be reduced to a minimum frame section 80mm deep x 45mm wide (excluding integral/planted glazing beads or stop sections).
- 1No 15 x 4mm intumescent seal must be present rebated into the junction between the two frames, centrally fitted with respect to the depth.
- It is permitted to include maximum 3mm (w) x 3mm (d) quirks at the junction of each timber section
- The drawings provided are 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.

8.3.3 Approved Glass Types

The following section provides a scope of approval for the glass type tested in RF05036 when used in a glazed screen with doorset installed, using the framing options described in section 8.3.1 and 8.3.2 above.

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

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

Transom/mullion details:

- Hardwood (minimum density 640kg/m^3) excluding Beech (Fagus species). The timber sections (common frame jambs, perimeter framing mullions etc.) are to meet the minimum section requirements as stated in section 8.3.1 and 8.3.2 above, as appropriate.

Glazing details:

- 20mm high x 40mm deep hardwood beads (minimum density 640kg/m^3) excluding Beech (Fagus sylvatica) with a 15º chamfer.
- 60mm long size 6 – 8 steel wood screws at maximum of 50mm from corners and 150mm centres inserted at 30-45˚ to the glass.
- 20mm x 3mm Hodgsons Sealant Firestrip 60 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 5mm 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.
- The maximum dimensions for a pane of glass above a mullion is limited to 1000mm (h) x 956mm (w)

8.4 Norsound Vision Glazing Systems – Fanlights & Side Screens

8.4.1 General

Timber framed doorsets may include glazed fanlights and/or side screens when glazed using the Norsound Vision Glazing Systems based on the test evidence contained within A12161 Rev B.

The glazing system and beads must meet the specification shown in sections 8.4.4 – 8.4.6.

The door frame and screen framing construction must comply with the specification shown in section 8.4.7.

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

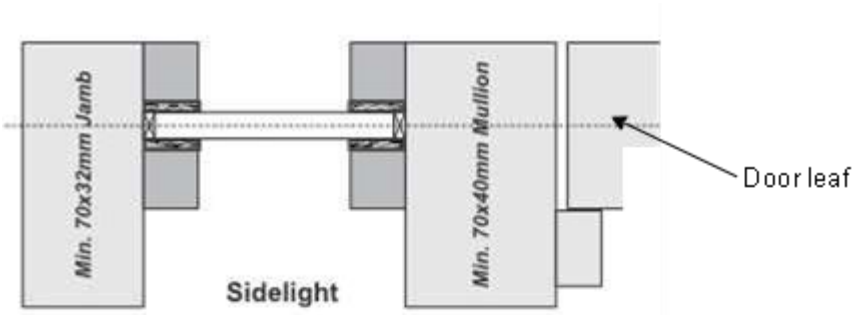
The glass must be able to demonstrate adequate performance when tested as a window or screen in accordance with BS 476: Part 22: 1987 or BS EN 1634-1, at the pane dimensions to be installed.

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

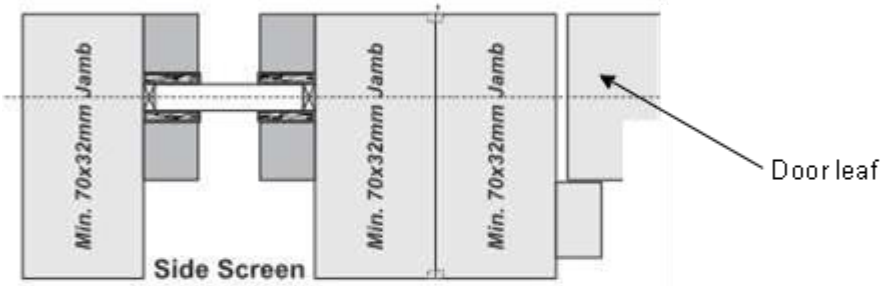
Note: Drawing is representative of doorset construction only; actual construction must be as the text within this document specifies

8.4.2 Frame Sections – Norsound Vision Glazing Systems

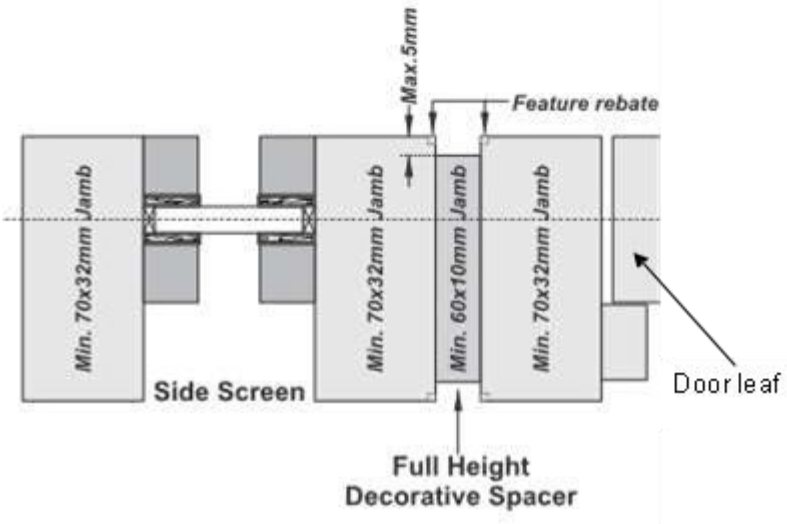
The following drawings depict possible constructions of combination frames and jointed frame sections for screens and door frame jambs:



Option 1 – One frame section (i.e., combination)



Option 2 – Back to back frame section (i.e., jointed frame)



Option 3 – Back to back frame section with separating post, which may be rebated by a maximum of 5mm, as shown (i.e., jointed frame)

When using separate sections of timber, as shown above (options 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 penetrate to approximately 2/3 depth of the adjacent timber section (including the entire depth of the spacer in option 3, if used). 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/pencil rounds at the junction of each timber section for options 2 and 3.

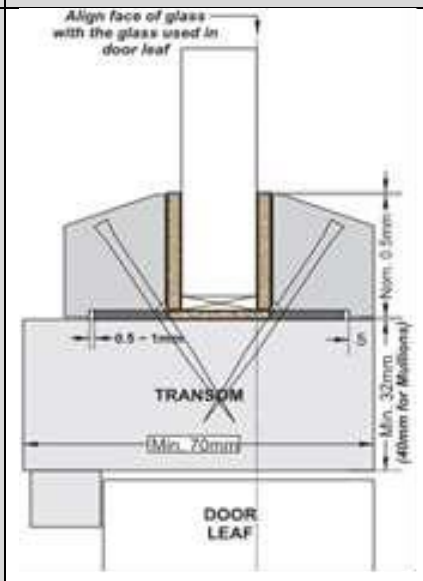
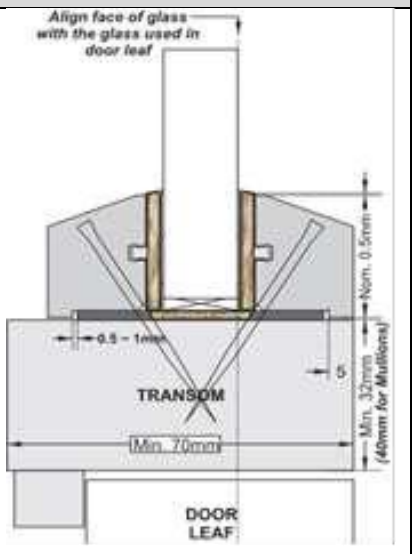
Drawings are representative of each type of common frame section makeup; actual construction in terms of intumescent seal location and material, etc. must be as the text within this document specifies.

8.4.3 Screen elevations – Norsound Vision Glazing System

See section 8.3.1 and 8.3.2 for possible screen configurations when using combination frames and jointed door frames.

8.4.4 Glazing beads & Installation – Norsound Vision Glazing System

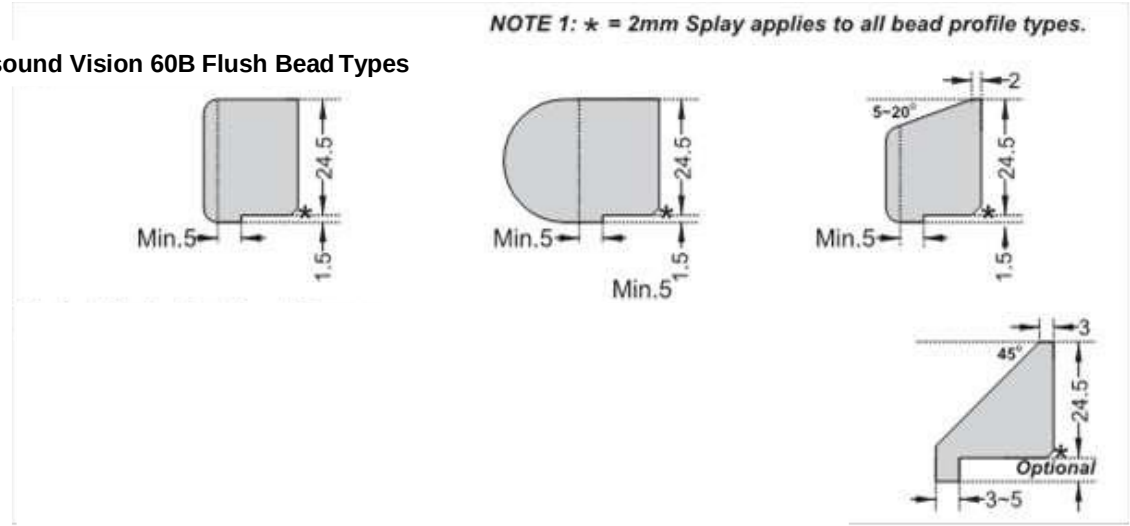
Glazing beads and intumescent materials must be installed in line with the following sections:

System Name		Norsound Vision 60B	Norsound Vision 60T
Typical Installation			
Dimensions	Bead height (mm)	Nominally 24.5	Nominally 14.5
	Intumescent Seals	25 high x 3 thick	15 high x 3 thick + 'plug'
Aperture Liner		Nominally – 2mm thick x minimum 42mm wide	

8.4.5 Norsound Vision 60B & 60T Applications

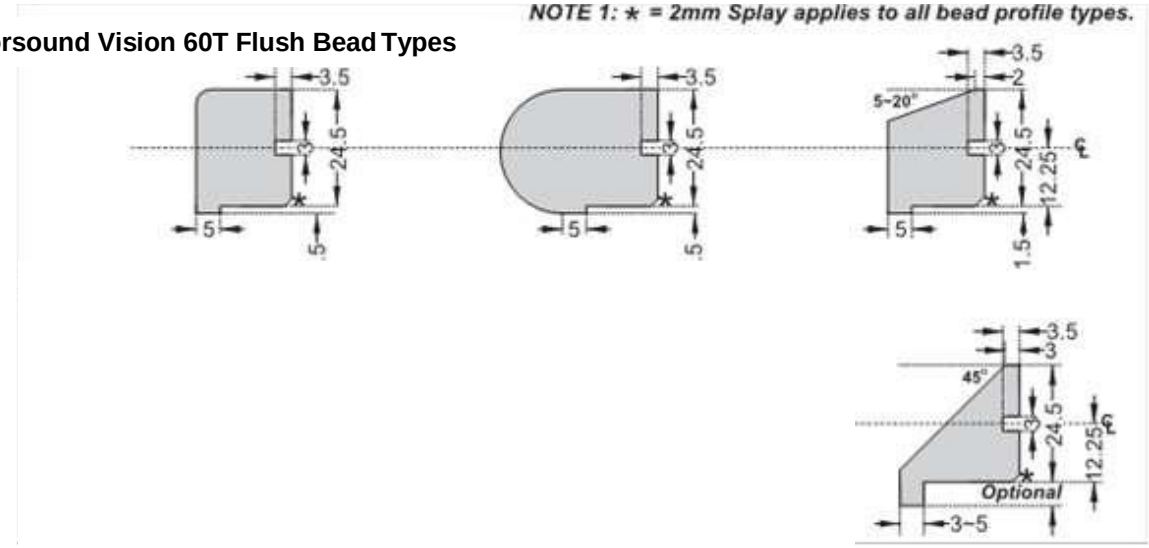
The following bead designs are assessed as acceptable for Norsound Vision 60B:

Norsound Vision 60B Flush Bead Types



The following bead designs are assessed as acceptable for Norsound Vision 60T:

Norsound Vision 60T Flush Bead Types



Notes:

1. Bead height must be nominally 24.5mm.
2. The intumescent seal component of Norsound Vision 60B & 60T is 25mm high and is required to project 0.5mm above the sightline of the bead.
3. Glazing aperture must be lined with the Norsound 5202LNR liner which is supplied at 52mm wide and may be reduced to a minimum of 42mm wide – liner must be fitted centrally in line with the plane of the glass
4. Glazing beads must be retained in position with minimum 50mm long x 2mm diameter steel pins, or minimum 50mm long No. 6 – 8 screws, inserted at 35 – 40º to the vertical, at no more than 50mm from each corner and at 150mm maximum centres.
5. Pneumatically fired pins are acceptable providing the pins meet the specification given above.

8.4.6 Glazing Bead Material – Norsound Vision Glazing System

All timber for glazing beads must be straight grained, joinery quality hardwood (excluding Beech (Fagus sylvatica)), free from knots, splits and checks.

Integrity Performance	Bead Profile	Material	Min. Density (kg/m^3)
60	All in section 8.4.4 & 8.4.5	Hardwood	640

8.4.7 Timber Screen Framing – Norsound Vision Glazing System

Timber used for constructing framing elements comprising screen assemblies as illustrated in section 8.4.3 must meet the following specification:

Element	Material	Min. Section Size (mm)	Min. Density (kg/m^3)
Perimeter screen framing	Hardwood	70 x 32	640
Mullions & transoms separating glass panes with side screens & fanlights	Hardwood	70 x 32	640
Back-to-back mullions separating side screens & doorsets (options 2 & 3)	Hardwood	70 x 32	640
Transoms common to doorsets & fanlights	Hardwood	70 x 32	640
Mullions common to doorset jambs & side screens	Hardwood	70 x 40	640

Notes:

1. Timber (excluding Beech (Fagus sylvatica)) for side screens must meet or exceed class J30 as specified in BS EN 942: 2007 (subject to adequate repair of any defects).
2. The fanlight and side screens may comprise multiple panes of glass providing the total doorset and screen assembly does not exceed 2950mm high x 2950mm wide and the transom/mullion restrictions above are complied with.
3. Gaps between glass and framing to permit expansion should be set according to the glass manufacturer's information, using non-combustible or hardwood setting blocks at the bottom edge.

9 Adhesives

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

Element	Product/Material Type
Timber lipping	Urea formaldehyde, Resorcinol formaldehyde, Polyurethane[2]
Decorative facings	UF, PUR or hotmelt EVA or PUR

Notes:

1. Flamebreak 660 and Flamebreak FF660 is a proprietary product under the control of Pacific Rim Wood Ltd and manufactured by P.T. Kutai Timber of Indonesia. The adhesives for constructing the door blank are held in confidence (WF503863). The adhesives listed above are necessary for further fabrication of the door blanks into doorsets.
2. Polyurethane glue only permitted for use on single leaf doorsets of the maximum dimensions specified in Appendix D. Glue line permitted based on RF08117 Revision A.

10 Hardware

10.1 General

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

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

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

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

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

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

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

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

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

10.2 Intumescent to Hardware

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

The door perimeter intumescent seal specifications are documented in conjunction with the leaf envelope size limitations in Appendix D.

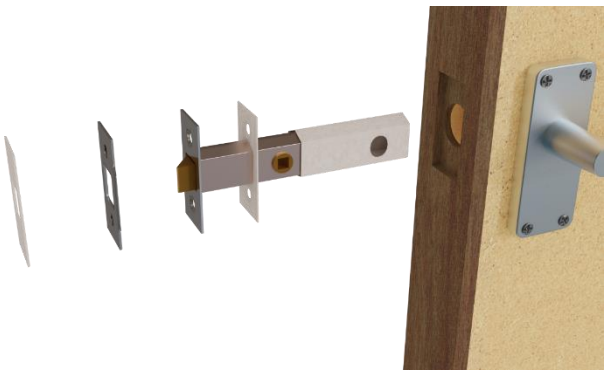
Hardware Intumescent Specification		
Item	**Location**	**Product/Manufacturer**
Hinges	Under both hinge blades	1mm Interdens – Dufaylite Developments Ltd. 1mm Therm-A-Strip – Intumescent Seals Ltd. 1mm G30 – Sealmaster Ltd. 1mm NOR910 – Norsound Ltd.
Lock/latches	Under forend & keep and lining all sides of the mortice (single and double leaf doorsets)	1mm Interdens – Dufaylite Developments Ltd. 1mm Therm-A-Strip – Intumescent Seals Ltd. 1mm G30 – Sealmaster Ltd. 1mm NOR910 – Norsound Ltd. [1]
Top pivots & & bottom straps	Fitted underneath the body footprint of top pivots and bottom straps	1mm Interdens – Dufaylite Developments Ltd. 1mm Therm-A-Strip – Intumescent Seals Ltd. 1mm G30 – Sealmaster Ltd. 1mm NOR910 – Norsound Ltd.

Hardware Intumescent Specification		
Item	**Location**	**Product/Manufacturer**
Flush bolts	Encasing the entire body of the flush bolt including the back surface of the face plate	2mm Interdens – Dufaylite Developments Ltd. 2mm Therm-A-Strip – Intumescent Seals Ltd. 2mm G30 – Sealmaster Ltd. 1mm NOR910 – Norsound Ltd.
Cableways	Wrap to cable running through door leaf (section 10.10.9)	1mm Interdens – Dufaylite Developments Ltd. 1mm Therm-A-Strip – Intumescent Seals Ltd. 1mm G30 – Sealmaster Ltd. 1mm NOR910 – Norsound Ltd.

Notes:

1. The maximum latch forend size for use with 1mm NOR910 is 155mm high by 25mm wide.
2. The seal specification for each configuration is shown in Appendix D.

Example of hinge protection detail



Example of lock & latch protection detail

10.3 Essential Hardware

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

Configuration	Hardware
LSASD	• Latch • Handle • Hinges • Self-closing device (closer)
ULSASD	• Hinges • Self-closing device (closer)
DASD	• Top pivot & bottom strap • Floor spring self-closing device (closer)
LSADD	• Latch • Handle • Hinges • Self-closing device (closer) • Flush bolt
ULSADD	• Hinges • Self-closing device (closer) • Flush bolt[1]
DADD	• Top pivot & bottom strap • Floor spring self-closing device (closer)

Notes:

1. Not permitted for doorsets that are fitted with perimeter intumescent spaced 5mm apart, see relevant data sheet in appendix D

10.4 Latches & Locks

10.4.1 Single Leaf Doorsets – Flamebreak 660 and Flamebreak FF660

Element	Specification
Maximum forend and strike plate dimensions	235mm high x 25mm wide x 4mm thick
Maximum body dimensions	165mm high x 100mm wide x 18mm thick
Intumescent protection	see section 10.2
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel, stainless steel or brass with a melting point ≥ 800ºC

Notes:

1. The maximum size of lock forend and strike when fitting the CS Edge protectors is 160mm (h) x 25mm (w)
2. Lock location to be between 800mm and 1200mm from threshold

10.4.2 Double Leaf Doorsets – Flamebreak 660

Element	Specification
Maximum forend dimensions	150mm high by 25mm wide by 4mm thick
Maximum strike plate dimensions	68mm high by 26mm wide by 4mm thick
Maximum body dimensions	20mm high by 75mm wide by 20mm thick
Intumescent protection	see section 10.2
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel, stainless steel or brass with a melting point ≥ 800ºC

Notes:

1. In all instances the location of the handle must be between 800 – 1200mm from the threshold.
2. Locks must be mounted in full depth stiles for double leaf doorsets (as tested in RF02055). The opposing leaf fitted with the keep can have the stile removed unless other hardware is also used in the opposite leaf that requires a full depth stile such as flush bolts

10.5 Handles

Handles may be any size up to 240mm high x 35mm wide. The handle must be compatible with the lock/latch and cylinder (if required), such that the closing action of the doorset is not impeded. Based on the supporting test evidence which used aluminium handles, steel handles are also permitted.

10.6 Butt Hinges

Components with the following specification have been deemed acceptable based on the supporting test evidence and subject to the intumescent protection specified in section 10.2.

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

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

Element		Specification	
Hinge positions:	If 3 hinges are required:	Top	150 – 220mm from the leaf head to top of hinge
		2nd	Minimum 200mm from centreline of top hinge to centreline of second hinge OR equally spaced between top and bottom hinge
		Bottom	200 - 300mm from the foot of leaf to bottom of hinge
	If 4 hinges are required:	Top	150- 220mm from the leaf head to top of hinge
		2nd	Minimum 200mm from centre line of top hinge to centre line of second hinge
		3rd	Equally spaced between 2nd hinge and bottom hinge
		Bottom	150 - 300mm from the foot of leaf to bottom of hinge
Intumescent protection:		See section 10.2	

Note:

Leaves less than 2300mm (h) must be hung on a minimum of 3 hinges. Leaves greater or equal 2300mm (h) must be hung on 4 hinges.

10.7 Doorset Self Closing

Doorset automatic self-closing can be provided by:

- Overhead face fixed closers
- Floor springs with top pivots and bottom straps

Automatic closing devices must either be as tested or components of equal specification that have demonstrated contribution to the required performance of these types of 60-minute doorset design, when tested to BS 476: Part 22: 1987 or BS EN 1634-1.

Notes:

1. The top pivots to floorspring assemblies must be protected with intumescent gaskets (see section 10.2) or alternatively the manufacturers tested intumescent gaskets.
2. Automatic doorset self-closing devices such as transom mounted, and offset pivots used with floor springs are not considered acceptable for use with the Flamebreak 660 or Flamebreak FF660 designs.
3. It is not permitted to fit concealed jamb mounted or head mounted closers to this door design without suitable fire test evidence supporting the specific concealed closer with this door design (i.e., test evidence must be in Flamebreak 660 or Flamebreak FF660 as appropriate). The tested perimeter intumescent specification for the closer must match that stated in this assessment and the tested gaskets must be fitted

Note:

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

10.8 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:

- 203mm long x 20mm deep x 20mm wide.

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

Flush bolts must be mounted in a full depth stile.

Flush bolt installation and intumescent protection

10.9 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.

10.10 Non-Essential Hardware

10.10.1 Pull Handles

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

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

10.10.2 Push Plates & Kick Plates

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

Approved specification:

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

10.10.3 Security Viewers

Components with the following specification are deemed acceptable.

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

10.10.4 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.

10.10.5 Air Transfer Grilles

10.10.5.1 General

Air transfer grilles may be fitted providing the product has suitable test evidence to BS 476: Part 22: 1987 or BS EN 1634-1 that demonstrates a minimum 60-minute integrity performance when installed within a timber based doorset of comparable thickness. Margins to the leaf edges will remain as detailed for glazing and the position of the unit will be dictated by the pressure regime tested in the proving evidence (normally below mid-height). The area occupied by the air transfer grille must not exceed 0.2m^2 and must be deducted from the area of glazing and letter plate, if both elements are fitted. If the tested air transfer grille included a timber aperture liner this must also be included when fitting the air transfer grille to this door design.

10.10.5.2 Pyroplex Air Transfer Grilles

The following Pyroplex air transfer grilles have been assessed as acceptable for use with the Flamebreak 60 design.

The grilles must be fitted a minimum of 100mm from the edge of the door leaf and a minimum of 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 percentage of glazing and letter plate, if both elements are fitted. The grilles may be fitted up to a maximum height of 2200mm from the threshold.

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 (excluding Beech (Fagus sylvatica)) aperture liner and Pyroplex intumescent mastic applied around the perimeter of the grille. Full details can be obtained from Pyroplex Ltd.

10.10.6 Environmental Seals

Silicon based flame retardant acoustic, weather and dust seals (for example Norsound 710, Lorient IS1212, IS1511, IS7025, IS7060 or Sealed Tight Solutions Ltd. ST1009) may be fitted to this doorset design without compromising the performance, providing their fitting does not interfere with the activation of the intumescent seals or hinder the self-closing function of the leaves.

10.10.7 Threshold drop Seals

Threshold drop seals can be fitted to the Flamebreak 660 and Flamebreak FF660

The drop seal must include a 1mm intumescent gasket to all edges of the recess for the drop seal and the drop seal must be mounted in a full depth rail at the bottom of the door leaf (i.e., the bottom rail cannot be removed when fitting drop seals).

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

The following components are deemed acceptable, recessed into the bottom of leaves.

Product	**Manufacturer**
IS8010si	Lorient Polyproducts Ltd.
RP8Si	Raven Products Ltd.
NOR810, NOR810S, NOR810dB+	Norsound Ltd.
Schall-Ex Duo L-15	Athmer
411-AR	Pemko

10.10.8 Letter Boxes / Plates

Letter boxes/plates may be fitted providing the product can demonstrate contribution to the required performance of this type of 60-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.

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

- Letter boxes/plates must be CERTIFIRE approved for 60 minutes in doorsets with solid timber door leaves. Restriction relating to size, location and intumescent protection around the letter box/plate must be complied with.
- The area of the letter plate (and air transfer grille if present) plus any glazing must not exceed the total permitted area for glazing in the leaf.
- Letter plates must be spaced at least 100mm from other apertures within the door leaf

10.10.9 Cableway

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 cableway to facilitate electro-magnetic closing/latching mechanisms. The cableway 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 60-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.

11 Installation

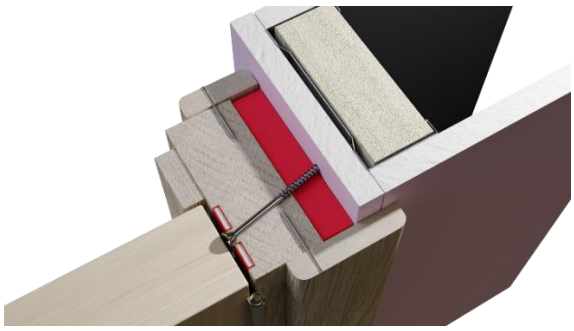
11.1 General

This section considers the installation of frames and doorsets. 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

11.2 Door Frame Installation

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

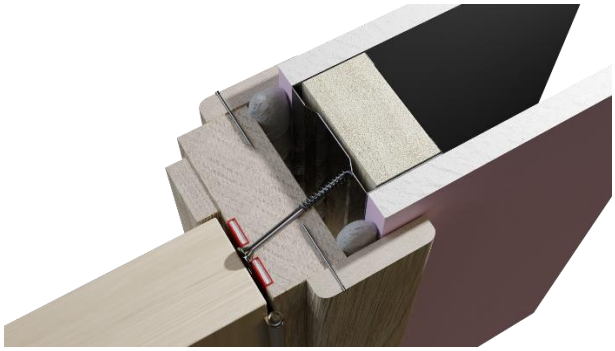
Permitted Installations	
	Instances where the door frame and the wall of the same depth such that architraves are fitted flush to both faces. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see door frame section. Architrave requirements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

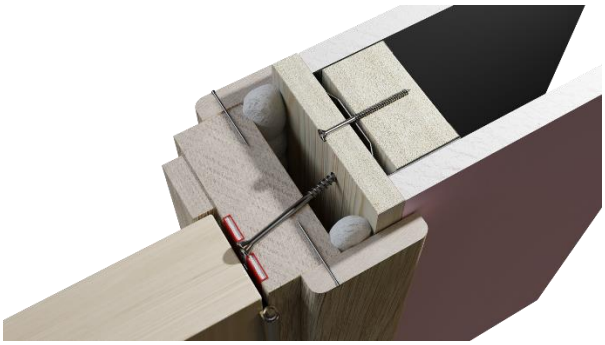
Note:

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

11.3 Firestopping

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

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

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

Note:

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

11.4 Packers

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

11.5 Wall types, Structural Opening & Fixity

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 60 minutes.

11.5.1 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 leaf head.
- A bottom fixing must be located 100mm from the bottom of the frame jamb.
- Intermediate fixings must be located at centres of not more than 600mm.

The minimum number of fixings in height must be:

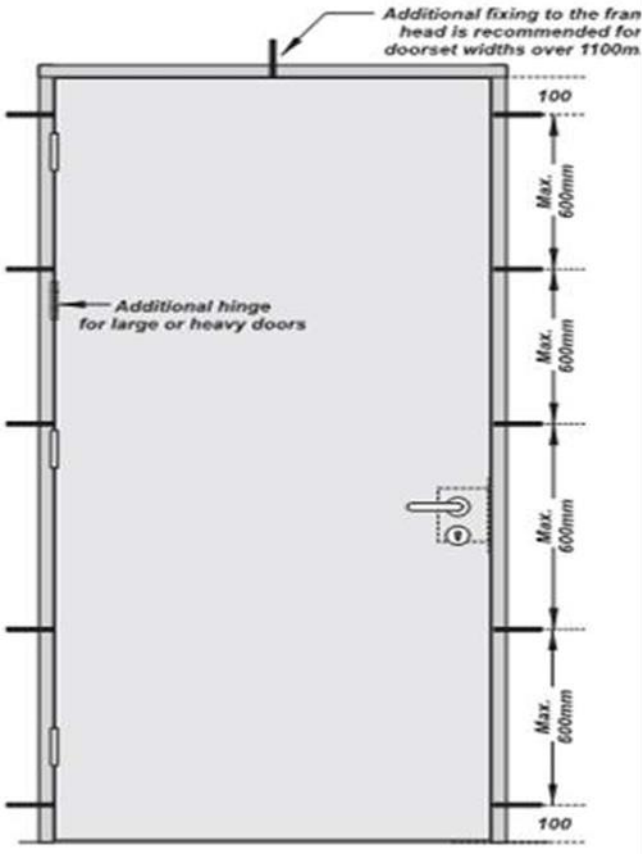
1. Doorset height up to 2000mm = 4No.
2. Doorset height 2000 – 2500mm = 5No.
3. Add 1No. fixing for each further 500mm increase in door height.

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.

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 centre width of the doorset at the head position is recommended.

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



Timber frame fixing locations illustrated.

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.

The same fixing specification and arrangement is to be replicated for doorsets that are fitted within screen assemblies.

11.6 Postproduction (Onsite) Leaf Size Adjustment

Doorsets constructed using the Flamebreak 660 and Flamebreak FF660 door blanks may be altered as follows:

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

11.7 Door Gaps

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

Door Gap & Alignment Tolerance Specification	
Location	Dimension
Door edge gaps	A minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud of each other or from the door frame by more than 1mm.
Threshold	8mm between bottom of leaf and top of floor covering. This is the maximum tolerance for fire resistance only. Where smoke control is required refer to section 13.

12 Insulation Performance

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

Insulation Performance Criteria		
Type		Details
Partially insulating		Doorsets incorporating up to 20% of non-insulating glazing, air transfer grilles or letter plates
Fully insulating	Timber frames	Unglazed doorsets or doorsets including 60-minute insulating glazing

13 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.

14 Conclusion

If doorsets were to be constructed in accordance with the specification documented in this field of application and were to be tested in accordance with BS 476: Part 22: 1987, it is our opinion that they would provide a minimum of 60 minutes integrity and insulation (subject to section 12).

15 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: Shawn Hannan

Name: Shawn Hannan

Position: Company Secretary

Date: 8th March 2022.

For and on behalf of: Pacific Rim Wood Ltd

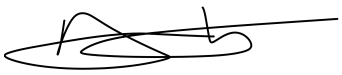
16 Limitations

The following limitations apply to this assessment:

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

17 Validity

1) The assessment is valid until 23rd February 2023 after which time it is recommended to be submitted to Warringtonfire for re-appraisal.
2) This assessment report is not valid unless it incorporates the declaration given in Section 15 duly signed by the applicant.

Signature:		
Name:	***Peter Barker**	***Liam Dunk**
Title:	Technical Manager	Product Assessor

* For and on behalf of Warringtonfire

Appendix A: Summary of Supporting Test Evidence

Primary Data

Report No.	Configuration	Leaf Size (mm)	Test Standard	Performance (mins)
RF02054 (Palusol)	A: ULSASD	2070 x 935 x 54	BS 476: Part 22: 1987	A: 54*
	B: ULSASD	2062 x 935 x 54		B: 58*
RF02055 (Pyrostrip 500P)	ULSADD	2155 x 935/845 x 54	BS 476: Part 22: 1987	60
RF02117 (Pyrostrip 500P)	A: ULSASD	2080 x 937 x 54	BS 476: Part 22: 1987	A: 71
	B: ULSASD	2380 x 1179 x 54		B: 61
RF05042 (MDF facings)	A: ULSASD	2080 x 936 x 54	BS 476: Part 22: 1987	A: 63
RF08117 (PU lipping glueline & Pyroplex seals)	B: ULSASD	2040 x 826 x 54	BS 476: Part 22: 1987	B: 62
WF 307381 (Pyroplex seals)	ULSADD	2156 x 936 x 54	BS 476: Part 22: 1987	62

* The failed single leaf, single acting doorset designs have been assessed through a change in the intumescent specification. The doorset were tested with 2 strips of 15 by 4mm and failed at the top closing corner. The intumescent specification has been increased to a single strip 30 by 4 mm in the head, which increases the intumescent from 52mm^2 to 54mm^2 (taking into account the PVC casing) but more importantly will give a better spread of intumescent at the centre portion of the door leaf. A 30 x 4mm head specification was successfully tested in RF02055, which further supports this assessment.

Supplementary Data

Report No.	**Configuration**	**Leaf Size** (mm)	**Test Standard**	**Performance** (mins)
A07051 Rev. B (assessment of Lorient Type 617 seals)	Various	Various	BS 476: Part 22: 1987	60
WF 191350 (Pyrostem)	Fixed sample	1495 x 926 x 54	BS 476: Part 20: 1987	62
WF 313434 (Lorient glazing system RF1)	Indicative	1490 x 1490 x 54	BS 476: Part 20: 1987	74
A11130 Rev. E (CS Group acrovyn & door edge protectors)	Various	Various	BS 476: Part 22: 1987	60
IF11064 (Norsound NOR810S threshold seal)	Indicative	1032 x 926 x 54	BS 476: Part 20: 1987	64
IF12006 (Norsound Vision 60)	Indicative	1090 x 1090 x 54	BS 476: Part 20: 1987	64
IF12027 (Norsound Vision 60)	Indicative	1052 x 1020 x 54	BS 476: Parts 20/22: 1987	68
IF12051 (Norsound Vision 60)	Indicative	1300 x 1300 x 70	BS 476: Parts 20/22: 1987	79
IF12053 (Norsound Vision 60)	Indicative	1300 x 1300 x 70	BS 476: Parts 20/22: 1987	75
IF13077 (Norsound Universal 60)	Indicative	1054 x 1022 x 54	BS 476: Part 22: 1987	64
A12161 Rev B (Norsound Vision fanlights & side screens)	Various	Various	BS 476: Part 22: 1987	30 & 60
RF11151 (Norsound NOR910 & NOR920 hardware protection)	LSASD	2040 x 926 x 54	BS 476: Parts 20/22: 1987	56*
RF11143 (Pyroplex FG60 glazing system)	ULSADD	2054 x 928 x 54	BS EN 1634-1 & BS EN 1363-1	61
A08001 Rev. D (Harrison Thompson/Lorient PVCu edge protectors)	Various	Various	BS 476: Part 22: 1987	30 & 60
RF05036 (Pyrodur 60-10 glazed leaf in glazed screen)	ULSASD (Glazed single leaf in glazed screen)	Leaf 2133 x 1037 x 54 Screen 3000 x 3000	BS EN 1634-1 & BS EN 1363-1	64
RF12077 (Pyroclear 60-001)	3No. ULSASD	A & B: 2050x700x54 C: 2050 x 927 x 54	BS 476: Parts 20/22: 1987	A: 79 B: 72 C: 61
RF05035 (Pyrostop 60-101)	A: ULSASD	A: 2135 x 1040 x 54	BS EN 1634-1 & BS EN 1363-1	A: 66
RF05126 (Pyrobel 25)	A: ULSASD	A: 2135 x 915 x 54	BS EN 1634-1 & BS EN 1363-1	A: 59**
CF437 (Pyroguard 23)	Various	Various	BS 476: Part 22: 1987	60

* The failure witnessed at 56 minutes was due to a failure at the threshold of the leaf. No further failures were witnessed until 62 minutes. Therefore, Warringtonfirehave assessed the intumescent hardware protection as suitable for inclusion as it had no bearing on the failure witnessed at 56 minutes.

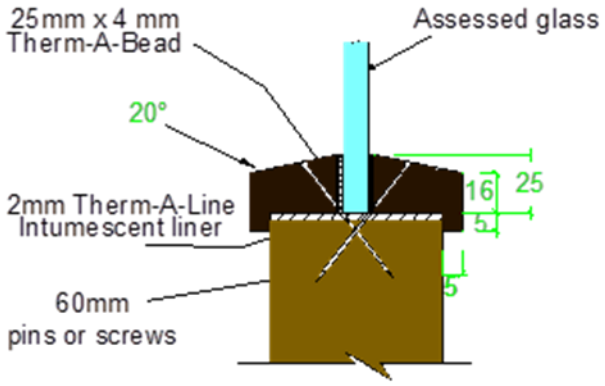
** The failure witnessed at 59 minutes was attributable to the leaf to frame junction. No failure directly attributable to the glass was witnessed prior to termination of the test at 66 minutes.

Appendix B: Revisions

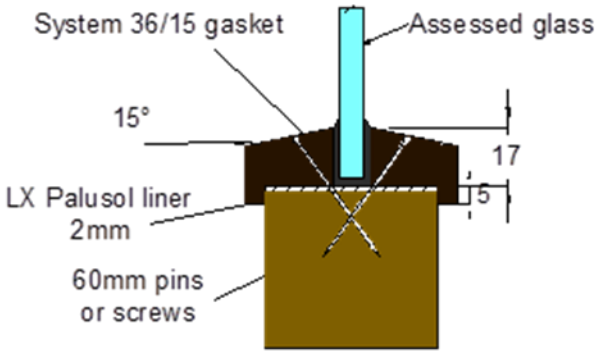
Revision	Warringtonfire Reference	Date	Description
A	A02141	05.03.03	Incorporation of additional test evidence Ref. RF02117 & RF02118 to include mixed hardwood stiles & rails and increase the leaf sizes in appendix D. Inclusion of MDF facings on LSASD. Filed under FEA/F03047.
B	A03047A	01.02.06	Change of top rail dimension to 100mm.
C	A07039	21.06.07	Update & revalidated for a further 5-year period.
D	A07171	22.08.07	Inclusion of Lorient Type 617 seals & revalidation for 5 years.
E	A09153	15.07.10	Update & revalidate assessment, including PU glue lines for lippings & Pyroplex seals for single leaf doors.
F	A09153	22.07.10	Edit to intumescent gaskets required for flush bolts & top pivots.
G	A11056	05.07.11	Technical review & update of assessment. Evidence from test WF 307381 has been included to permit 2No. 15 x 4mm Pyroplex seals for double doorsets. Assessment revalidated for a further 5-year period.
H	A13248	24.03.14	Inclusion of CS Ltd. acrovyn & door edge protectors, Lorient RF1 glazing system, Pyroplex FG60 glazing system, Norsound Vision 60 & Universal 60 glazing systems, Norsound Vision fanlights & side screens, Norsound NOR 910/NOR 920 intumescent hardware protection, Norsound threshold seals, AGC Flat Glass UK Pyrobel 25, CGI Ltd. Pyroguard 60-23, Pilkington Group Ltd. Pyrostop 60-101 & Pyroclear 60-001, & Pilkington Pyrodur 60- 10 for fanlights & side screens.
I	CNA/F14089	22.04.14	Inclusion of updated Norsound Universal drawings, clarification on Norsound intumescent gasket thickness for protecting flush bolts, inclusion of additional Norsound threshold seals
J	WF396631	23.02.18	Technical reviewed, revalidated and update to new document format. Include clarification of lipping application, clarification of concealed closer application, Mann McGowan Palusol 100 removed, clarification of facing option restrictions for leaf sizes & configurations, false timber bead option removed & inclusion of Yeoman Shield/Lorient edge protectors based on Chilt/A08001 Rev. C.

Revision	Warringtonfire Reference	Date	Description
K	WF 514531	09.02.22	Report re-branded in the Warringtonfire name and styling. Scope of report based on the test evidence cited within Rev J but with the updates to scope linked to the results of the testing conducted by Pacific Rim Wood under WF 503863 and WF 503868. Assessment to have same expiry date as Rev J Specific scope updates to Flamebreak FF660 design: • Coverage for Latched Single leaf Single Acting Designs only for MDF faced Flamebreak 60 • MDF leaves must have head rail and stiles present with max 5mm reduction to stiles and 3mm reduction to head rail permitted. • MDF design permitted with Mann McGowan perimeter seals only Scope updates required for Flamebreak 660 and FF660: • 10mm spaced perimeter intumescent seals for all configurations other than double leaf doorsets fitted on 3 No. hinges • Europrofile size locks in single leaf doorsets (MDF and ply faced), tubular mortice locksets in double leaf doorsets • Plywood faced design permitted as latched and unlatched single and double leaf configurations where full width head rail remains • Flush bolts and drop seals permitted when fitted into stiles/rails as appropriate and when fitted with intumescent protection • Doors clarified as requiring lipping on all edges (including the head) • Clarification on the use of Pyrodur glass in glazed screens based on RF05036 • Clarification on required glazing system for 23mm Pyroguard using CF437 • Clarification on required intumescent protection for cableway

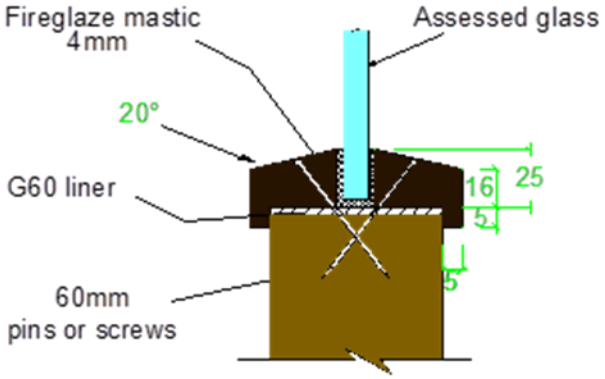
Appendix C: Glazing Systems



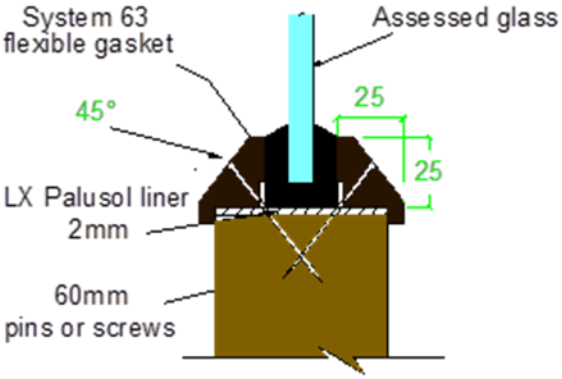
Therm-A-Glaze 60
Intumescent Seals Ltd



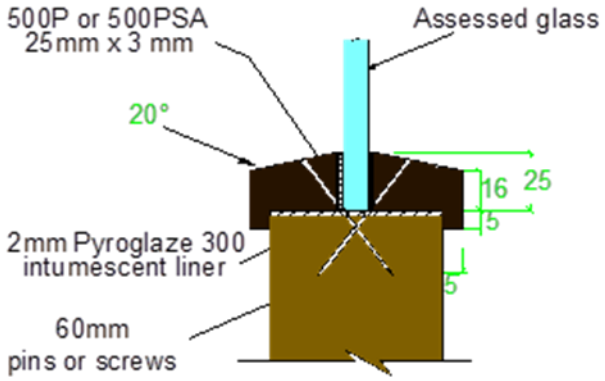
System 36/15
Lorient Polyproducts Ltd



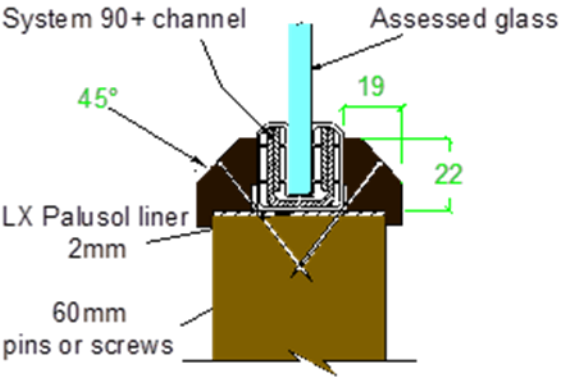
Fireglaze Mastic
Sealmaster Ltd



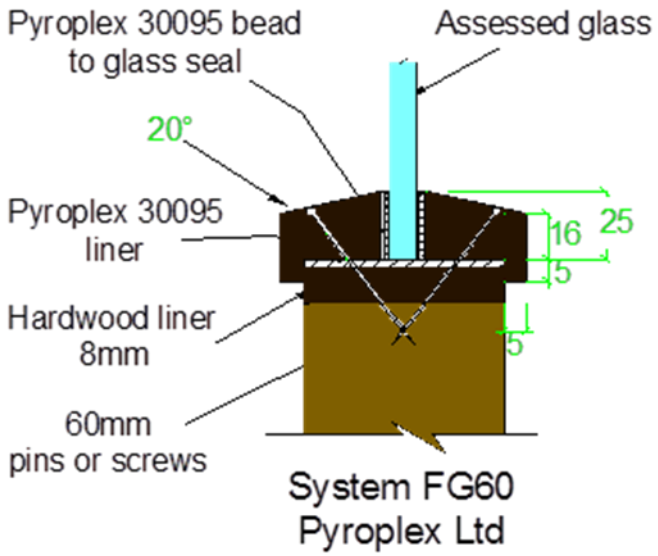
System 63
Lorient Polyproducts Ltd



Pyroglaze 60
Mann McGowan Ltd

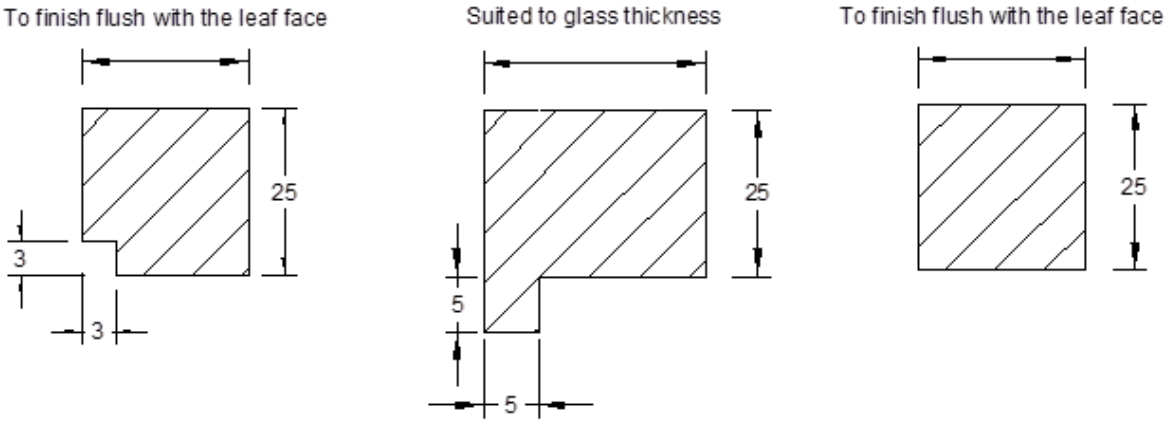


System 90+
Lorient Polyproducts Ltd



Assessed Square Glazing Bead Profiles

(The following square bead profiled may be used as an alternative to the splayed beads detailed above – refer to section 6 for glazing system and glass restrictions).



Appendix D: Leaf Size Envelopes

The following data sheets indicate the maximum leaf size envelopes for doorsets constructed using the Flamebreak 660 and Flamebreak FF660 door blanks.

The data sheets give the required intumescent specification for each of the configurations based on the test evidence.

All other construction details given in the main assessment must be followed when constructing doorsets using the Flamebreak door blanks.

Each data sheet states what leaf size envelope, configuration and intumescent specification is permitted for either the Flamebreak 660 or Flamebreak FF660 door blank design.

Pacific Rim Wood Ltd. – Flamebreak FF660 Doorsets

Latched, Single Acting, Single Doorsets – Pyrostrip 500P

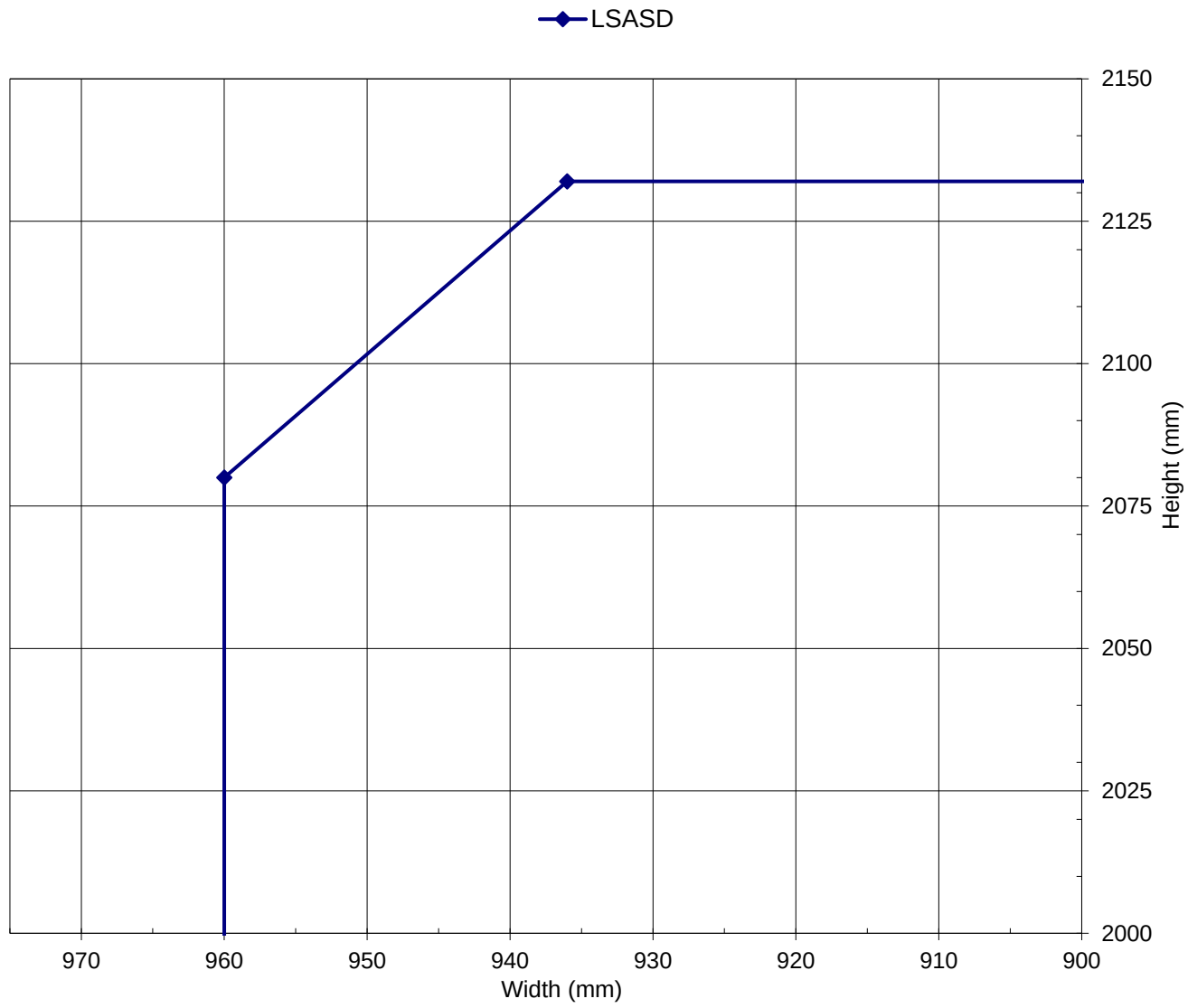
	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	From:	2080	x	960
		To:	2132	x	936

Intumescent Materials: Pyrostrip 500P – Mann McGowan Fabrications Ltd (assessed based on RF05042)

Head: 2No. 15 x 4mm seals fitted centrally 10mm apart in the frame reveal.

Jambs: 2No. 15 x 4mm seals fitted centrally 10mm apart in the frame reveal.

Maximum Door Leaf Size



Pacific Rim Wood Ltd. – Flamebreak 660 Doorsets

Latched & Unlatched, Single & Double Acting, Single Doorsets – Type 617 Seals

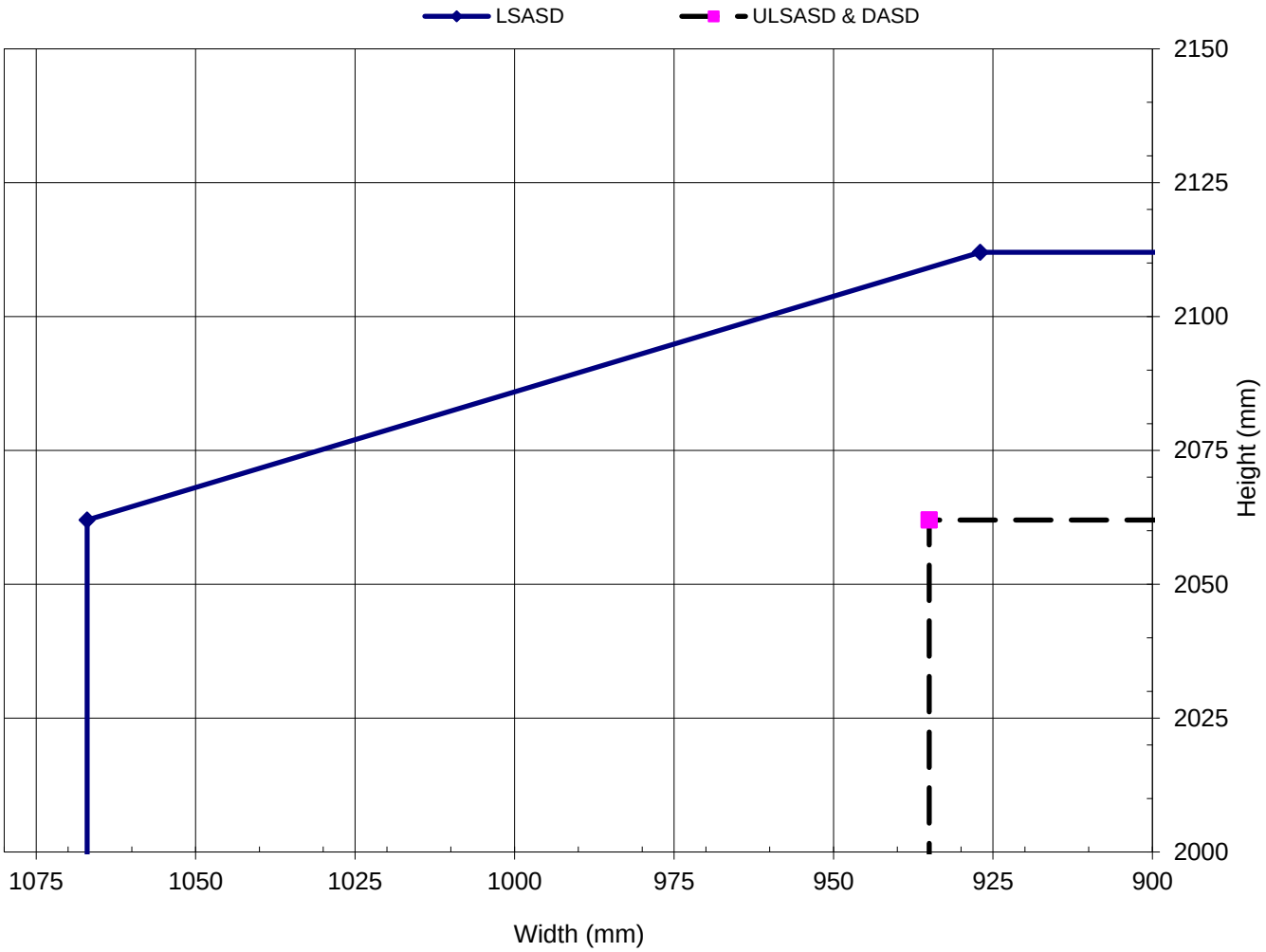
	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	From:	2062	x	1067
		To:	2112	x	927
	ULSASD & DASD	Maximum	2062	x	935

Intumescent Materials: PVC encased Type 617 – Lorient Polyproducts Ltd (assessed based on RF02054)

Head: 1No. 30 x 4mm seal fitted centrally in the frame reveal.

Jambs: 2No. 15 x 4mm seals fitted centrally 10mm apart in the frame reveal.

Maximum Door Leaf Size



Pacific Rim Wood Ltd. – Flamebreak 660 Doorsets

Latched & Unlatched, Single & Double Acting, Single Doorsets - Pyrostrip 500P Seals

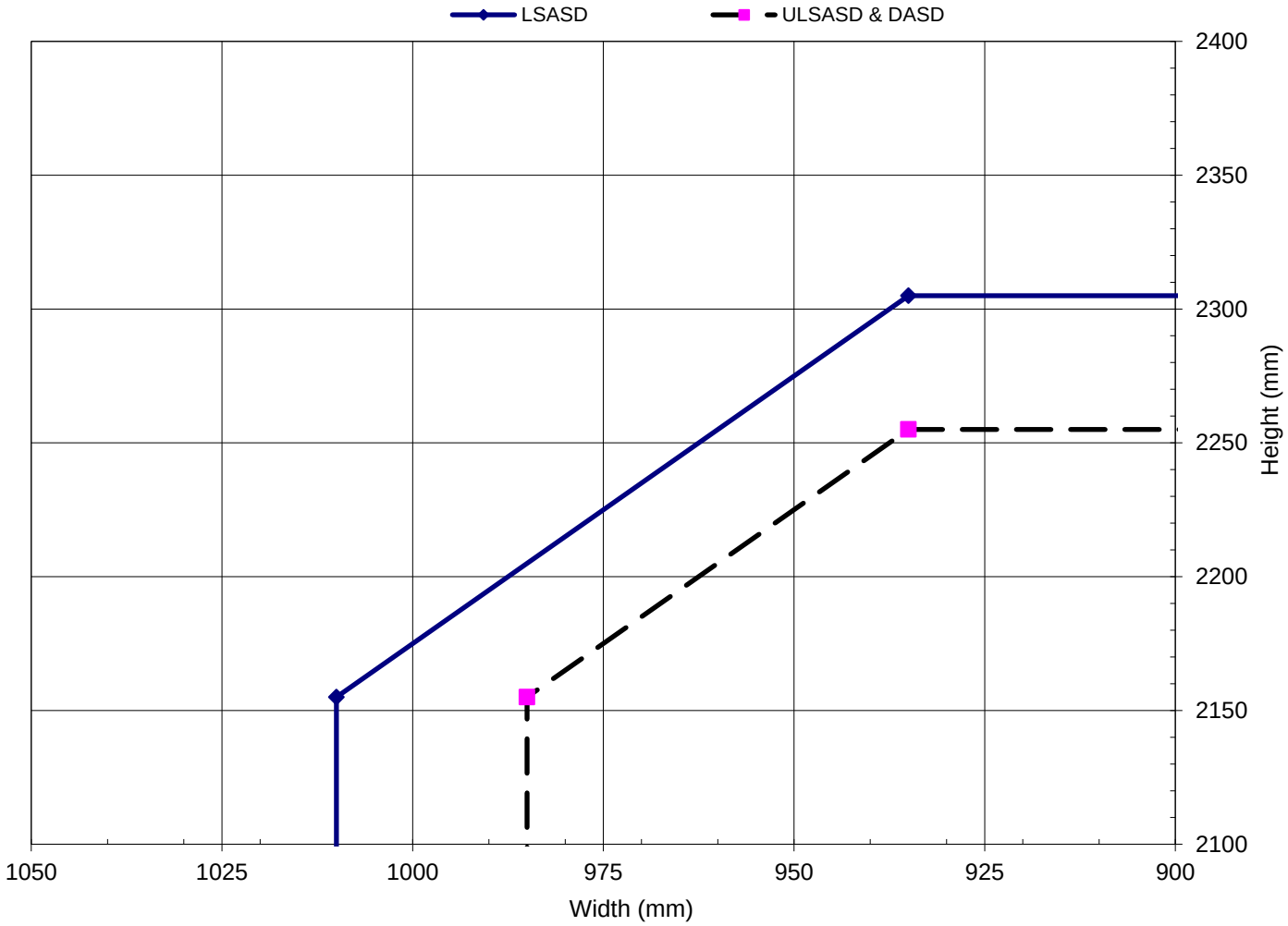
	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	From:	2155	x	1010
		To:	2305	x	935
	ULSASD & DASD	From:	2155	x	985
		To:	2255	x	935

Intumescent Materials: Pyrostrip 500P – Mann McGowan Fabrications Ltd (assessed based on RF02117)

Head: 1No. 30 x 4mm seal fitted centrally in the frame reveal.

Jambs: 2No. 15 x 4mm seals fitted centrally 10mm apart in the frame reveal.

Maximum Door Leaf Size



Pacific Rim Wood Ltd. – Flamebreak 660 Doorsets

Latched & Unlatched, Single & Double Acting, Single Doorsets – Pyroplex Rigid Box Seals

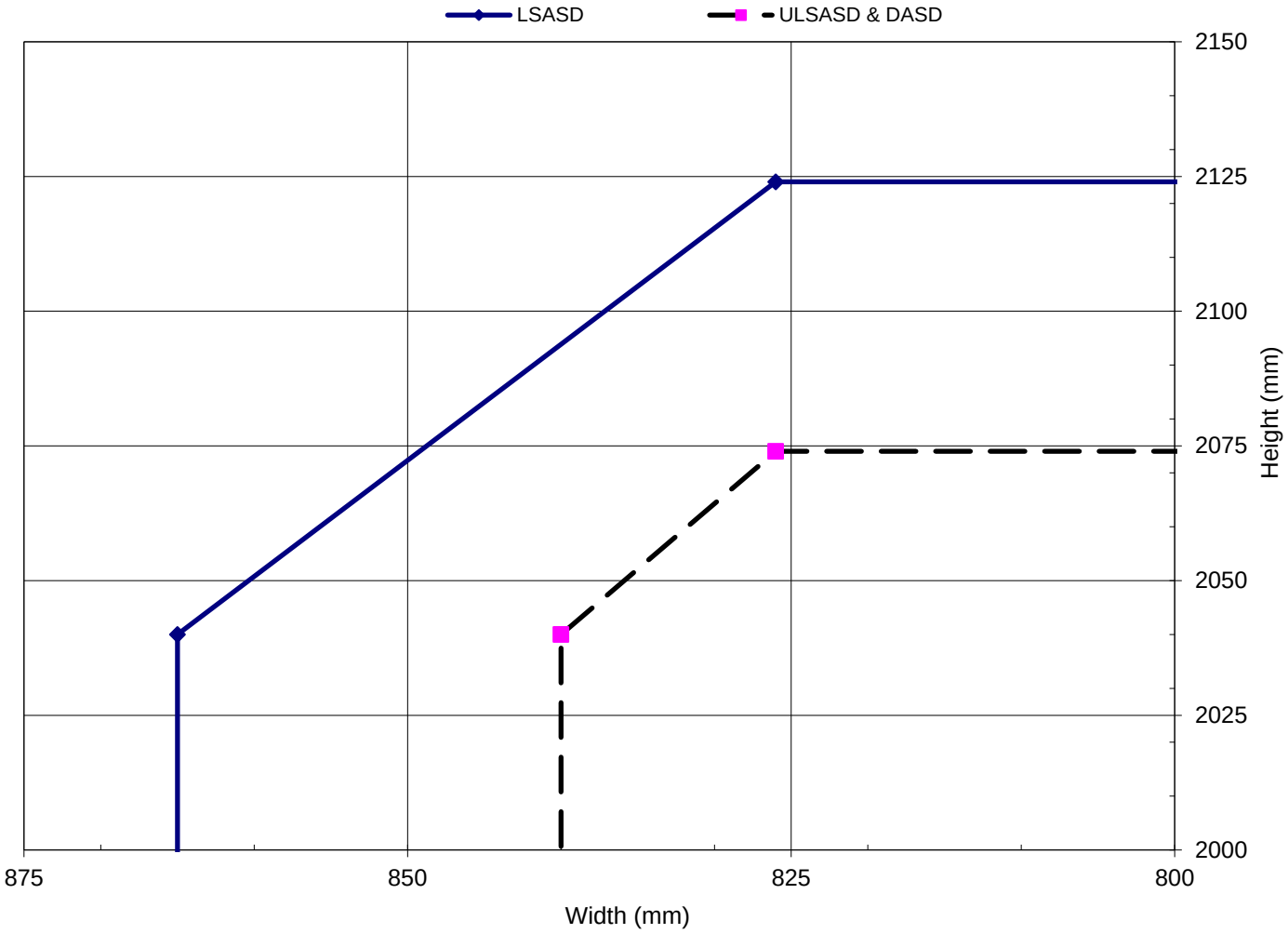
	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	From:	2040	x	865
		To:	2124	x	826
	ULSASD & DASD	From:	2040	x	840
		To:	2074	x	826

Intumescent Materials: Pyroplex Rigid Box Seals Rigid Box Seals (assessed based on RF08117 Rev A)

Head: 2No. 15 x 4mm seals fitted centrally 10mm apart in the frame reveal.

Jambs: 2No. 15 x 4mm seals fitted centrally 10mm apart in the frame reveal.

Maximum Door Leaf Size



Pacific Rim Wood Ltd. – Flamebreak 660 Doorsets

Unlatched, Single Acting, Single Doorsets – Pyroplex Rigid Box Seals

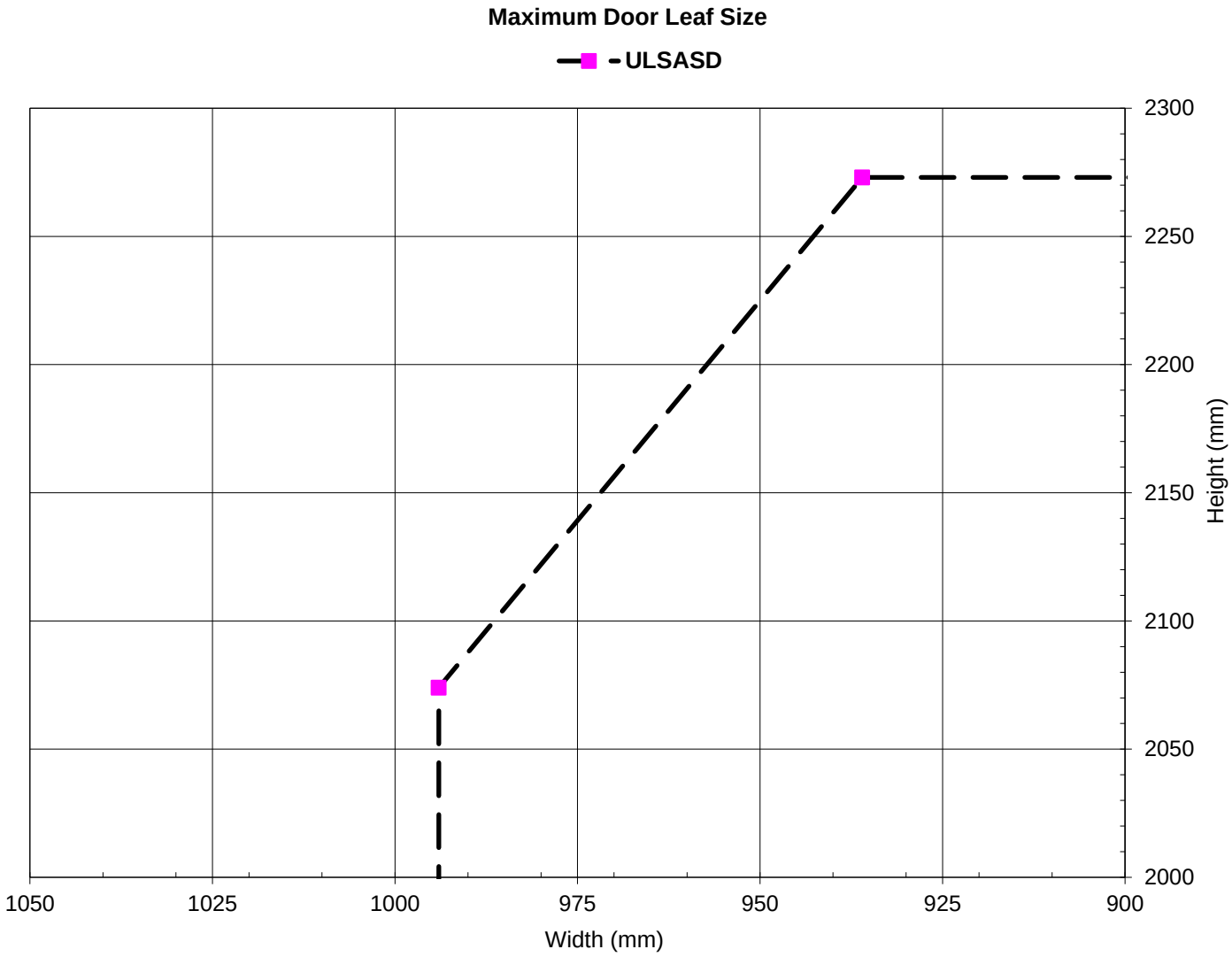
Leaf Sizes	Configuration		Height (mm)		Width (mm)
	ULSASD	From:	2156	x	994
		To:	2273	x	936

Intumescent Materials: Pyroplex Rigid Box Seals Rigid Box Seals (assessed based on WF307381)

Head: 2No. 15 x 4mm seals fitted centrally 5mm apart in the frame reveal.

Jambs: 2No. 15 x 4mm seals fitted centrally 5mm apart in the frame reveal.

IMPORTANT NOTE: This intumescent specification and leaf size envelope is only permitted for single acting doorsets hung on min. number 3 hinges with a face fixed self-closer (no other edge mounted hardware is permitted)



Pacific Rim Wood Ltd. – Flamebreak 660 Doorsets

Latched & Unlatched, Single & Double Acting, Single Doorsets – Pyrostrip500P Large Leaves

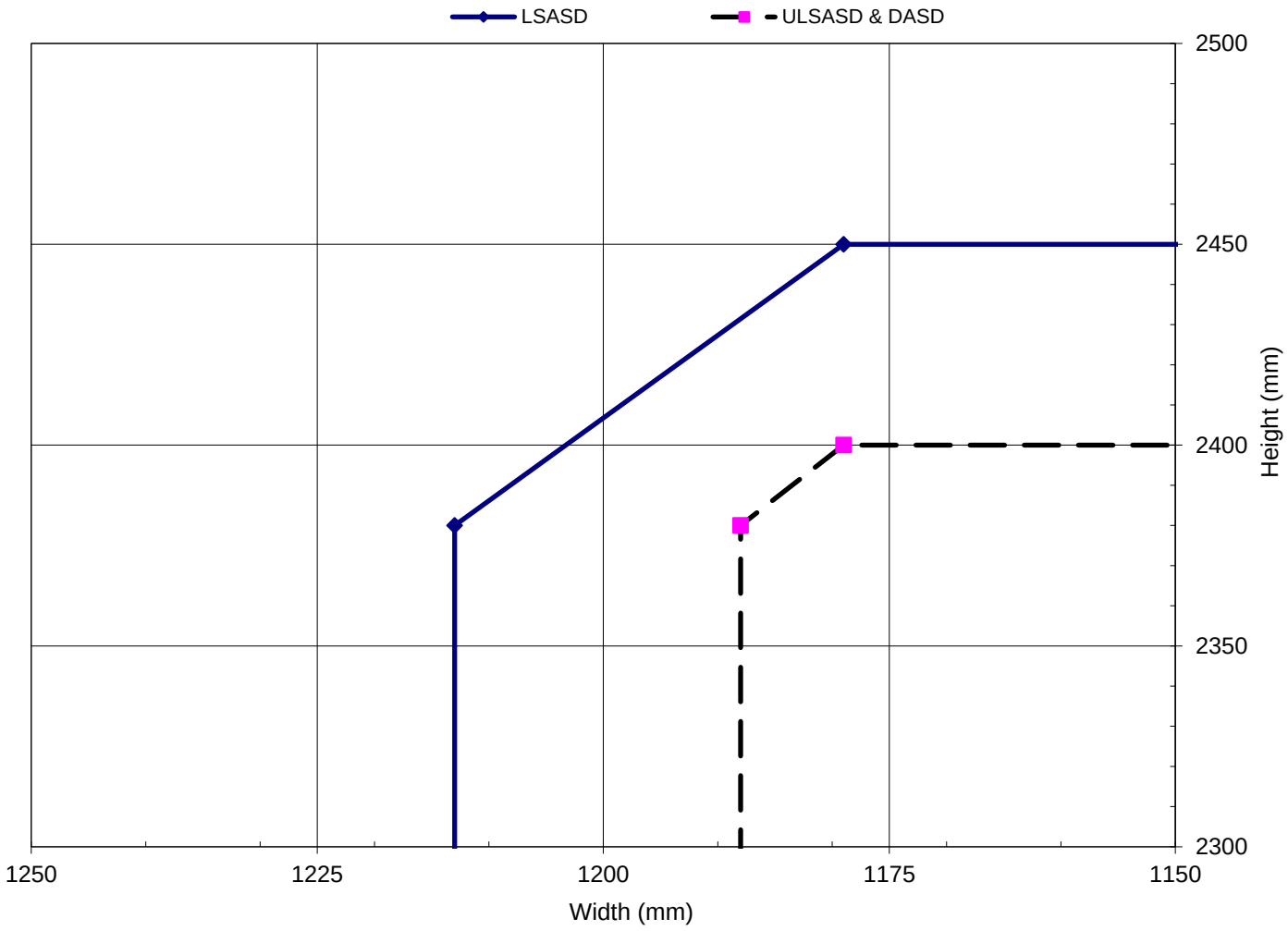
	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	From:	2380	x	1213
		To:	2450	x	1179
	ULSASD & DASD	From:	2380	x	1188
		To:	2400	x	1179

Intumescent Materials: Pyrostrip 500P – Mann McGowan Fabrications Ltd (assessed based on RF02117)

Head: 2No. 15 x 4mm seals fitted centrally 10mm apart in the frame reveal.

Jambs: 2No. 15 x 4mm seals fitted centrally 10mm apart in the frame reveal.

Maximum Door Leaf Size



Pacific Rim Wood Ltd. – Flamebreak 660 Doorsets

Unlatched, Single Acting, Double Doorsets – Pyroplex Rigid Box Seals

Leaf Sizes	Configuration		Height (mm)		Width (mm)
	ULSADD	From:	2156	x	944
		To:	2173	x	936
Maximum Overpanel Height (mm)		Transomed	1500		

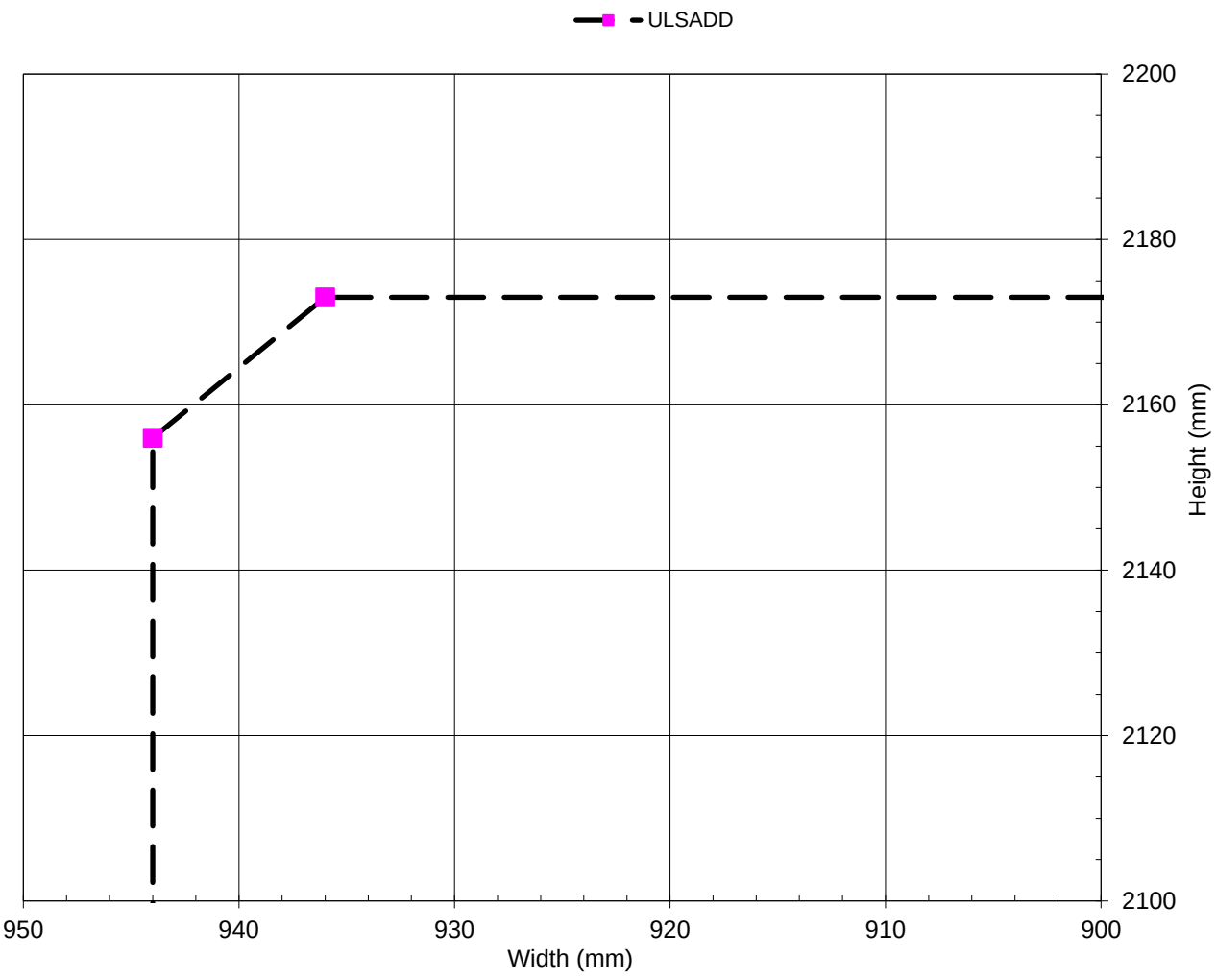
Intumescent Materials: PVC encased Pyroplex Rigid Box Seals – Pyroplex Ltd (assessed based on WF307381)

Head and Jambs: 2No. 15 x 4mm seals fitted centrally 5mm apart in the frame reveal.

Meeting Edges: 2No. 15 x 4mm seals fitted centrally 5mm apart in one meeting edge only.

IMPORTANT NOTE: This intumescent specification and leaf size envelope is only permitted for single acting doorsets hung on min. number 3 hinges with a face fixed self-closer (no other edge mounted hardware is permitted)

Maximum Door Leaf Size



Pacific Rim Wood Ltd. – Flamebreak 660 Doorsets

Latched & Unlatched, Single & Double Acting, Double Doorsets – Pyrostrip 500P – Mann McGowan Fabrications Ltd.

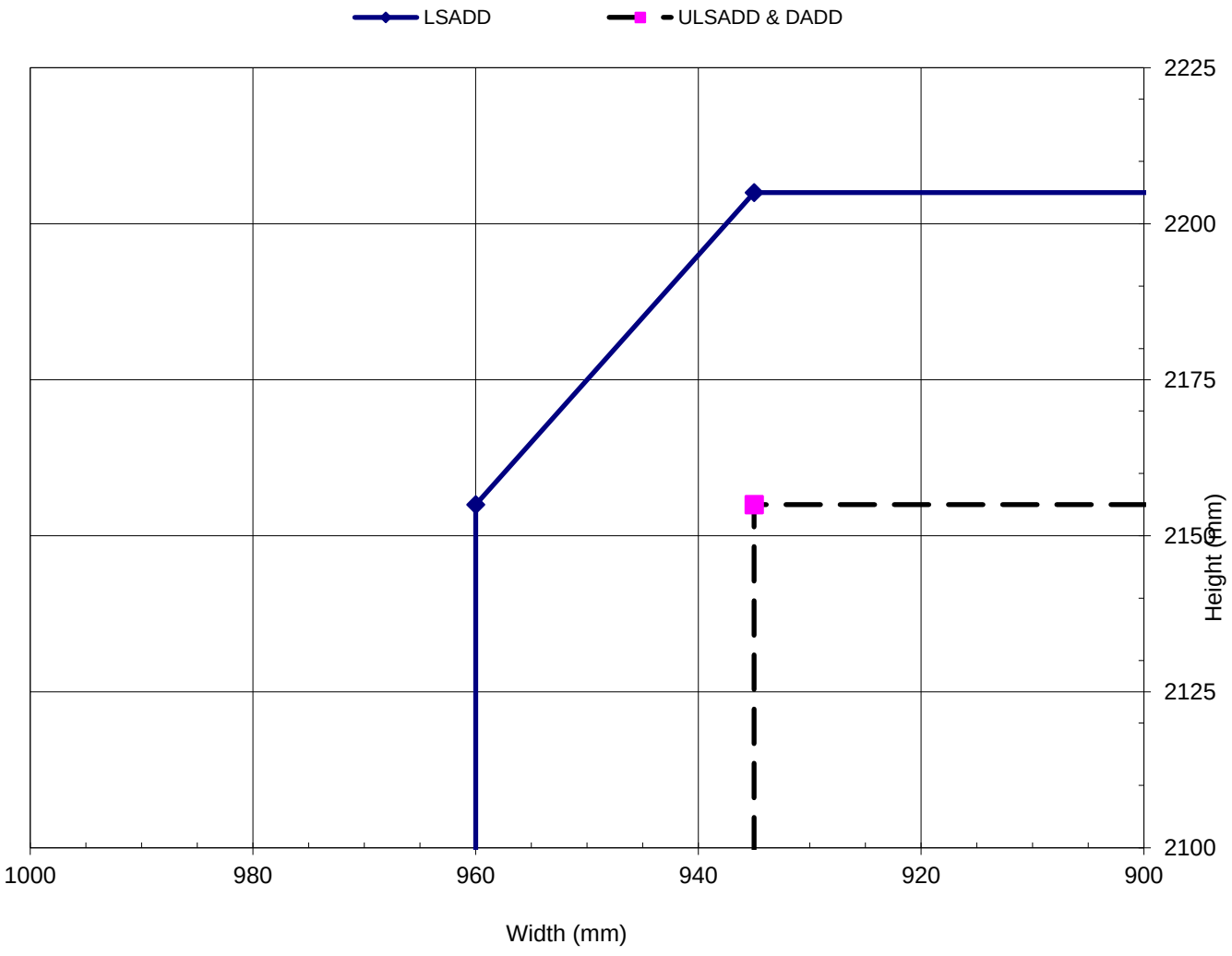
			Height (mm)		Width (mm)
Leaf Sizes	LSADD	From:	2155	x	960
		To:	2205	x	935
	ULSADD & DADD	From:	2155	x	935
		To:	2155	x	935

Intumescent Materials: Pyrostrip 500P – Mann McGowan Fabrications Ltd (assessed based on RF02055)

Head: 1No. 30 x 4mm seals fitted centrally in the frame reveal.

Jambs: 2No. 15 x 4mm seals fitted centrally 10mm apart in the frame reveal.
Meeting Edges: 2No. 15 x 4mm seals fitted centrally 10mm apart in one meeting edge only (edge with lock case).

Maximum Door Leaf Size



Pacific Rim Wood Ltd. – Flamebreak 660 Doorsets

Latched & Unlatched, Single & Double Acting, Single Doorsets – CS Edge Protectors/Acrovyn Wrap

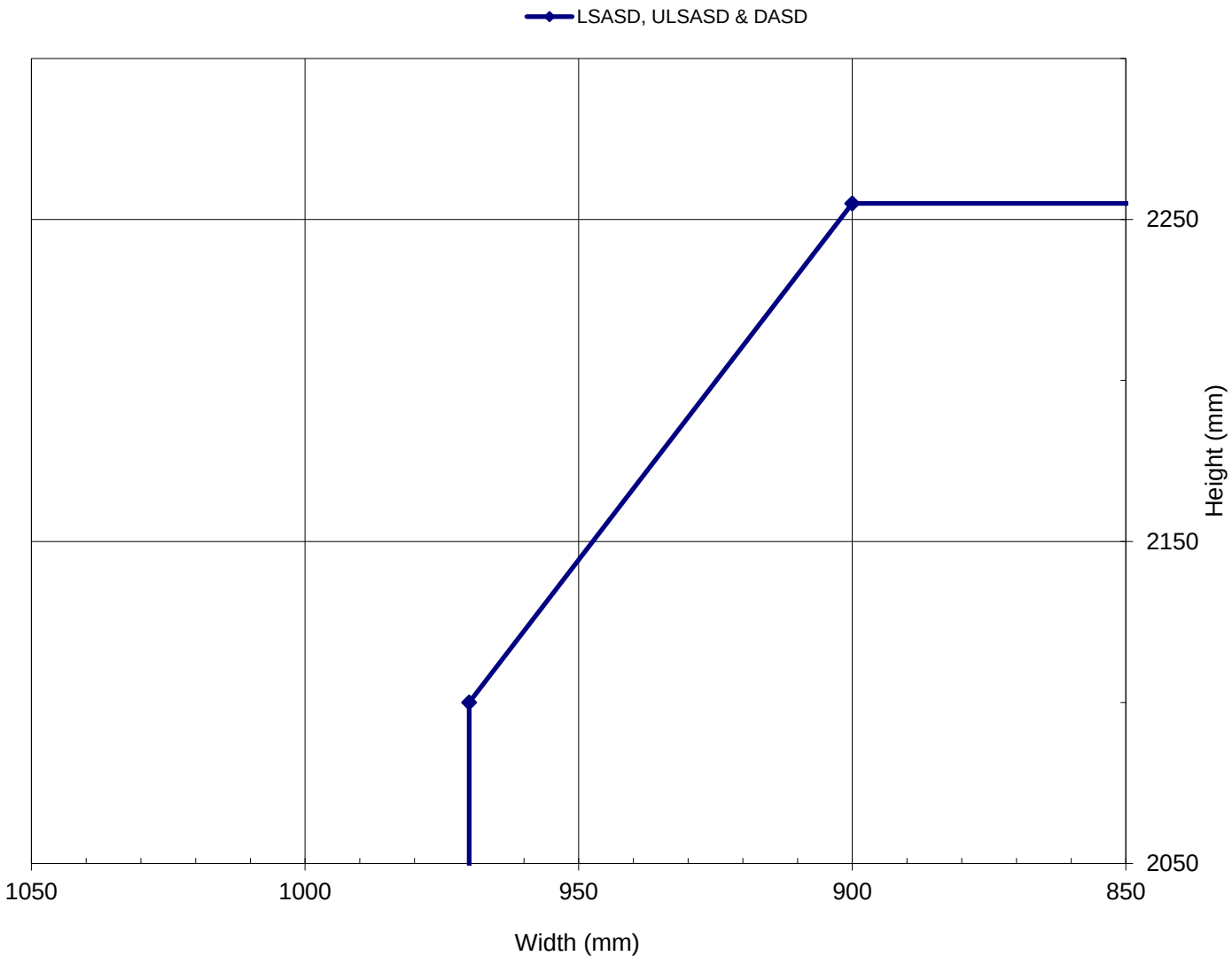
Leaf Sizes	Configuration		Height (mm)		Width (mm)
	LSASD	From: To:	2100 2255	x x	970 900
	ULSASD & DASD	From: To:	2100 2255	x x	970 900
Maximum Overpanel Height (mm)		-	Not Permitted		

Intumescent Materials: Type 617 – Lorient Polyproducts Ltd (taken from A11130 CS assessment)

Head: 2No. 15 x 4mm seals fitted 10mm apart centrally in the frame reveal.

Jambs: 2No. 15 x 4mm seals fitted 10mm apart centrally in the frame reveal, in addition to the CS edge protectors with integral intumescents fitted on the leaf edges.

Maximum Door Leaf Size



Pacific Rim Wood Ltd. – Flamebreak 660 Doorsets

Latched & Unlatched, Single & Double Acting, Double Doorsets – CS Edge Protectors/Acrovyn Wrap

	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSADD	From:	2100	x	945
		To:	2205	x	900
	ULSADD & DADD	From:	2100	x	945
		To:	2205	x	900
Maximum Overpanel Height (mm)		-	Not Permitted		

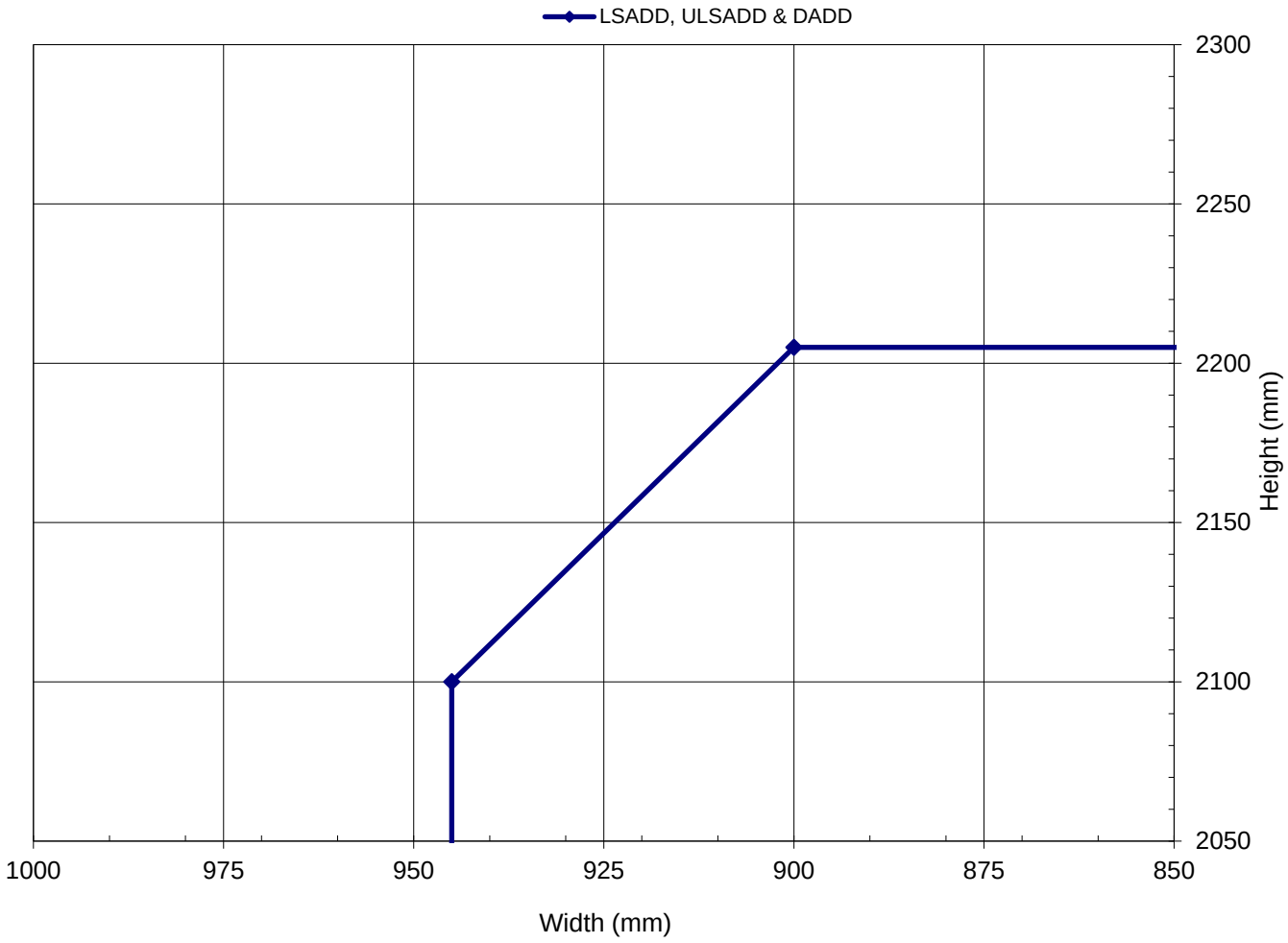
Intumescent Materials: Type 617 – Lorient Polyproducts Ltd (taken from A11130 CS assessment)

Head: 2No. 15 x 4mm seals fitted 10mm apart centrally in the frame reveal.

Jambs: 2No. 15 x 4mm seals fitted 10mm apart centrally in the frame reveal in addition to the CS edge protectors with integral intumescents fitted on the leaf edges.

Meeting Edges: 1No. 15 x 4mm seal fitted centrally in the CS edge protectors fitted to the meeting edge of both leaves.

Maximum Door Leaf Size



Pacific Rim Wood Ltd. – Flamebreak 660 Doorsets

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

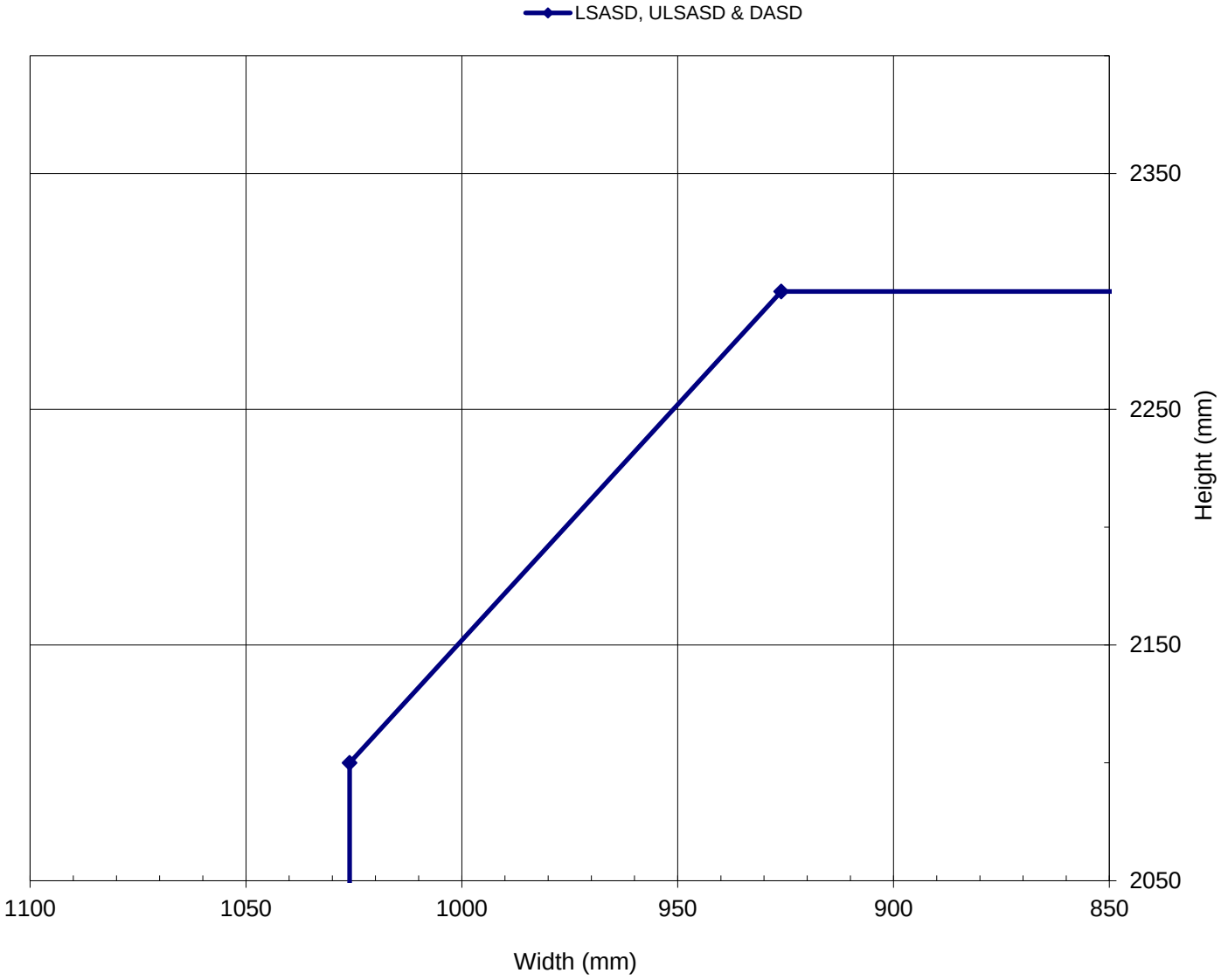
	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD, ULSASD & DASD	From:	2100	x	1026
		To:	2300	x	926
Maximum Overpanel Height (mm)		-	Not Permitted		

Intumescent Materials: Type 617 – Lorient Polyproducts Ltd (taken from A08001 Rev D Harrison Thompson assessment)

Head: 2No. 15 x 4mm seals fitted centrally 10mm apart in the frame reveal. For leaves over 2250mm high, increase to 2No. 20 x 4mm seals

Jambs: 1No. 20 x 4mm seal fitted centrally in the Yeoman Shield/Lorient door edge protector.

Maximum Door Leaf Size



Pacific Rim Wood Ltd. – Flamebreak 660 Doorsets

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

Leaf Sizes	Configuration		Height (mm)		Width (mm)
	LSADD	From:	2100	x	1026
		To:	2300	x	826
Maximum Overpanel Height (mm)		-	Not Permitted		

Intumescent Materials: Type 617 – Lorient Polyproducts Ltd (taken from A08001 Rev D Harrison Thompson assessment)

Head: 2No. 15 x 4mm seals fitted centrally 10mm apart in the frame reveal. For leaves over 2250mm high, increase to 2No. 20 x 4mm seals

Jambs: 1No. 20 x 4mm seal fitted centrally in the Yeoman Shield/Lorient door edge protector.

Meeting Edges: 1No. 20 x 4mm seal fitted centrally in the Yeoman Shield/Lorient door edge protectors of both leaves.

Maximum Door Leaf Size