

Title:

Global Fire Resistance
Assessment of Laminated
Core Doorsets for:

30 Minutes Fire Resistance
Assessment

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1 Introduction

This document constitutes a global assessment relating to laminated timber fire resisting doorsets, for Mademer Madeiras Ltd. The assessment uses established extrapolation and interpretation techniques in order to extend the scope of application by determining the limits for the design based on the tested constructions and performances obtained. The assessment is an evaluation of the potential fire resistance performance, if the elements were to be tested in accordance with BS 476: Part 22: 1987.

Much of the guidance that supports fire safety legislation in the UK is given in terms of performance in relation to British or European Standards which may take the form of test methods or agreed product standards.

In such cases a material, product or structure should therefore:

- a. have a specification or design which has been shown by test to be capable of meeting the required performance; or,
- b. have been assessed from test evidence generated against appropriate standards, or by using relevant design guides, to be capable of meeting the required performance.

This approach is outlined as being acceptable in paragraphs 1 a) and b) of appendix A in Approved Document B Vol. 1 - Dwellinghouses (2006 edition incorporating 2010 and 2013 amendments) and Approved Document B Vol. 2 - Buildings other than dwellinghouses (2006 edition incorporating 2007, 2010 and 2013 amendments), the Passive Fire Protection Federation (PFPF) guidelines and EGOLF Agreement EGA 10 Rev 2: 2014.

Test reports provide information on the performance of a specimen that was tested against the relevant standard and do not offer any extension to scope (e.g. leaf dimensions or hardware options). Assessments are written based on applicable primary test evidence and extend the scope of application of the tested design to provide for different design options and are written by person(s) with the necessary expertise in the performance of construction products under fire test conditions, as detailed in appendix A of Approved Document B Vol. 1 and Vol. 2.

Assessments utilise, as applicable, the direct fields of application incorporated within the test standards themselves (DIAPs), the extended fields of application (EXAPs) formalised as EN standards, and the guidelines referenced in this introduction.

This assessment has been written to the principles outlined in the PFPF guidelines to undertaking assessments. The aim of the PFPF guidelines is to give confidence to end-users that assessments that exist in the UK are of a satisfactory standard to be used for building control and other purposes.

The PFPF guidelines are produced by the UK Fire Test Study Group (FTSG) an association of the major fire testing laboratories in the UK and are published by the PFPF, the representative body for the passive fire protection industry in the UK.

2 General Description of Construction

The following table details the basic construction of door leaves to this design:

Element		Material	Dimensions (mm)	Density (kg/m ³)
Stiles		None fitted	-	-
Rails*	Outer	Elliotis pine	38 wide x 23 thick	460-500
	Inner	Elliotis pine dented rails	38 wide x 21 thick including an 18 wide x 13 deep tongue	460-500
Lipping	Horizontal edges (concealed between facings)	Hardwood	38 wide x 17 thick	560
	Vertical edges (exposed)	Hardwood	44 wide x 10 thick	560
Core		Elliotis pine lamels	Comprised of 24 wide x 38 deep vertical lamels	460-500
Facings	Inner	Mescla cross-band	3 thick	460-500
	Outer	Hardwood decorative veneer	0.7 thick	640

Notes: Leaf thickness 45mm.

*Bottom rail is optional, lipping must always be installed as per section 9.

3 Leaf Sizes

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

Unequal leaf double doorsets are covered by this assessment providing neither leaf exceeds the leaf sizes given in Appendix D. Doorsets containing leaves with smaller dimensions than those stated are deemed to be less onerous and are therefore automatically covered.

3.1 Orientation

The primary fire resistance tests for this design were all conducted with the doorset hung such that the door leaf opened towards the fire, which is considered the most onerous orientation in terms of fire resistance performance, for timber based door leaves. Based on this testing, assessment is made that doorsets to this design may be hung to open either away from or towards the fire risk side of the doorset.

4 Configurations

Based on the test evidence listed in appendix A, this assessment covers the following doorset configurations:

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

5 Leaf Size Adjustment

Door leaves constructed to this design may be altered as follows:

Element	Reduction	
Leaf	Height	The manufactured size of the leaf may be reduced in height without restriction from the bottom edge only which must be re-lipped in accordance with section 9. The rail at the head of the leaf must always remain in position and must not be reduced in size.
	Width	The manufactured size of the leaf may be reduced in width without restriction providing the edges are re-lipped in accordance with section 9
Timber lippings	The horizontal or vertical lipping dimensions stated in section 2 may be reduced by 20% for fitting purposes. See section 9 for further details	

6 Overpanels

6.1 Solid

Overpanels of the same construction as the door leaves may be used when separated by a transom. The overpanel must be fully contained within the door frame (see following diagram).

The transom must be to the same specification as the door frame (see the table in section 8.1).

Door frame joints must utilise one of the following methods: mortise and tenon joints or butt joints (see section 8.2).

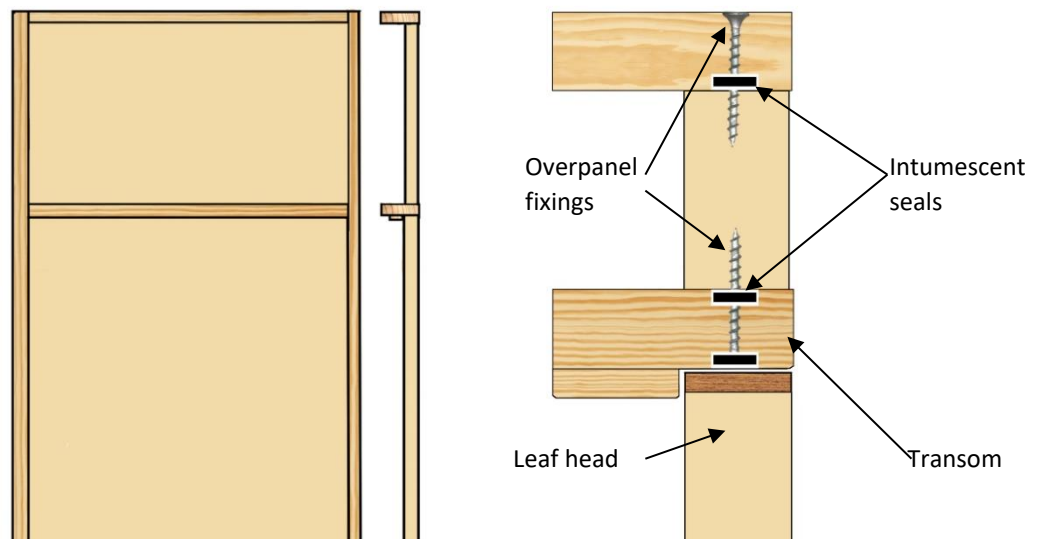
All methods require joints to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws. Butt joints must be additionally bonded with urea formaldehyde or equivalent.

Overpanels must be fixed by 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 intumescent seals specified for the jambs in section 12 must be fitted in the overpanel edges or frame reveal. Providing the intumescent seals are fitted to all edges of the overpanel, the frame to overpanel junction is permitted to have a maximum 2mm gap tolerance.

Maximum overpanel heights are as follows:

Configuration	Height (mm)	Width (mm)
Single doorsets	2000	Overall door width
Double doorsets	1500	Overall door width



Note: Drawing is representative of doorset construction. Exact construction must comply with the specification contained in this document.

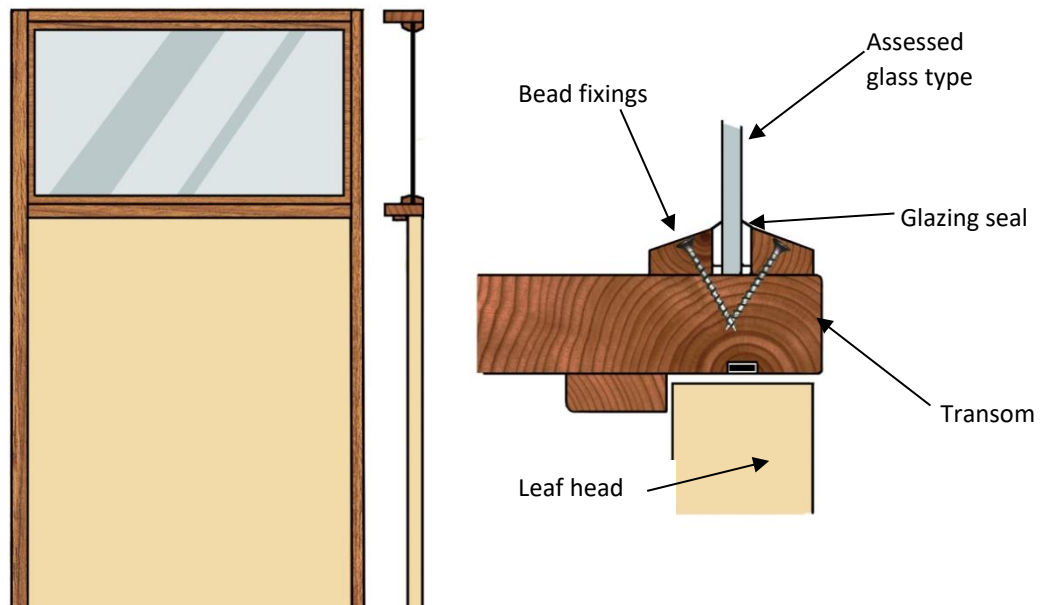
6.2 Glazed Fanlights

Doorsets with timber frames including a transom may include a glazed fanlight. The timber frame and glazing beads must be hardwood with a minimum density of 640kg/m^3 , whilst the frame section for the transom must be a minimum of $70\text{mm} \times 44\text{mm}$. All other elements of the timber door frame and transom assembly must comply with the specifications contained in section 8.

The maximum assessed fanlight 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.

Configuration	Height (mm)	Width (mm)
Single doorsets	≤ 600	Overall door width
Double doorsets	≤ 600	Overall door width



Note: Drawing is representative of doorset construction. Exact construction must comply with the specification contained in this document.

7 Glazing

7.1 General

The testing on this doorset design has successfully demonstrated that it is capable of tolerating the inclusion of glazing.

Glazed openings must not be less than 100mm from any door edge. Multiple apertures are acceptable within the permitted glazed area, with a minimum of 80mm of door core separating the apertures.

Aperture shape is not restricted, providing the glazing system and beads are compatible with that shape.

The permitted glazed area for all configurations is 0.76m² and the glazing must meet the following criteria:

7.2 Assessed Glazing Systems

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

Glazing System	Manufacturer
1. Therm-A-Strip 30	Intumescent Seals Ltd.
2. Fireglaze 30	Sealmaster Ltd.
3. Firestrip 30	Hodgson Sealants Ltd.
4. System 36 Plus	Lorient Polyproducts Ltd.
5. Pyroglaze 30	Mann McGowan Ltd.
6. R8913	Pyroplex Ltd.
7. Flexible Figure 1	Lorient Polyproducts Ltd.

7.3 Assessed Glass Products

Assessed glass types are as follows:

Glass Type	Manufacturer	Thickness (mm)	Max. Area (m ²)
1. Pyroshield	Pilkington Group Ltd.	6 & 7	0.76
2. Pyroshield 2	Pilkington Group Ltd.	6 & 7	0.76
3. Pyran S	Schott Glass Ltd.	6	0.76
4. Pyroguard EW30	Pyroguard UK Ltd	7	0.76
5. Pyrobelite 7	AGC Flat Glass UK	7	0.76
6. Pyrodur 30-104	Pilkington Group Ltd.	7	0.76
7. Pyrodur 60-10	Pilkington Group Ltd.	10	0.76
8. Pyrobelite 12	AGC Flat Glass UK	12	0.76

9. Pyrostop 30-10	Pilkington Group Ltd.	15	0.76
10. Pyrobel 16	AGC Flat Glass UK	16	0.76

Note: All glass types must be fitted strictly in accordance with the manufacturers' tested details/installation requirements.

7.4 Glazing Beads & Installation

Glazing beads must be from hardwood as specified in the following table:

Material	Profile	Min. Density (kg/m ³)	Application
Hardwood	Splayed	640	All proprietary systems detailed in 7.2 and shown in appendix B and all glass types specified in 7.3
Hardwood	Square	640	Proprietary systems 1, 2 & 3 as specified in 7.2 and glass types 4-10 specified in 7.3

All timber must be straight grained, joinery quality, free from knots, splits and checks.

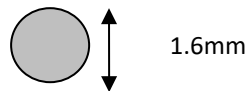
A square bead profile may be used as an alternative to the splayed beads required for the proprietary systems, subject to the restricted glass types and glazing systems specified in the table above (see appendix B for square bead profile options).

False timber beads may be bonded to the glass face with an intumescent mastic/silicon, or a 0.5-2mm thick self-adhesive intumescent tape/strip. Suitable glass for this application is restricted to types 4-10.

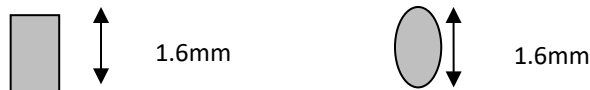
Glazing beads must be retained in position with 50mm long x 2mmØ steel pins or No. 6-10 screws, inserted at 30-35° to the vertical at no more than 50mm from each corner and at 150mm maximum centres.

Pneumatically (gun) fired steel pins are acceptable providing the pins meet the specifications shown below, are a minimum of 60mm long, and wherever possible are orientated 35-40° angle in relation to the glass.

Round pin diameter (mm) = minimum 1.6mm:



Oval/rectangular pin minimum linear dimensions = 1.6mm x 1.4mm:



8 Door Frames

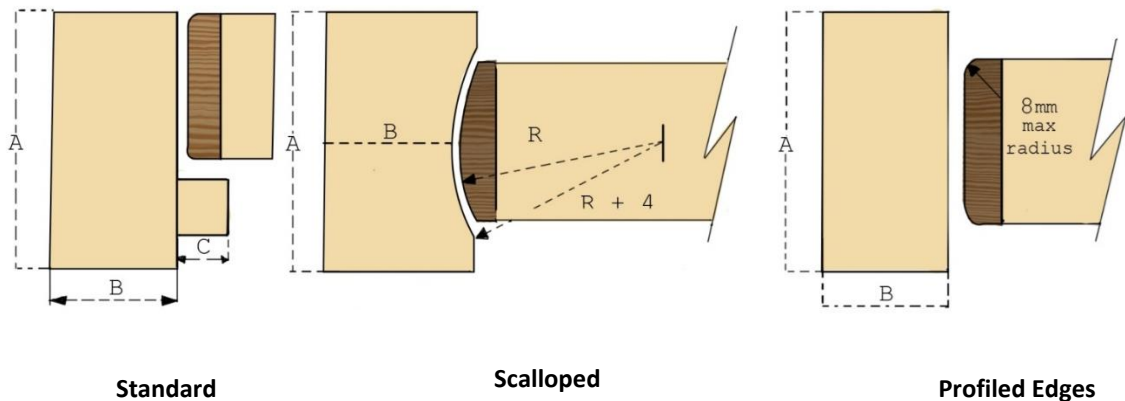
8.1 Door Frame Construction

Door frames must be constructed as follows:

Application	Material	Section Size (mm)	Min. Density (kg/m ³)
Door frames with or without solid overpanels	Softwood	70 x 32	510
	Hardwood	70 x 32	510
Door frames with glazed fanlights	Hardwood	70 x 44	640

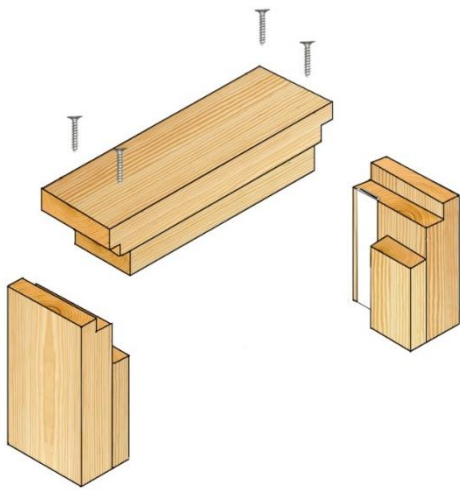
All door frame timber must be straight grained, joinery quality, free from knots, splits and checks.

A 12mm deep planted stop is adequate for single acting frames whilst double acting frames may be scalloped or square. If frames are square, the maximum radius to the corners of the leaf is 8mm. Frame joints must be mortice and tenoned, mitred or half lapped, and nailed or screwed additionally secured with P.U, P.V.A or Urea Formaldehyde adhesive (see 8.2 below) with no gaps. The following diagram depicts the assessed frame profiles and dimensions:

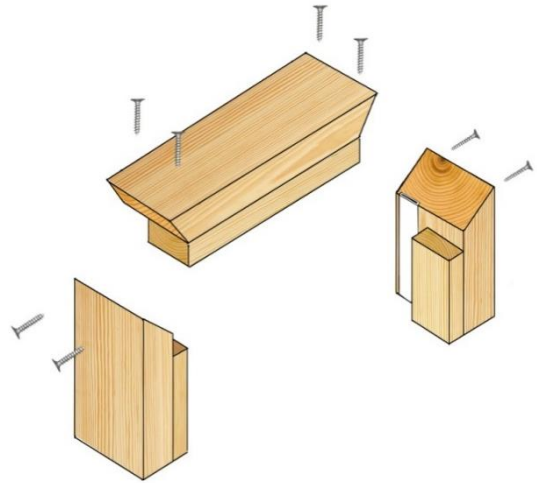


$A = 70\text{mm}$ $B = 32\text{-}44\text{mm}$ (see table above) $C = 12\text{mm}$ $R = \text{Radius of floorspring}$

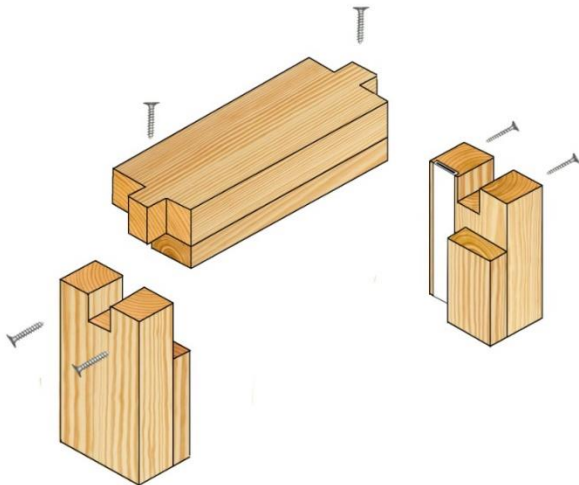
8.2 Door Frame Joints



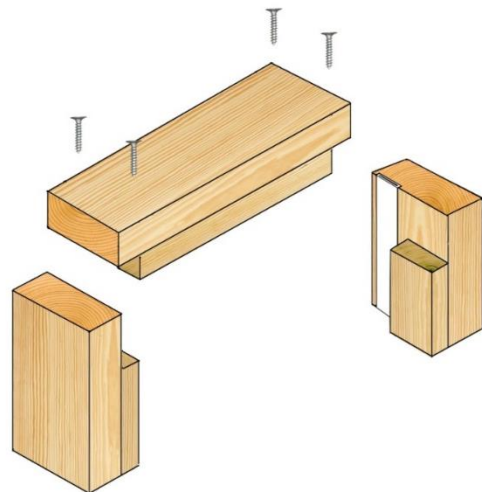
Half Lapped Joint



Mitre Joint



Mortice and Tenon Joint

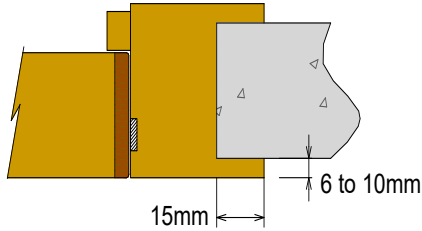
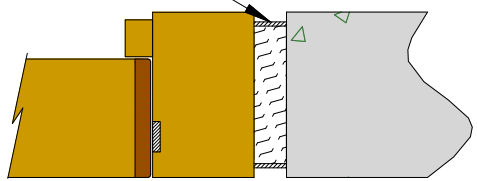
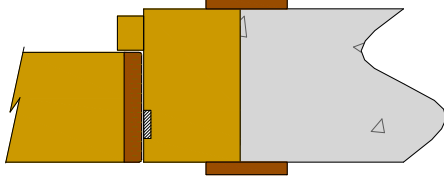
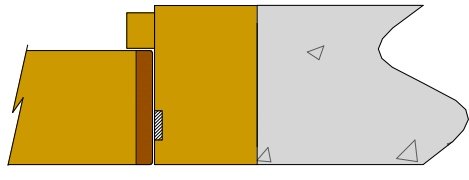
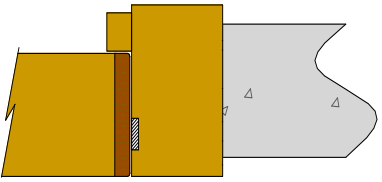
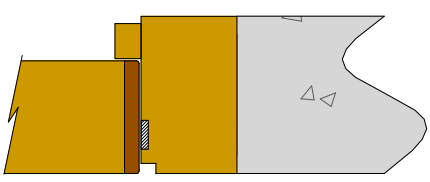


Butt Joint

Note: Drawing is representative of doorset construction. Exact construction must comply with the specification contained in this document.

8.3 Door Frame Installation

The following diagrams indicate acceptable and unacceptable door frame installations

Permitted Installations	
 <p style="text-align: center;">15mm 6 to 10mm</p>	<p>Max 10 x 10mm shadow gap with 2mm intumescent mastic capping or 10 x 4mm PVC encased intumescent seal</p>  <p>Shadow gaps are permitted as shown in the above diagram providing the frame to structural surround is infilled with timber of the same density as the frame or a non combustible material such as plasterboard. Other shadow gap dimensions will require specific test evidence or assessment.</p>
	
<p>Architraves overlapping the frame to structural surround junction are always permitted where required but may be mandatory depending on the size of frame to surround junction gap and the fire stopping used. See section on Sealing to the Structural Surround.</p>	<p>Depending on the size of the frame to surround junction gap and the fire stopping methods used, it may be permitted to install doorsets without architraves. See section on Sealing to the Structural Surround.</p>
Not Permitted Installations	
	
<p>Projecting frames without bolection returns are not permitted without specific test evidence or assessment due to the potential for increased charring to the back of the frame.</p>	<p>Quirks between the leaf and frame are not permitted without specific test evidence or assessment due to the potential for increased charring of the leaf to frame gap.</p>

The diagrams above are representative; actual installation must be as the text within this document specifies. See section 17 for sealing to structural opening.

9 Lippings

The door design is manufactured with integral lippings as defined in section 2. If the leaf is reduced in size and the lippings are removed, the cut edges must be re-lipped with exposed lippings meeting the following specification:

Type	Leaf Edges	Dimensions (mm - thick)	Min. Density (kg/m ³)
Flat	Vertical	8 – 13 with a maximum of 2 profiling permitted at corners of lipping (see section 8.1)	640
	Horizontal	15 – 20 with a maximum of 2 profiling permitted at corners of lipping (see section 8.1)	
Rounded	Vertical	8 - 13 with a radius matching the distance between leaf edge and floor pivot (see section 8.1)	
Rebated (meeting stile)	Vertical	20 - 25 with a 22 wide x 12 deep rebate	

Timber for lippings must be straight grained, joinery quality hardwood, free from knots, splits and checks.

10 Leaf Facing Materials

The primary tested facing material for this doorset design is 3mm thick cross band veneer. The following table defines the tested and assessed facing options:

Material	Dimensions (mm)	Minimum Density (kg/m ³)
Mescla cross-band	3	460-500
Plywood	3	500
Chipboard	3	680
MDF	3	750

10.1 Decorative & Protective Facings

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

Facing Material	Maximum Permitted Thickness (mm)
Paint	0.5
Timber veneers	2
PVC	2
Plastic laminates	2
Decorative paper/non-metallic foil	0.4

Notes:

1. Metallic facings are not permitted.
2. Materials must not conceal intumescent strips.
3. PVC and plastic laminates must not return around the leaf edges.

11 Adhesives

The adhesives used in construction of this door design must be as detailed in the following table:

Element	Adhesive Type
Timber lippings	Cascamite
Inner facing	Cascamite
Outer facing	Cascamite
Core lamels	PVA

12 Intumescent Materials

The intumescent materials tested and assessed for this doorset design are as follows:

Application	Location	Product/Manufacturer
Edge seals	Fitted in the frame jambs and meeting edge of door leaf	1. PVC encapsulated Palusol 100 - Mann McGowan Fabrications Ltd. 2. PVC encapsulated Palusol 100 - Lorient Polyproducts Ltd.
Hinges	Not required	-
Lock/latch	Under forend & keep for products with forends that exceed 60mm x 26mm	1. 1mm MAP paper - Lorient Polyproducts Ltd. 2. 1mm Interdens - Dufaylite Developments Ltd. 3. 1mm G30 – Sealmaster Ltd. 4. 1mm Therm-A-Strip - Intumescent Seals Ltd.
Top pivots & flush bolts	Lining all sides of the mortices	1. 1mm MAP paper - Lorient Polyproducts Ltd. 2. 1mm Interdens - Dufaylite Developments Ltd. 3. 1mm G30 – Sealmaster Ltd. 4. 1mm Therm-A-Strip - Intumescent Seals Ltd.

The seal specification for each configuration is shown in appendix D.

13 Tested Hardware

The following hardware has been successfully incorporated in the tests on this design:

Element	Product	Dimensions (mm)
Hinges	Royde & Tucker H101 and H105 hinges	100 x 35 (blade size)
Closer	Dorma Door Controls Ltd. TS73V overhead closer	233 x 60 (footprint size)
Latch	Henderson Hardware Ltd tubular mortise latch - disengaged	57 x 26 (forend size)
Furniture	Aluminium lever type handle	100 x 40 (footprint size)

14 Additional & Alternative Hardware

14.1 General

The following sections detail a generic specification for hardware assessed for use with this doorset design.

14.2 Certifire

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

14.2 CE Marking

The following items of hardware must also bear the CE mark for doorsets supplied within the EEC:

- Locks and latches: test standard EN 12209
- Electro mechanically operated locks: test standard EN 14846
- 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.

14.3 Latches & Locks

Latches and locks must either be as tested, or alternatively components with the following specification are acceptable:

Maximum forend and strike plate dimensions	150mm high by 28mm wide by 4mm thick
Maximum body dimensions	120mm high by 100mm wide by 18mm thick
Intumescent protection	See section 12
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel
Location	800 - 1200mm from the foot of the leaf

14.4 Hinges

Door leaves must be hung on a minimum of 3 hinges. Leaves over 2300mm high must fit 4 hinges. Hinges with the following specification are acceptable:

Blade height	90 - 120mm
Blade width (excluding knuckle)	30 - 35mm
Blade thickness	2.5 - 4mm
Fixings	Min. of 4No. 30mm long No. 8 or No. 10 steel wood screws per blade
Materials	Steel or stainless steel
Hinge positions	Top – 150 - 180mm from the head Bottom – 180 - 250mm from the foot Remainder – Equispaced between top and bottom
Intumescent protection	Not required

14.5 Automatic Closing

Automatic closing devices must either be as tested or components of equal specification that have demonstrated contribution to the required performance of this type of 30 minute doorset design, when tested to BS 476: Part 22: 1987 or BS EN 1634-1.

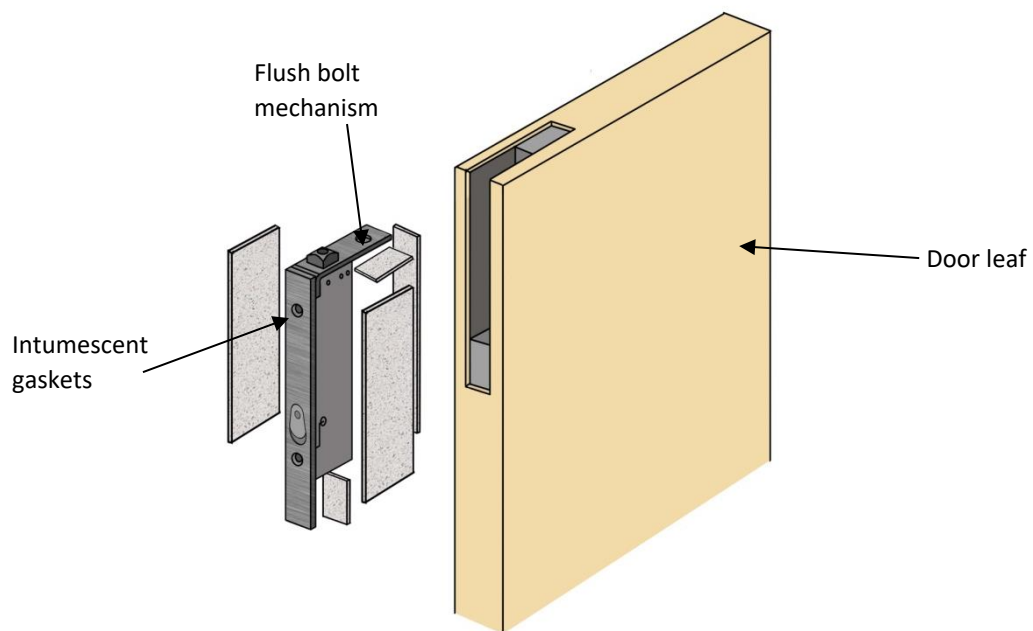
Note: The top pivots to floorspring assemblies must be protected with intumescent gasket (see section 12) or alternatively the manufacturers tested intumescent gasket pack.

14.6 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:

- 200mm long x 20mm deep x 20mm wide.

Flush bolts must be steel or brass and the mortice must be as tight to the mechanism as is compatible with its operation. All edges of the keep and bolt mortices must be protected with intumescent gaskets as specified in section 12. Alternatively the hardware manufacturers tested gaskets may be used. See diagram below for example of intumescent protection to flush bolt:



14.7 Pull Handles

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

14.8 Push Plates/Kick Plates

Steel and stainless steel face-fixed hardware such as push plates and kick plates may be fitted to the doorsets provided that their fitting requires the removal of no part of the door leaf. 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 thermo-softening contact adhesive. Plates must not return around the door edges.

14.9 Door Selectors

These may be freely applied, provided that they are not invasive in the leaf edges or door frames. Those that are invasive will require fire resistance test/assessment evidence to support their use. No additional intumescent protection is required unless test evidence dictates otherwise.

14.10 Door Security Viewers

Door security viewers with brass or steel bodies of a diameter less than or equal to 15mm may be used provided that the through-hole is bored tight to the case of the viewer (maximum tolerance +1mm). Lenses must be glass and the item must be bedded in to a tested intumescent mastic.

14.11 Panic Hardware

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

14.12 Air Transfer Grilles

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 30 minutes 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 location of the unit will be dictated by the position tested (normally below mid-height). The area occupied by the air transfer grille must not exceed 0.2m² and must be deducted from the area of glazing, if both elements are fitted.

14.13 Environmental Seals

Silicon based flame retardant acoustic, weather and dust seals 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.

14.14 Threshold Seals

The following types of automatic threshold drop seals may be recessed in to the bottom rail of leaves to this design without compromising the performance:

Manufacturer	Product
Raven	RP8Si, RP510, RP520, RP530
Athmer	Schall-Ex Duo L-15
Norsound	810Si
Pemko	S88 Series
Lorient Polyproducts	IS8010si

14.15 Letter Boxes/Plates

Letter boxes/plates may be fitted providing the product can demonstrate contribution to the required performance of this type of 30 minute doorset design, when tested to BS 476: Part 22: 1987 or BS EN 1634-1, when installed within a timber based doorset of comparable thickness. The position of the letter box/plate will be dictated by the pressure regime tested in the proving evidence (normally below mid height). Margins to the leaf edges must remain as specified for glazing.

15 Door Gaps

For fire resistance performance, door gaps and alignment tolerances must fall within the following range:

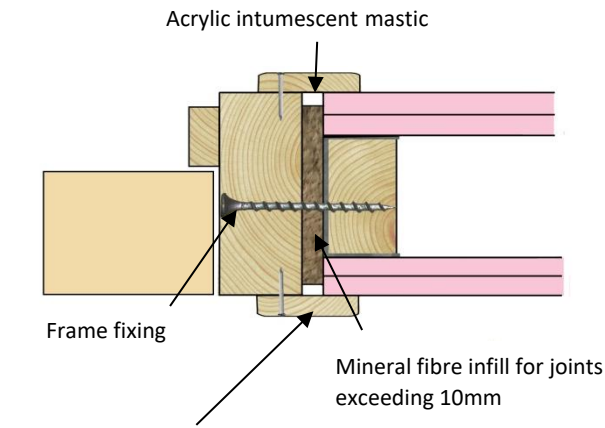
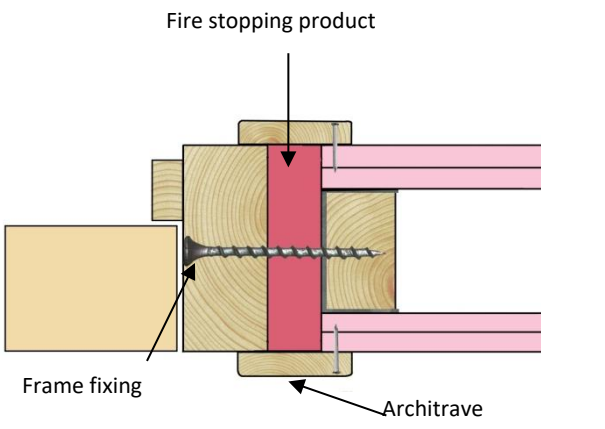
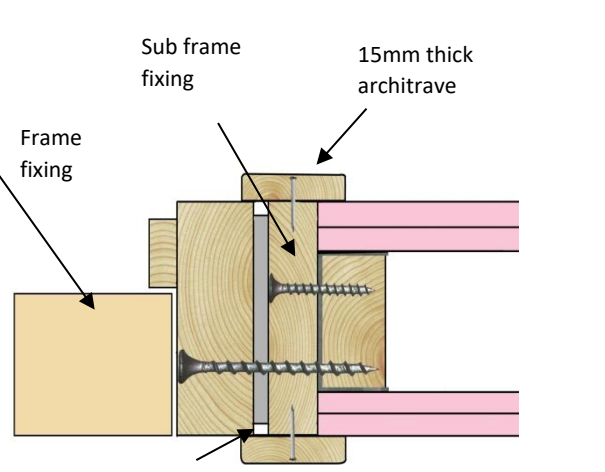
Location	Dimensions
Door edge gaps	Representative of those tested but as a guideline a minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud of each other or from the door frame by more than 1mm
Threshold	10mm between bottom of leaf and top of floor covering. For smoke control refer to Section 18.

16 Supporting Construction & Fixings

The supporting construction must be capable of staying in place and intact for the full period of fire resistance required from the doorset. The frame jambs are to be fixed to the supporting construction using steel fixings at 500mm maximum centres. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm. It is not necessary to fix the frame head, although packers must be inserted.

17 Sealing to Structural Opening

The door frame to structural opening gap must be protected using one of the following methods:

<p>1. Gaps up to 10mm 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. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.</p>	 <p>Acrylic intumescent mastic</p> <p>Frame fixing</p> <p>Mineral fibre infill for joints exceeding 10mm</p> <p>Architrave for joints not filled with mineral wool and optional for filled joint</p>
<p>2. Gaps between 10mm and 20mm 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. Architraves are optional.</p>	 <p>Fire stopping product</p> <p>Frame fixing</p> <p>Architrave</p>
<p>4. Timber based or non-combustible subframe up to 50mm thick, with gaps up to 10mm between the components 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. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.</p>	 <p>Sub frame fixing</p> <p>15mm thick architrave</p> <p>Frame fixing</p> <p>10mm of acrylic intumescent mastic or full depth PU foam</p>

Guidance for various 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 where appropriate.

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

18 Smoke Control

18.1 General

If the doorset design is required to provide a smoke control function to comply with Building Regulations, in the absence of a suitable pressurisation system, the doorset must meet one of the following criteria:

- (a) have a leakage rate not exceeding 3m³/m/hour (head and jambs only) when tested at 25Pa under BS 476 *Fire tests on building materials and structures*, Section 31.1 - *Methods for measuring smoke penetration through doorsets and shutter assemblies, Method of measurement under ambient temperature conditions*; or
- (b) meet the additional classification requirement of Sa when tested to BS EN 1634-3: 2001 - *Fire resistance tests for door and shutter assemblies*, Part 3 – *Smoke control doors*.

Smoke seals or combined intumescent/smoke seals that are fitted to the door to achieve the performance requirements specified above must have been tested in accordance with the associated test method. Providing the smoke seals, any interruptions, door gaps, and the type/configuration of the doorset are consistent with the detail tested, the doorset will comply with current smoke control legislation under Approved Document B; and a suffix 'S' or 'Sa', as appropriate, may be added to the designation. Any other components installed where smoke leakage may occur must also be taken into account.

Note: The incorrect specification and fitting of smoke seals may impair the operation of a doorset and therefore compromise the fire resistance performance. Advice should be sought from the seal manufacturers regarding the correct specification and installation of smoke seals or combined smoke and intumescent seals.

18.2 Further Considerations

Note that there is other guidance available, including BS EN 9999-2017 - *Code of practice for fire safety in the design, management and use of buildings*, which may impose different or additional requirements, such as consideration of the gap between door leaf and threshold.

Responsibility for the appropriate smoke sealing specification and performance of the doors should be agreed between the relevant parties (i.e. specifier, manufacturer, contractor) prior to commencing manufacture and/or installation.

19 Insulation

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

Type	Details
Partially insulating	Doorsets incorporating up to 20% of non-insulating glazing
Fully insulating	Unglazed doorsets or doorsets fitted with 30 minute insulating glazing (e.g. 15mm Pyrostop or 16mm Pyrobel)

20 Conclusion

If the doorset design constructed in accordance with the specification documented in this global assessment, were to be tested in accordance with BS 476: Part 22: 1987, it is our opinion that it would provide a minimum of 30 minutes integrity and insulation (subject to section 19).

21 Declaration by the Applicant

- 1) We the undersigned confirm that we have read and comply with obligations placed on us by FTSG Resolution No. 82: 2001.
- 2) We confirm that the component or element of structure which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which this assessment is being made.
- 3) We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.
- 4) We are not aware of any information that could adversely affect the conclusions of this assessment.
- 5) If we subsequently become aware of any such information, we agree to ask the assessing authority to withdraw the assessment.

Signed:



Name:

TANIA MARCIA OSS-EMER MAFFEZZOLI

For and on behalf of: **Mademer Madeiras Ltd.**



22 Limitations

The following limitations apply to this assessment:

- 1) This assessment addresses itself solely to the elements and subjects discussed and does not cover any other criteria. All other details not specifically referred to should remain as tested or assessed.
- 2) This assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available, Warringtonfire reserves the right to withdraw the assessment unconditionally but not retrospectively.
- 3) This assessment has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.
- 4) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
- 5) This assessment relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions. It does not purport to be a complete specification ensuring fitness for purpose and long-term serviceability. It is the responsibility of the client to ensure that the element conforms to recognised good practice in all other respects and that, with the incorporation of the guidance given in this assessment, the element is suitable for its intended purpose.
- 6) This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with BS476: Part 22: 1987, on the basis of the evidence referred to in appendix A. We express no opinion as to whether that evidence, and/or this assessment, would be regarded by any Building Control authority as sufficient for that or any other purpose. This assessment is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

23 Validity

- 1) The assessment is initially valid for five years after which time it must be submitted to Warringtonfire for technical review and revalidation.
- 2) This assessment report is not valid unless it incorporates the declaration given in Section 21 duly signed by the applicant.

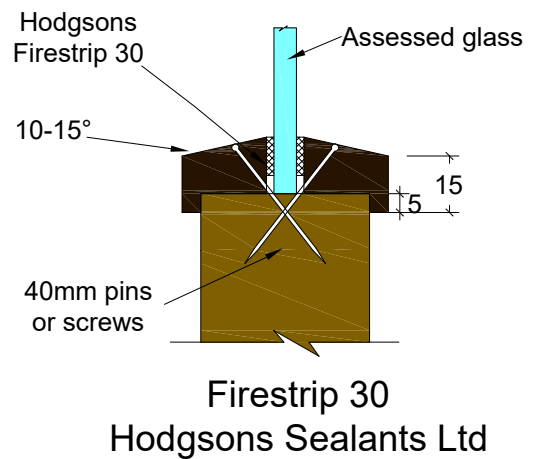
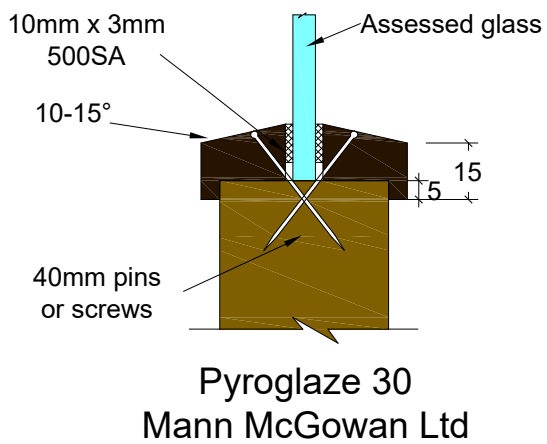
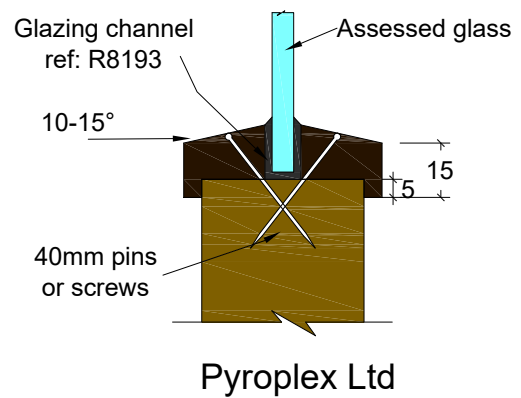
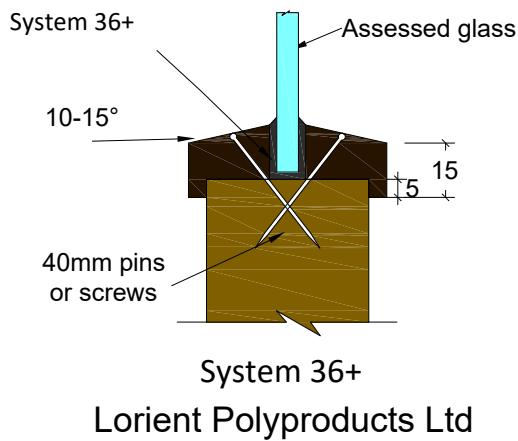
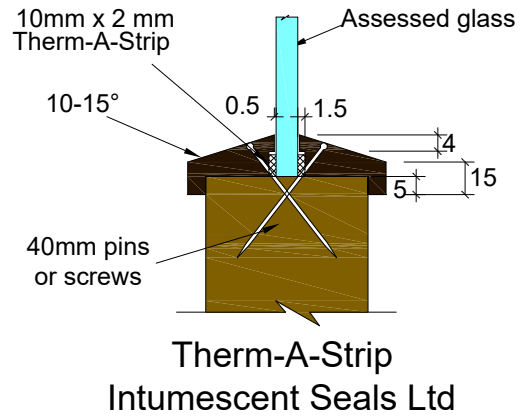
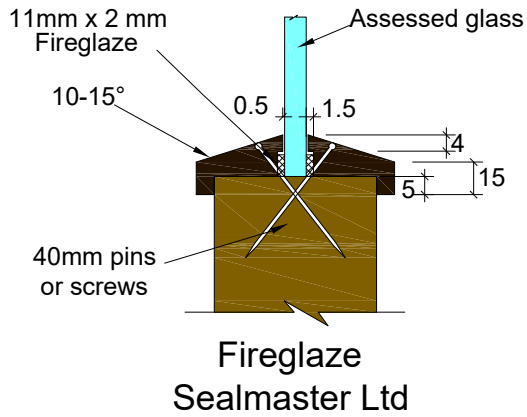
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Name:	Dr K D S Towler	Andrew Winning
Title:	Senior Product Assessor	Senior Product Assessor

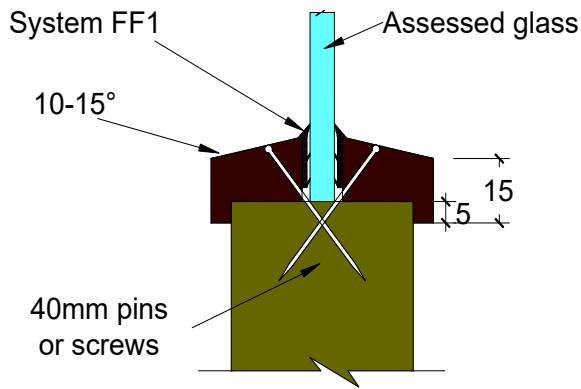
Appendix A Test Data

Primary Data

Test/Assessment No.	Configuration	Leaf Size (mm)	Standard	Performance (mins)
RF01117	ULSADD	2135 915 45	BS 476: Part 22: 1987	40
RF02021	A: ULSASD	2380 1200 45	BS 476: Part 22: 1987	32
	B: ULSASD	2440 1222 44	BS 476: Part 22: 1987	26
RF03105	ULSADD	2140 910 45	BS 476: Part 22: 1987	41

Appendix B Proprietary 30 Minute Glazing Systems

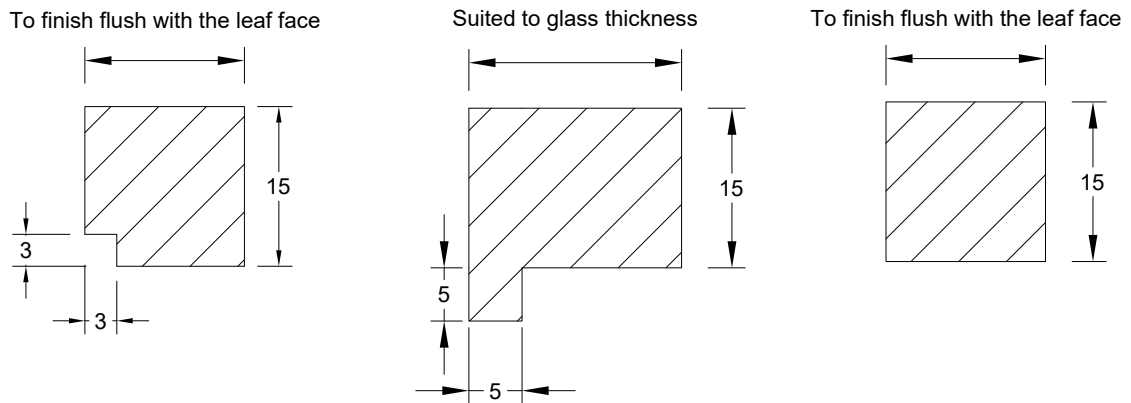




System FF1
Lorient Polyproducts Ltd

Assessed Square Glazing Bead Profiles

(The following square bead profile may be used as an alternative to the splayed beads detailed above - refer to section 7 for glazing system and glass restrictions.)



Appendix D

Data Sheets for:

Mademer Madeiras Ltda.

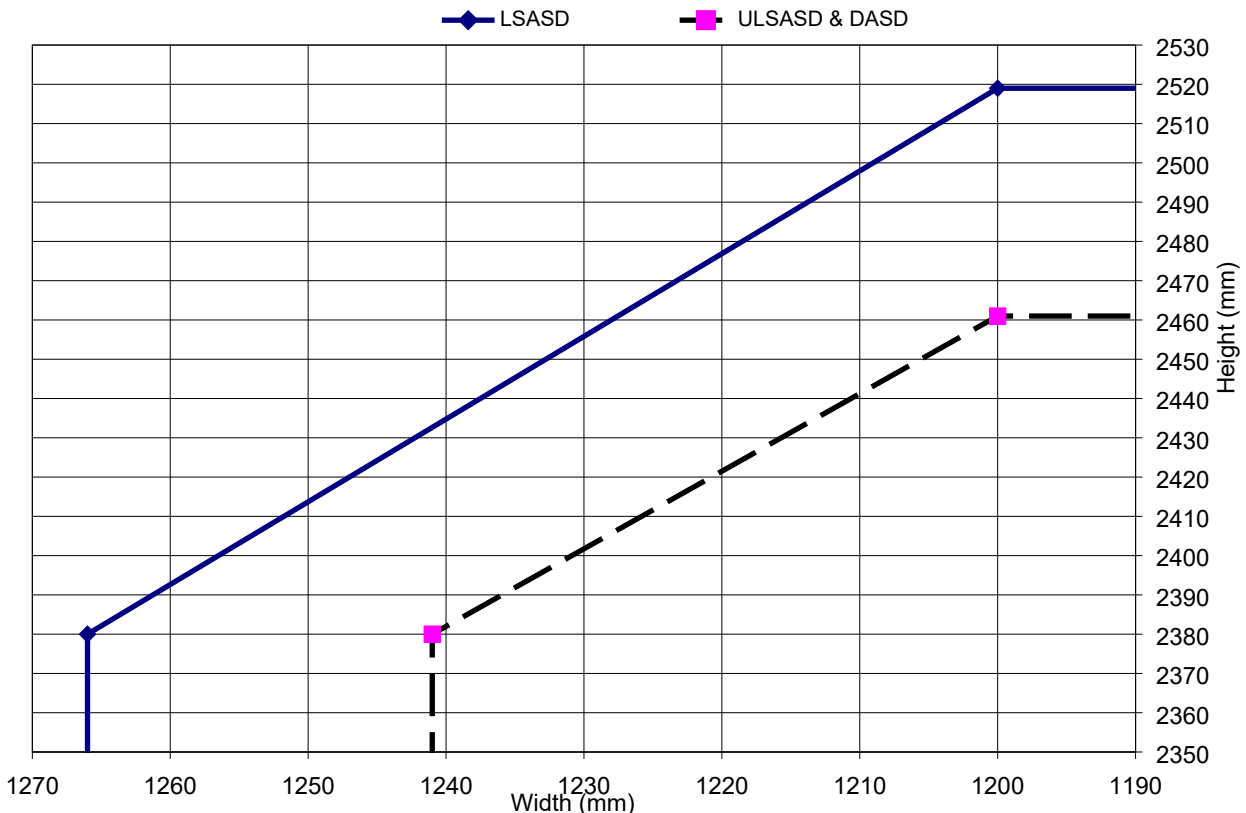
Laminated Core Doorsets

30 Minutes Fire Resistance

Mademer Madeiras Ltda. – Laminated Core 30 Minute Fire Resisting Doorsets Latched & Unlatched, Single & Double Acting, Single Doorsets

	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	From:	2380	x	1266
		To:	2519	x	1200
	ULSASD & DASD	From:	2380	x	1241
		To:	2461	x	1200
Maximum Overpanel Height (mm)		Transomed	2000		
Glazing		Maximum Glazed Area	0.76m ² (see section 7 for details)		
		Approved Systems	See section 7 and appendix B		
Frame Specification (see section 8)		Material	Softwood		Hardwood
		Min. Section (mm)	70 x 32		70 x 32
		Min. Density (kg/m ³)	510		510
INTUMESCENT MATERIALS: PVC encased Palusol 100					
HEAD: 1No. 15x4mm exposed strip, fitted centrally in the frame reveal or leaf edge. Increase to 20x4mm for door leaves exceeding 2400mm high.					
JAMBS & TRANSOMED OVERPANEL: 1No. 15x4mm exposed strip, fitted centrally in the frame reveal or leaf/overpanel edge.					
HARDWARE PROTECTION: See section 12.					

Maximum Door Leaf Size



Mademer Madeiras Ltda. – Laminated Core 30 Minute Fire Resisting Doorsets

Latched & Unlatched, Single & Double Acting, Double Doorsets

	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSADD	From:	2140	x	1102
		To:	2582	x	910
	ULSADD & DADD	From:	2140	x	1077
		To:	2532	x	910
Maximum Overpanel Height (mm)		Transomed	1500		
Glazing		Maximum Glazed Area	0.76m ² (see section 7 for details)		
		Approved Systems	See section 7 and appendix B		
Frame Specification (see section 8)		Material	Softwood		Hardwood
		Min. Section (mm)	70 x 32		70 x 32
		Min. Density (kg/m ³)	510		510

INTUMESCENT MATERIALS: PVC encased Palusol 100

HEAD: 1No. 15x4mm exposed strip, fitted centrally in the frame reveal or leaf edge. Increase to 20x4mm for door leaves exceeding 2250mm high.

MEETING EDGES:

Square: 2No. 10x4mm exposed strips, spaced 5mm either side of the centre line of one leaf edge, plus 1No. 10x4mm exposed strip, fitted centrally in the opposing leaf edge.

Rebated: 1No. 10x4mm exposed strip, fitted centrally in the bottom of each rebate.

JAMBS & TRANSOMED OVERPANELS: 1No. 15x4mm exposed strip, fitted centrally in the frame reveal or leaf/overpanel edge.

HARDWARE PROTECTION: See section 12.

Maximum Door Leaf Size

