INTERNATIONAL FIRE CONSULTANTS LIMITED

**PRIVATE & CONFIDENTIAL**

# IFC FIELD OF APPLICATION REPORT

**PAR/16553/01**

## Field of Application of
## 30 Minute
## Timber Lamel Core Door Leaves
## Installed in Timber Frames

**Fire Resistance Standard: BS476: Part 22: 1987**

Prepared on behalf of:

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*NOTE: This report should not be manipulated, abridged or otherwise presented without the written consent of International Fire Consultants Ltd*

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# ISSUE AND AMENDMENT RECORD

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| Draft | December 2016 | WL | DC | – |
| 01 | March 2017 | WL/RA | DC | – |
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# 1. INTRODUCTION

This report has been prepared by International Fire Consultants Ltd (IFC) to define the Field of Application for Timber lamel core door leaves installed in timber frames, that are required to provide 30 minutes fire resistance performance, when adjudged against BS476: Part 22: 1987.

The methodologies used in preparing this document are based upon the guidance in BS ISO/TR 12470: 1998; *'Fire resistance tests - Guidance on the application and extension of results'*.

It is proposed that variations to the tested specifications, as described in the following sections, may be accommodated into assemblies, without reducing their potential to achieve a 30 minute integrity rating, if tested in accordance with the method and criteria of BS476: Part 22: 1987. The omission of information on any components or manufacturing methods does not imply a lack of approval of those details but these would need to be the subject of a separate analysis. Only variations specifically mentioned are supported by this assessment document, and all other aspects must otherwise be as tested.

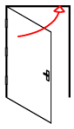
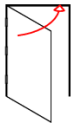
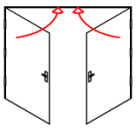
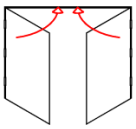
# 2. TEST EVIDENCE

The test evidence used to support this Field of Application Report is summarised in Appendix G of this report.

# 3. SCOPE OF APPROVAL

## 3.1 Door Assembly Configuration

The following door assembly configurations are approved within the scope of this report:

| Configuration | Envelope of Approved Leaf Size | | | |
|---|---|---|---|---|
| | Pacifire SPF | | Pacifire Litewood | Duocore |
| | Standard Intumescent Seal Specification | Enhanced Intumescent Seal Specification | Standard Intumescent Seal Specification Only | Standard Intumescent Seal Specification Only |
|  • Latched • Single Acting • Single Door • Without Overpanel | Figure PAR/16553/ 01:C01 in Appendix C | Figure PAR/16553/ 01:C01 in Appendix C | Figure PAR/16553/ 01:D01 in Appendix D | Figure PAR/16553/ 01:E01 in Appendix E |
|  • Unlatched • Single Acting • Single Door • Without Overpanel | Figure PAR/16553/ 01:C02 in Appendix C | Figure PAR/16553/ 01:C02 in Appendix C | Figure PAR/16553/ 01:D02 in Appendix D | Figure PAR/16553/ 01:E02 in Appendix E |
|  • Latched • Single Acting • Double Doors *Note 1* • Without Overpanel | Not approved | Not approved | Figure PAR/16553/ 01:D03 in Appendix D | Not approved |
|  • Unlatched • Single Acting • Double Doors *Note 1* • Without Overpanel | Not approved | Not approved | Figure PAR/16553/ 01:D04 in Appendix C | Not approved |

*Note 1* *Double leaf door assemblies must have square edged (or slightly rounded) meeting stiles.*

## 3.2 Maximum Assessable Door Leaf Sizes

The calculated envelopes of assessed leaf dimensions for each door configuration covered by this Field of Application Report are given in Appendix C, D and E, based upon use of the intumescent seal specifications outlined in Appendix B.

Leaves in double door assemblies may each be of the same width, up to the maximum width indicated in Appendix D. For unequal pairs there is no limit on the ratio of leaf widths, (although the large leaf must still be within the limitations in Appendix D). The width of the small leaf shall not be less than 250mm, since this will affect its vertical stability relative to that of the larger leaf.

## 3.3 Door Leaf Specification

A detailed constructional specification of each basic door construction is given below. This is based upon the test evidence detailed in Appendix G, (and is, therefore, limited to the information available from that test report), but also defines variations and tolerances, where it is considered that these will not adversely affect overall fire resistance.

### *3.3.1 Pacifire SPF Door*

| Component | | Species | Dimensions | Minimum Density |
|---|---|---|---|---|
| Core | Centre Layer | Spruce/Pine/Fir (SPF) | Horizontally orientated lamels 25/50mm wide x 13mm thick | 550kg/m$^3$ |
| | Outer Layers | Spruce/Pine/Fir (SPF) | Vertically orientated lamels 25/50mm wide x 13mm thick | 550kg/m$^3$ |
| Facings option 1 | | Plywood | 3mm thick | 550kg/m$^3$ |
| Facings option 2 | | MDF | 3mm thick | 700kg/m$^3$ |
| Facings option 3 | | Particleboard | 3mm thick | 630kg/m$^3$ |
| Lippings (to vertical edges only) | | Hardwood *Note 2* | 6 – 10mm thick | 550kg/m$^3$ *Note 2* |
| Adhesives | Core | PVAC | – | – |
| | Facings | Melamine or Urea Formaldehyde | – | – |

| Component | | Species | Dimensions | Minimum Density |
|---|---|---|---|---|
| | Lippings | Polyurethane or Urea Formaldehyde | – | – |
| Minimum leaf thickness | | – | 44mm thick | – |
| Optional additional decorative finishes | | Timber veneer, decorative plastic based laminate or PVC | Maximum 2mm thick | – |
| | | Varnish or paint | Maximum 0.5mm thick | – |

*Note 2* *Hardwood to be straight grained and of appropriate quality in accordance with BS EN 942: 1996, or national equivalent. Moisture content shall be 10 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).*

Core and facings must be constructed in such a way that the minimum thickness of the door leaf is 44mm (with the addition of optional additional decorative finished). In addition, both faces of each door must have the same combination of facings.

### *3.3.2 Pacifire Litewood Door*

| Component | | Species | Dimensions | Minimum Density |
|---|---|---|---|---|
| Core | Centre Layer | Albasia Falcata | Horizontally orientated lamels 25/50mm wide x 13mm thick | 180 – 335kg/m$^3$ |
| | Outer Layers | Albasia Falcata | Vertically orientated lamels 25/50mm wide x 13mm thick | 180 – 335kg/m$^3$ |
| Facings option 1 | Inner | Albasia Falcata Veneer | 1.4mm thick with grain oriented horizontally | 180 – 335kg/m$^3$ |
| | Outer | Albasia Falcata Veneer | 0.9mm thick with grain oriented vertically | 180 – 335kg/m$^3$ |
| Facings option 2 | | Plywood | 3mm thick | 550kg/m$^3$ |
| Facings option 3 | | MDF | 3mm thick | 700kg/m$^3$ |
| Facings option 4 | | Particleboard | 3mm thick | 630kg/m$^3$ |
| Lippings (to vertical edges only) | | Hardwood *Note 3* | 6 – 10mm thick | 640kg/m$^3$ *Note 3* |

| Component | | Species | Dimensions | Minimum Density |
|---|---|---|---|---|
| Adhesives | Core | PVAC | – | – |
| | Facings | Melamine or Urea Formaldehyde | – | – |
| | Lippings | Polyurethane or Urea Formaldehyde | – | – |
| Minimum leaf thickness | | – | 44mm thick | – |
| Optional additional decorative finishes | | Timber veneer, decorative plastic based laminate or PVC | Maximum 2mm thick | – |
| | | Varnish or paint | Maximum 0.5mm thick | – |

*Note 3* *Hardwood to be straight grained and of appropriate quality in accordance with BS EN 942: 1996, or national equivalent. Moisture content shall be 10 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).*

Core and facings must be constructed in such a way that the minimum thickness of the door leaf is 44mm (with the addition of optional additional decorative finished). In addition, both faces of each door, (and both leaves of double doors, as applicable) must have the same combination of facings.

### *3.3.3 Duocore Door*

| Component | | Species | Dimensions | Minimum Density |
|---|---|---|---|---|
| Core | Layer 1 | Albasia Falcata | Horizontally orientated lamels 25/50mm wide x 16mm thick | 350kg/m$^3$ |
| | Layer 2 | Albasia Falcata | Vertically orientated lamels 25/50mm wide x 16mm thick | 350kg/m$^3$ |
| Facings option 1 | | Albasia Falcata Veneer | 4.5mm thick | 350kg/m$^3$ |
| Facings option 2 | | Plywood | 4.5mm thick | 550kg/m$^3$ |
| Facings option 3 | | MDF | 4.5mm thick | 700kg/m$^3$ |

| Component | | Species | Dimensions | Minimum Density |
|---|---|---|---|---|
| Facings option 4 | | Particleboard | 4.5mm thick | 630kg/m$^3$ |
| Lippings (to vertical edges only) | | Hardwood *Note 3* | 6-10mm thick | 640kg/m$^3$ *Note 4* |
| Adhesives | Core | Melamine or Urea Formaldehyde | – | – |
| | Facings | Melamine or Urea Formaldehyde | – | – |
| | Lippings | Polyurethane or Urea Formaldehyde | – | – |
| Minimum leaf thickness | | – | 45mm thick | – |
| Optional additional decorative finishes | | Timber veneer, decorative plastic based laminate or PVC | Maximum 2mm thick | – |
| | | Varnish or paint | Maximum 0.5mm thick | – |

*Note 4* *Hardwood to be straight grained and of appropriate quality in accordance with BS EN 942: 1996, or national equivalent. Moisture content shall be 10 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).*

Core and facings must be constructed in such a way that the minimum thickness of the door leaf is 45mm (with the addition of optional additional decorative finished). In addition, both faces of each door must have the same combination of facings.

## 3.4 Frames

Timber frames, to the specifications given below, may be used across the complete range of approved sizes and configurations outlined in Appendices C, D and E, utilising the intumescent seal specifications outlined in Appendix B.

| Material | Density | Minimum Face Width | Minimum Frame Depth | Minimum Stop Depth |
|---|---|---|---|---|
| | | Single Acting | | |
| Softwood or hardwood | 530kg/m³ *Note 5* | 32mm, excluding stop *Note 6* | 70mm | 12mm *Note 7* |

*Note 5* *Hardwood must have a minimum measured density at 12% moisture content. The timber must be straight grained and of appropriate quality in accordance with BS EN 942: 1996. The moisture content shall be 10 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).*

*Note 6* *These dimensions assume that the rear of the frame is protected by the adjacent wall, (and firestopping), and that the frame does not project out from the wall. See Section 3.8 regarding projecting frames and shadow gaps.*

*Note 7* *The door stop is to comprise the same material as the door frame and may be either planted and pinned using 40mm steel pins, or integral with the main door frame, providing the minimum frame thickness remains as stated.*

Door frames must be constructed from timber with a minimum measured density of 530kg/m³

The overall frame depth may be increased by the use of extension linings.

In scenarios where the face of the frame, and the door, are flush with the face of the wall, architraves may be 'loose' (i.e. pin-fixed), but are optional, subject to adequate fire-stopping; (See Section 3.8 regarding wall/frame gaps). Where an integral architrave is used, the face of the door may project beyond the face of the wall, providing the thickness of the architrave is no greater than 10mm and it projects at least 15mm beyond the rear face of the door frame. This assumes that the face of the door leaf is flush with the face of the architrave.

Head/jamb joint : Mortice and tenon, or half-lapped joint, head twice screwed to each jamb **or** mitred joint which is glued with a non-thermally softening adhesive and the head twice screwed to each jamb.

Architraves : Architraves are optional and have no fire performance requirements. (See Section 3.8 regarding wall/frame gaps).

## 3.5 Glazed Apertures

### *3.5.1 Glass types*

The following glass types are approved for use in Pacifire SPF and Pacifire Litewood doors considered herein, which are compatible with the identified approved glazing systems given in Section 3.5.2, although some restrictions on size may be given in subsequent sections.

*The codes used, below, for the glass types, glazing materials, and bead types, (e.g. G1, S1 and B1), are not those used by the respective manufacturers, and are attributed solely by IFC for the purpose of identification and cross-referencing within this assessment.*

| | |
|---|---|
| G30/1 | 6mm thick Pyroshield 2 Safety Clear by Pilkington |
| G30/2 | 6mm thick Pyran S by Schott |
| G30/3 | 7mm thick Pyroshield 2 Texture by Pilkington |
| G30/4 | 7mm thick Pyroguard by Pyroguard |
| G30/5 | 7mm thick Pyrobelite by AGC Flat Glass |
| G30/6 | 7mm thick Pyrodur Plus by Pilkington |
| G30/7 | 10mm thick Pyrodur by Pilkington |
| G30/8 | 11mm thick Pyroguard by Pyroguard |
| G30/9 | 12mm thick Pyrobelite by AGC Flat Glass |
| G30/10 | 13mm thick Pyrodur by Pilkington |

Where assemblies require 30 minutes insulation, the following glass types are approved:

| | |
|---|---|
| G30/11 | 12mm thick Pyroguard Insulation by Pyroguard |
| G30/12 | 15mm thick Pyrostop by Pilkington |
| G30/13 | 16mm thick Pyrobel by AGC Flat Glass |

Expansion allowance for all glass types shall be as recommended by the glass manufacturer.

### *3.5.2 Glazing materials and systems*

The following glazing materials are approved for use in the doors considered herein, which are compatible with the identified approved glass types listed above, although some restrictions on size may be given in subsequent sections. (See also **Figure PAR/16553/01:A01** in Appendix A for limitations).

| | |
|---|---|
| S30/1 | 10 x 2mm Pyrostrip 300 by Mann McGowan (use with G30/1 – G30/13) |
| S30/2 | 10 x 2mm Interdens by various suppliers (use with G30/1 – G30/13) |
| S30/3 | 10 x 2mm Therm-A-Glaze 45 by Intumescent Seals (use with G30/1 – G30/13) |
| S30/4 | 10 x 5mm closed cell foam by various suppliers (use with G30/9 – G30/13) |
| S30/5 | 10 x 4mm ceramic fibre tape by various suppliers (use with G30/9 – G30/13) |
| S60/6 | Pyroplex 30049 (use with G30/1 – G30/13) |
| S30/7 | 10 x 5mm Sealed Tight Solutions ST105GT glazing system (use with G30/5 – G30/13) |
| S30/8 | Norsound Vision 30B (use with G30/5 – G30/13) |
| S30/9 | Norsound Vision 30T (use with G30/5 – G30/13) |

### *3.5.3 Bead profiles and installation*

The approved bead size and profile, and relevant fixing details, are shown on **Figure PAR/16553/01:A01** in Appendix A, which also define any limitations upon options of interchangeability with glass types and glazing systems.

The bead profile must extend so that it projects over the edge of the aperture. Beads must be secured within the aperture using pins set as shown on **Figure PAR/16553/01:A01** in Appendix A. Care must be taken to ensure that bead fixings engage into 'solid' core material.

The glazing beads shall be formed from straight grained hardwood with 650kg/m$^3$ minimum density (measured at 12% moisture content). Timber must be of appropriate quality in accordance with BS EN 942: 1996. Moisture content shall be 10 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).

### *3.5.4 Assessed aperture sizes*

Apertures may be created by cutting directly into the door slab. Based upon the size of apertures tested, it the opinion of IFC that the following limitations apply to glazed apertures in the door leaves considered herein;

| Door Type | Pacifire SPF | Pacifire Litewood |
|---|---|---|
| Maximum Aperture Area | 0.22m² | 0.3m² |
| Maximum Aperture Height | 740mm | 600mm |
| Maximum Aperture Width | 370mm | 500mm |
| Minimum Distance from Leaf Edge | 150mm | 150mm |
| Minimum Distance Between Apertures | 150mm | 150mm |

More than one aperture may be included in each leaf subject to the individual limitations above. The minimum margins may need to be increased to accommodate hardware; see also Appendix F.

### 3.6 Intumescent Seals

The intumescent seal specifications, widths, and positions are shown in Appendix B, based upon details tested.

### 3.7 Ambient Temperature Smoke Seals

Smoke seals, or combined intumescent/smoke seals (using the specification approved in Appendix B), that have been tested in accordance with BS EN 1634-3: 2004 (ambient temperature) or BS476: Part 31: Section 31.1: 1983 and shown not to leak by more than $3m^3/m/hr$ at 25Pa may be used in conjunction with the proposed door assemblies to provide smoke control.

The orientation of the seals, door edge gaps, degree of hardware interruption, and leaf configuration, will need to be as tested in accordance with BS EN 1634-3: 2004 (ambient temperature) or BS476: Part 31: Section 31.1: 1983 to achieve the desired level of smoke control, unless these conflict with the intumescent seal widths and positions as shown in Appendix B, in which case, the latter shall take precedence.

Test evidence to BS476: Part 22: 1987 shall be available to demonstrate that the smoke seals will not adversely affect the overall fire resistance of timber door assemblies, when fitted in the proposed arrangements.

## 3.8 Hardware

Some of the various items of hardware to be used with the proposed door assemblies will have a positive contribution to the overall performance ('essential hardware') and others are classed as 'non-essential'. However, in all cases it must be ensured that choice of items, or their installation within the assemblies, does not have a detrimental effect upon their achievement of the required period of fire resistance.

All hardware beyond the scope of the general guidance given below must have been subjected to fire resistance testing, and/or assessed by a notified body, to support its use in doors of a similar construction to that proposed, or third party certification shall be available to support its use on door assemblies of the proposed type.

General guidance for all items of hardware is outlined in Appendix F, based upon the range of items tested.

## 3.9 Installation, Supporting Construction, and Door Edge Gaps

The frames must be fixed back to the supporting construction with steel fixings at centres not exceeding 600mm (minimum 200mm from the top and bottom); this applies to jambs and head. Screws shall be of sufficient length to penetrate the wall by at least 40mm, and shall be positioned such that they are not exploited by charring of the frame, irrespective of the direction of test exposure; (this may necessitate a twin line of screws). Packers shall be used at all fixing positions, although if combustible packers are employed, these must be protected by a layer of firestopping (see below), aligned near to each face of the door frame.

The supporting construction may be timber or steel stud plasterboard partition, blockwork, brickwork or concrete walls, but shall be of a type that has been tested or assessed to provide in excess of 30 minutes fire resistance, at the required size, when incorporating door openings. If fitted into timber or steel stud partitions, the method of forming the door assembly aperture must be as tested by the partition and/or door assembly manufacturer.

*Note 8* *Reference to steel stud partitions is in the context of permanent elements, such as those designed and proven by the plasterboard manufacturers – this report does not approve use of the proposed door assemblies in proprietary 'demountable' partitions, which must be subject to a full and independent appraisal of the particular system and door assemblies therein.*

No part of the rear of the frame section shall be exposed once installed, and the leaf must be flush with the face of the wall; except when using integral architraves. There shall be no feature rebates or shadow gaps at the junction of the frame and wall.

The fire stopping between the supporting construction and timber frames should follow the recommendations of Tables 2 and 3 in BS8214: 2016, *'Timber-based fire door assemblies – Code of practice'*, using a product proven in such timber applications, or tested, assessed or Third Party Certificated solutions may also be utilised using a product proven in such timber applications, and with reference to the correct depth of seal to suit the width of gap between wall and frame. The firestopping shall be positioned on the plane of the door leaf; (unless combustible packers are employed).

The gap between the door and the frame, and at meeting stiles, should be 2–4mm. Gaps under the door(s) should not exceed 6mm for fire performance, although, if smoke control is also required, these gaps should only be 3mm, or smoke seals should be included (see also Section 3.7 regarding suitability of smoke seals).

The door assemblies design should be such that the leaves are fully flush within the frame when in the closed position. They may however be set back from the exposed face of the frame if required. Meeting stiles of double doors should be flush with each other, when doors are in the closed position.

# 4. CONCLUSION

It is the opinion of International Fire Consultants Ltd that, if the proposed timber lamel core door leaves installed in timber frames, were manufactured and installed within the limitations of this Field of Application Report, and tested for fire resistance, they would satisfy the integrity criteria of BS476: Part 22: 1987 for 30 minutes.

# 5. LIMITATIONS

This assessment addresses itself solely to the ability of the proposed assemblies described to satisfy the criteria of the fire resistance test and does not imply any suitability for use with respect to other unspecified criteria.

This document only considers the door assemblies constructions described herein, and assumes that the surrounding construction will provide no less restraint than the tested assembly, and that it will remain in place and be substantially intact for the full fire resistance period.

Where the constructional information in this report is taken from details provided to IFC and/or fire resistance test reports referenced herein, it is therefore limited to the information given in those documents. It is necessarily dependent upon the accuracy and completeness of that information. Where constructional or manufacturing details are not specified, or discussed herein, it should not, therefore, be taken to infer approval of variation in such details from those tested or otherwise approved.

The analysis and conclusions within this report are based upon the likely fire resisting performance of a complete assembly that is manufactured and installed in accordance with this document, and offered for fire resistance testing in 'perfect' condition. In practice, management procedures must be in place in any building where the assemblies are installed, to ensure that no parts of the assembly are damaged or faulty. Door leaves must open and close without the use of undue force. The edge gaps/alignment must remain in accordance with the tolerances defined, herein.

Any such shortfalls in respect to the condition of the assemblies will invalidate the approval by IFC, and may seriously affect the ability of the assembly to provide the required level of fire resistance performance. Determination of what constitutes wear or damage, and any corrective actions in order to return assemblies to the required condition, should only be carried out following consultation with the manufacturer and IFC.

Where the assessed constructions have not been subject to an on-site audit by IFC, it is the responsibility of anyone using this report to confirm that all aspects of the assemblies fully comply with the descriptions and limitations herein.

Any materials specified in this report have been selected and judged primarily on their fire performance. IFC do not claim expertise in areas other than fire safety. Whilst observing all possible care in the specification of solutions, we would draw the reader's attention to the fact that during the construction and procurement process, the materials used should be subjected to more general examination regarding the wider Health and Safety, and CoSHH Regulations.

This assessment considers the fire resistance performance of the door assemblies when tested with the leaves in the closed position, within the frame reveal; either retained by the latch, or self-closing device, or locked shut, as applicable. The door assemblies will only provide the assessed fire performance when in a similar configuration; and it is the responsibility of the building occupants/owner to ensure that this is the case.

This report is provided to the sponsor on the basis that it is a professional independent engineering opinion as to what the fire performance of the construction/system would be should it be tested to the named standard. It is IFC's experience that such an opinion is normally acceptable in support of an application for building approvals, certainly throughout the UK and in many parts of Europe and the rest of the world.

However, unless IFC have been commissioned to liaise with the Authorities that have jurisdiction for the building in question for the purpose of obtaining the necessary approvals, IFC cannot assure that the document will satisfy the requirements of the particular building regulations for any building being constructed.

It is, therefore, the responsibility of the sponsor to establish whether this evidence is appropriate for the application for which it is being supplied and IFC cannot take responsibility for any costs incurred as a result of any rejection of the document for reasons outside of our control. Early submittal of the Report to the Authorities will minimise any risks in this respect.

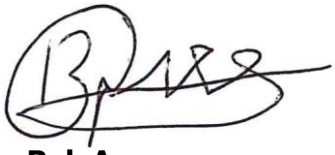
# 6. VALIDITY

This assessment has been prepared based on International Fire Consultants Ltd's present knowledge of the products described, the stated testing regime and the submitted test evidence. For this reason anyone using this document after March 2022 should confirm its ongoing validity.

Prepared by:

**Will Lightfoot** BEng (Hons)
Fire Safety Engineer
International Fire Consultants Ltd. (IFC)

and:



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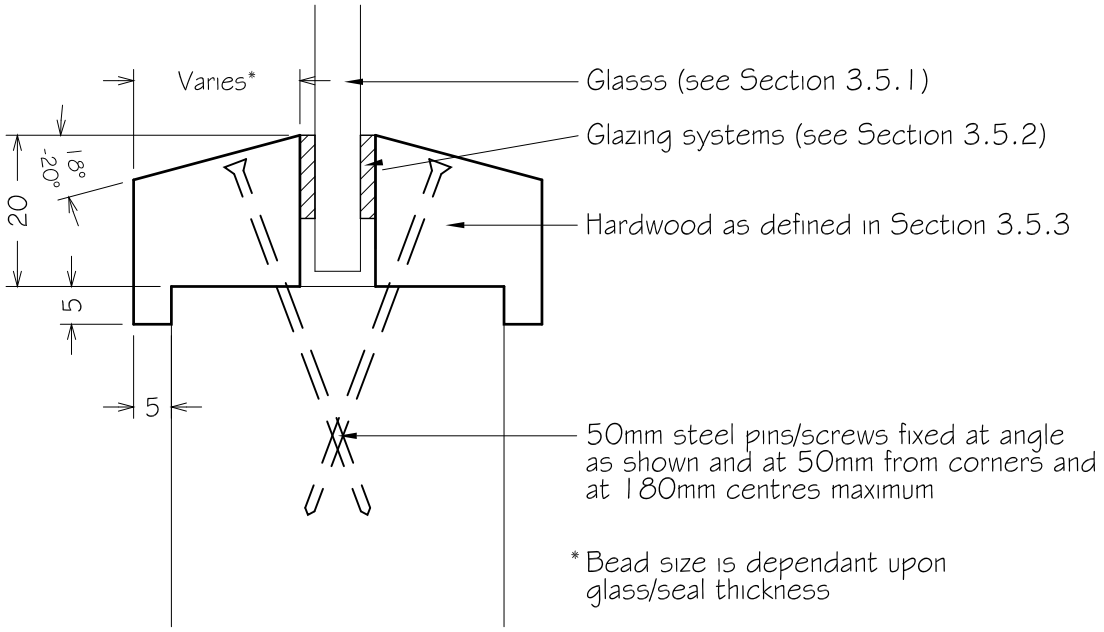
# APPENDIX A

## Glazing Details

## Figure PAR/16553/01:A01

***The figure in this Appendix is not included in the sequential page numbering of this report***



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Field of Application Report
PAR/16553/01
PT Group Ltd
30 Minute Timber Lamel Core Door Leaves Installed in Timber Frames

Glazing Detail

| | |
|---|---|
| Job number: 16553 | |
| Drawn by: CSP | Checked by: WL |
| Not To Scale | Drawn: Dec 2016 |

PAR/16553/01:A01

# APPENDIX B

## Assessed Intumescent Seal Specifications for Timber Lamel Core Door Leave Installed in Timber Frames

## Intumescent Seal Specifications for Timber Lamel Core Door Leaves Installed in Timber Frames

| Location | Size and Position | |
|---|---|---|
| | **Standard Intumescent Seal Specification** | **Enhanced Intumescent Seal Specification** |
| Stiles/jambs | 1no 15 x 4mm, PVC encased seal fitted centrally in the frame reveal | 2no 10 x 4mm, PVC encased seals, fitted 10mm apart, centrally in the frame reveal |
| Head | 1no 15 x 4mm, PVC encased seal fitted centrally in the frame reveal | 2no 10 x 4mm, PVC encased seals, fitted 10mm apart, centrally in the frame reveal |
| Meeting stiles | 2no 10 x 4mm, PVC encased seals, fitted 10mm apart, centrally in the active leaf only | Not approved |

***Note:***

*The PVC encased seals must be graphite based from Intumescent Seals or Pyroplex (see Note ii). Combined intumescent/smoke seals may be used, maintaining the widths specified above (and subject to the conditions outlined in Section 3.7).*

# APPENDIX C

**Assessed Leaf Size Envelopes using Pacifire SPF Leaves**

**Figures PAR/16553/01:C01 and C02**

***The figures in this Appendix are not included in the sequential page numbering of this report***

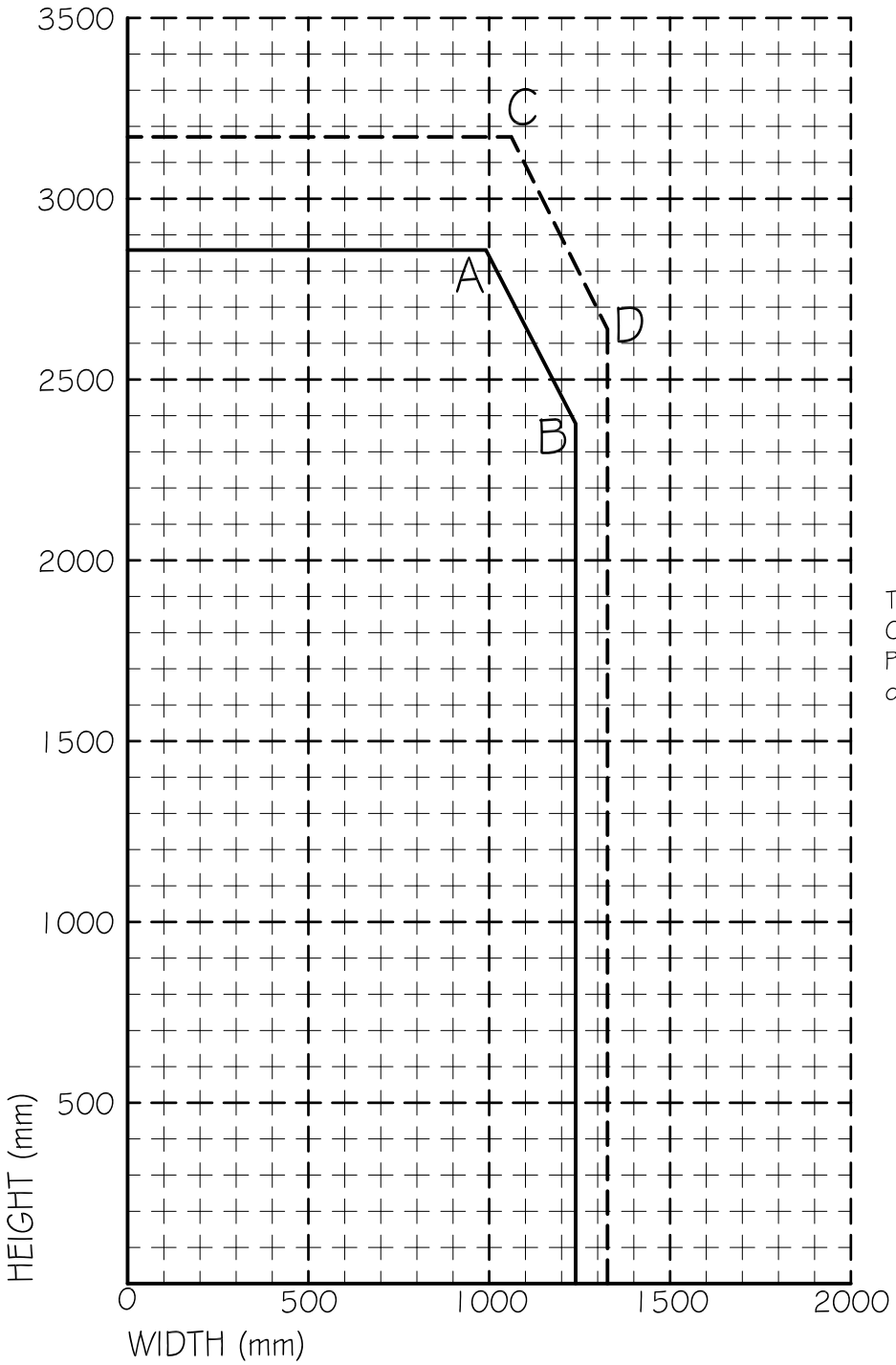
| | Pacifire SPF Core with Standard Intumescent | | Pacifire SPF Core with Enhanced Intumescent | |
|---|---|---|---|---|
| | A | B | C | D |
| Width | 991 | 1239 | 1061 | 1327 |
| Height | 2858 | 2378 | 3171 | 2639 |

## PROPOSED CONFIGURATION

LATCHED
SINGLE ACTING
SINGLE LEAF
WITHOUT OVERPANEL

## REQUIRED INTEGRITY : 30minutes

## LEAF SIZE ENVELOPE POINTS




This figure forms part of International Fire Consultants Ltd's Field of Application Report PAR/16553/01, which contains full details of the assessed door leaf construction.

## ENVELOPE OF APPROVED LEAF SIZES

The above graph represents the envelope of approved leaf sizes for the proposed door leaf configuration.
Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved.
POINT C represents the maximum leaf height and its associated width.
POINT D represents the maximum leaf width and its associated height.



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Field of Application Report
PAR/16553/01
PT Group Ltd
30 Minute Timber Lamel Core Door Leaves Installed in Timber Frames

Envelope of Approved Door Leaf Sizes
LSASD
In Timber Frames

| Job number: 16553 | |
|---|---|
| Drawn by: CSP | Checked by: WL |
| Not To Scale | Drawn: Dec 2016 |

PAR/16553/01:C01

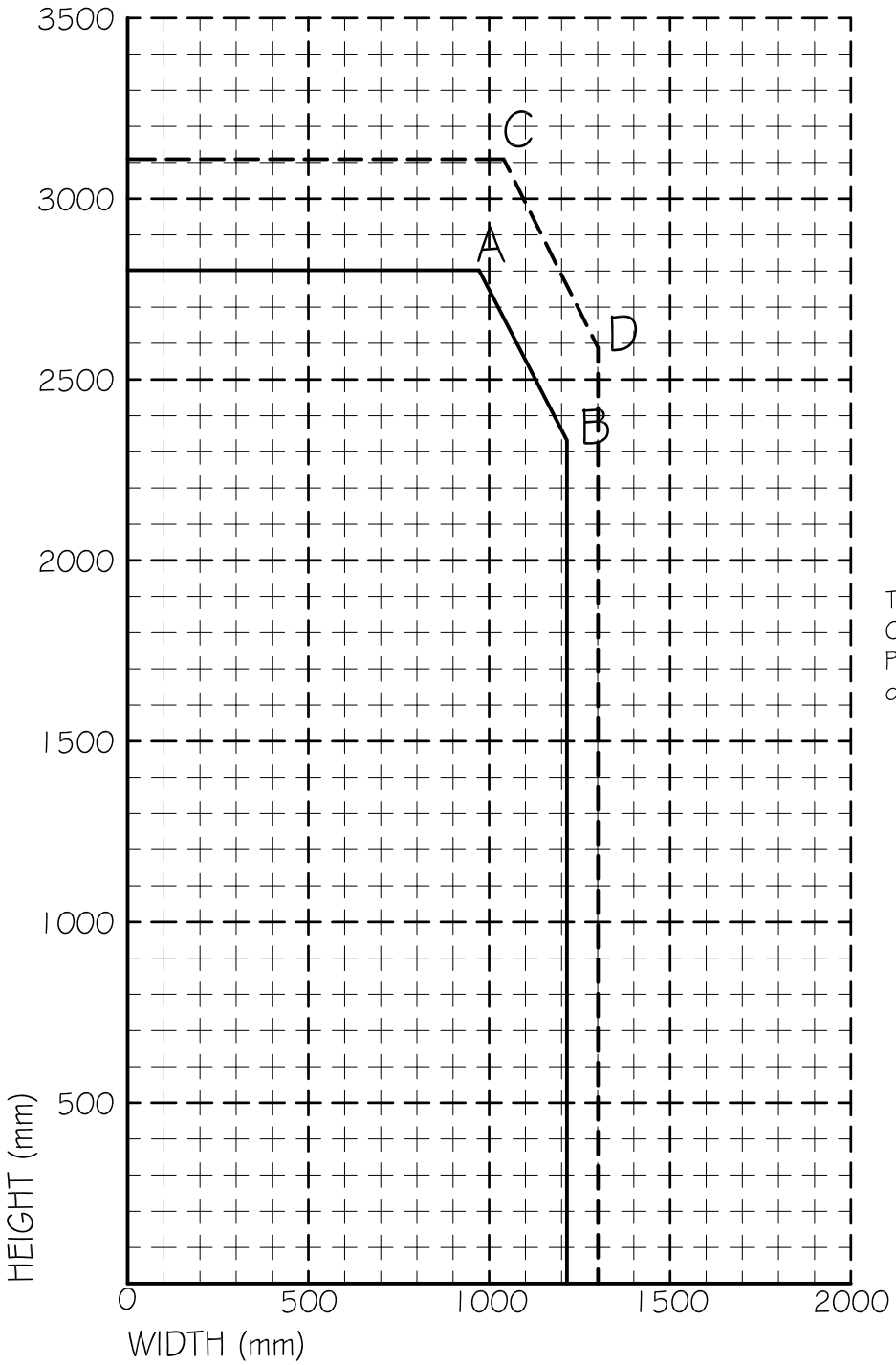
| | Pacifire SPF Core with Standard Intumescent | | Pacifire SPF Core with Enhanced Intumescent | |
|---|---|---|---|---|
| | A | B | C | D |
| Width | 972 | 1215 | 1040 | 1301 |
| Height | 2802 | 2332 | 3109 | 2588 |

## PROPOSED CONFIGURATION

UNLATCHED
SINGLE ACTING
SINGLE LEAF
WITHOUT OVERPANEL

## REQUIRED INTEGRITY : 30minutes

## LEAF SIZE ENVELOPE POINTS

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## ENVELOPE OF APPROVED LEAF SIZES

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Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved.
POINTS A & C represent the maximum leaf height and its associated width.
POINTS B & D represent the maximum leaf width and its associated height.



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Envelope of Approved Door Leaf Sizes
ULSASD
In Timber Frames

| Job number: 16553 | |
|---|---|
| Drawn by: CSP | Checked by: WL |
| Not To Scale | Drawn: Dec 2016 |

PAR/16553/01:C02

# APPENDIX D

**Assessed Leaf Size Envelopes using Pacifire Litewood Leaves**

**Figures PAR/16553/01:D01 to D04**

***The figures in this Appendix are not included in the sequential page numbering of this report***

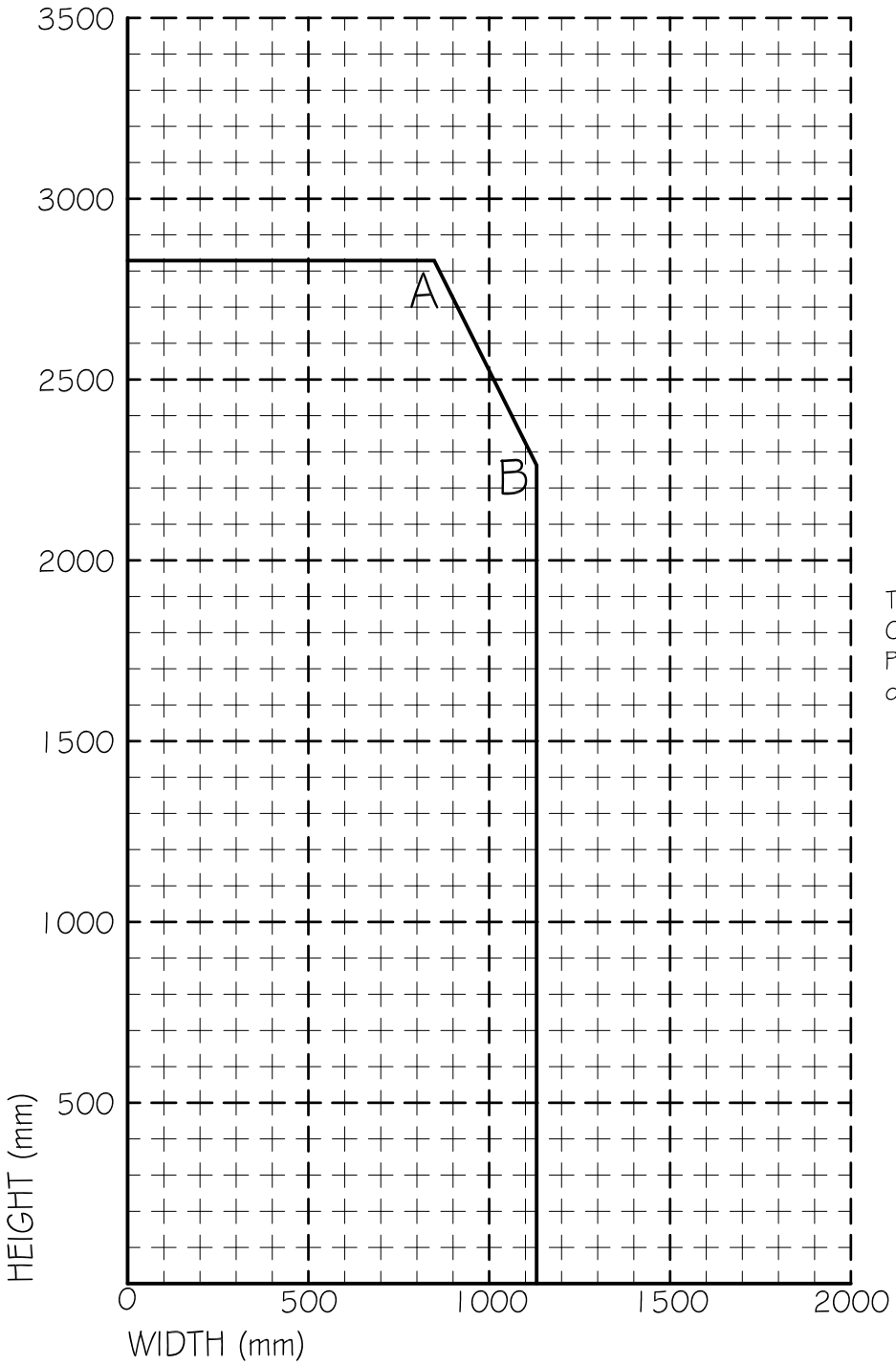
| | Pacifire Litewood Core with Standard Intumescent | |
|---|---|---|
| | A | B |
| Width | 848 | 1131 |
| Height | 2829 | 2263 |

## PROPOSED CONFIGURATION

LATCHED
SINGLE ACTING
SINGLE LEAF
WITHOUT OVERPANEL

## REQUIRED INTEGRITY : 30minutes

## LEAF SIZE ENVELOPE POINTS




This figure forms part of International Fire Consultants Ltd's Field of Application Report PAR/16553/01, which contains full details of the assessed door leaf construction.

## ENVELOPE OF APPROVED LEAF SIZES

The above graph represents the envelope of approved leaf sizes for the proposed door leaf configuration.
Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved.
POINTS A & C represent the maximum leaf height and its associated width.
POINTS B & D represent the maximum leaf width and its associated height.



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Envelope of Approved Door Leaf Sizes
LSASD
In Timber Frames

| Job number: 16553 | |
|---|---|
| Drawn by: CSP | Checked by: WL |
| Not To Scale | Drawn: Dec 2016 |

PAR/16553/01:D01

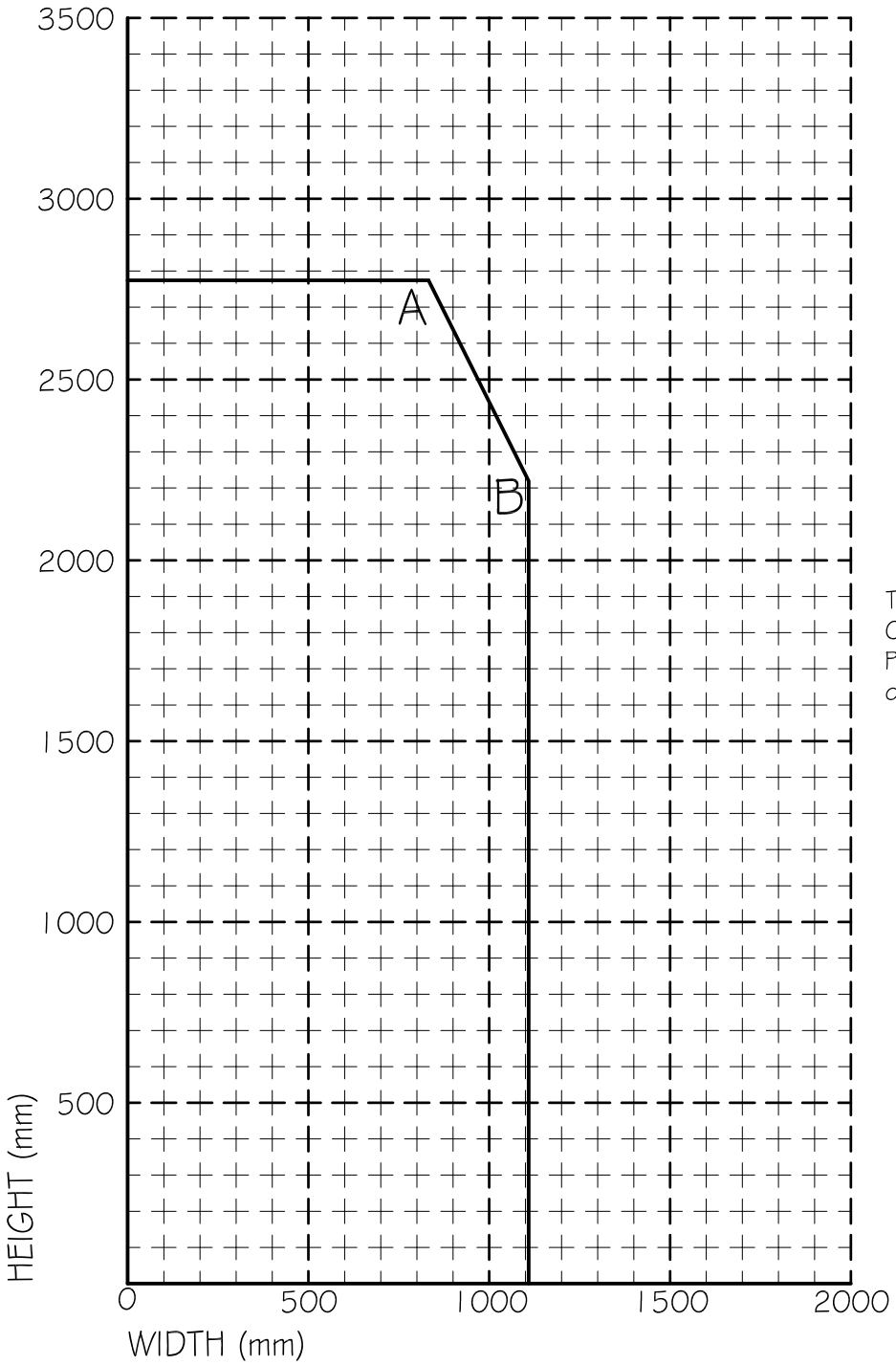
| | Pacifire Litewood Core with Standard Intumescent | |
|---|---|---|
| | A | B |
| Width | 832 | 1109 |
| Height | 2774 | 2219 |

## PROPOSED CONFIGURATION

UNLATCHED
SINGLE ACTING
SINGLE LEAF
WITHOUT OVERPANEL

## REQUIRED INTEGRITY : 30minutes

## LEAF SIZE ENVELOPE POINTS




This figure forms part of International Fire Consultants Ltd's Field of Application Report PAR/16553/01, which contains full details of the assessed door leaf construction.

## ENVELOPE OF APPROVED LEAF SIZES

The above graph represents the envelope of approved leaf sizes for the proposed door leaf configuration.
Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved.
POINTS A & C represent the maximum leaf height and its associated width.
POINTS B & D represent the maximum leaf width and its associated height.



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Envelope of Approved Door Leaf Sizes
ULSASD
In Timber Frames

| Job number: 16553 | |
|---|---|
| Drawn by: CSP | Checked by: WL |
| Not To Scale | Drawn: Dec 2016 |

PAR/16553/01:D02

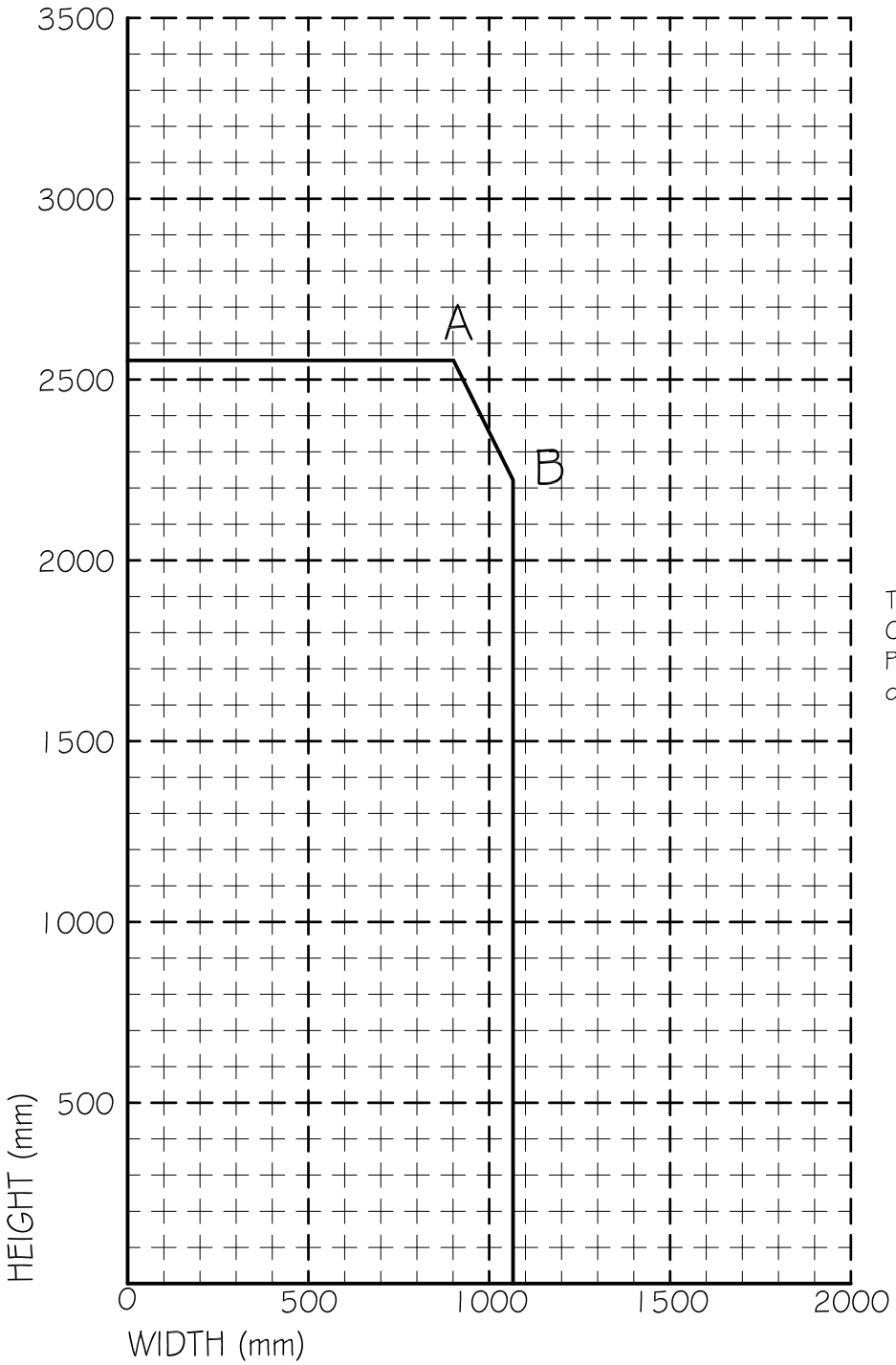
| | Pacifire Litewood Core with Standard Intumescent | |
|---|---|---|
| | A | B |
| Width | 901 | 1066 |
| Height | 2553 | 2222 |

## PROPOSED CONFIGURATION

LATCHED
SINGLE ACTING
DOUBLE LEAF
FLUSH MEETING STILES
WITHOUT OVERPANEL

REQUIRED INTEGRITY : 30minutes

## LEAF SIZE ENVELOPE POINTS




This figure forms part of International Fire Consultants Ltd's Field of Application Report PAR/16553/01, which contains full details of the assessed door leaf construction.

## ENVELOPE OF APPROVED LEAF SIZES

The above graph represents the envelope of approved leaf sizes for the proposed door leaf configuration.
Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved.
POINT A represents the maximum leaf height and its associated width.
POINT B represents the maximum leaf width and its associated height.



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Envelope of Approved Door Leaf Sizes
LSADD
In Timber Frames

| Job number: 16553 | |
|---|---|
| Drawn by: CSP | Checked by: WL |
| Not To Scale | Drawn: Dec 2016 |

PAR/16553/01:D03

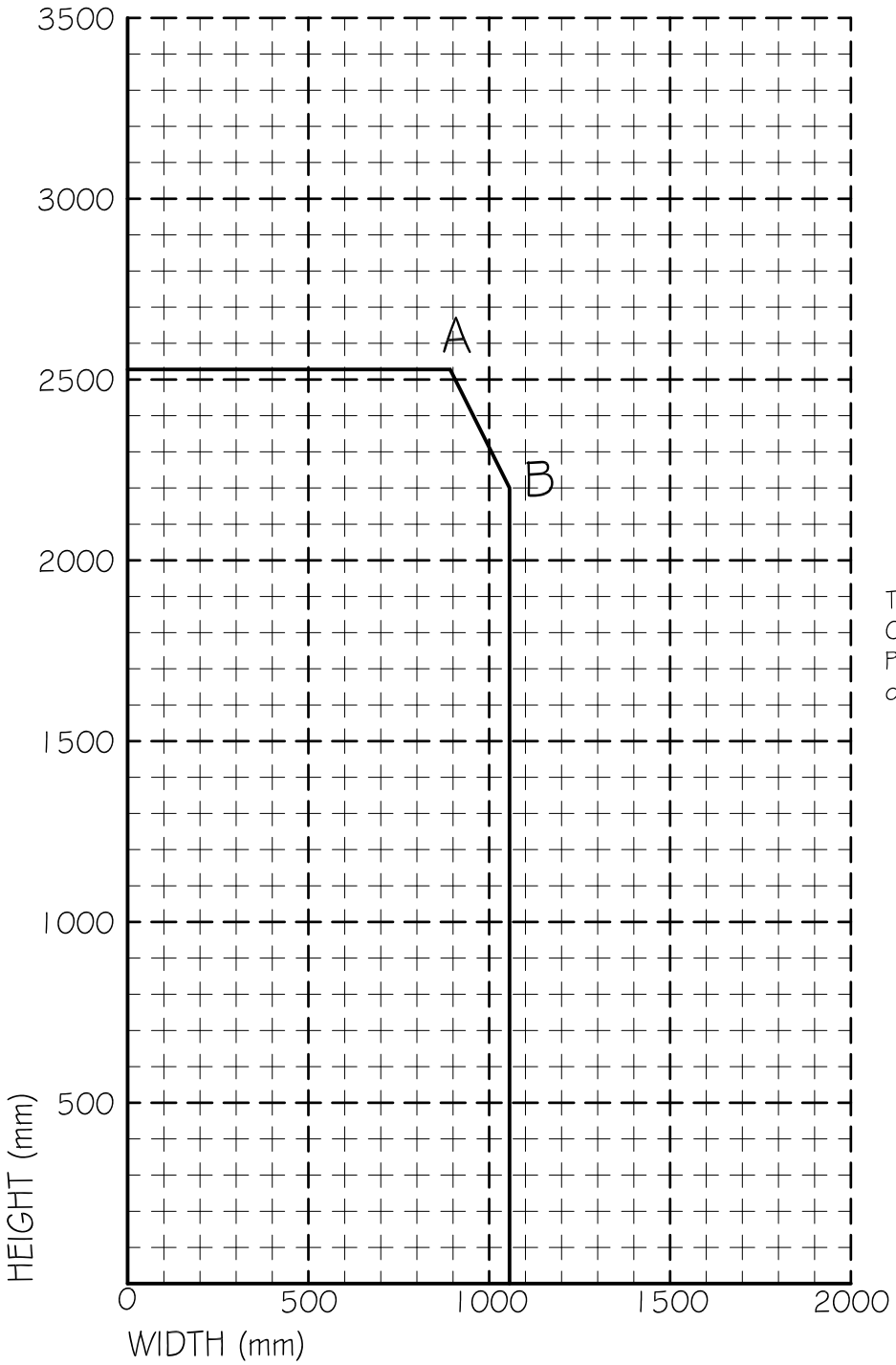
| | Pacifire Litewood Core with Standard Intumescent | |
|---|---|---|
| | A | B |
| Width | 892 | 1056 |
| Height | 2528 | 2200 |

## PROPOSED CONFIGURATION

UNLATCHED
SINGLE ACTING
DOUBLE LEAF
FLUSH MEETING STILES
WITHOUT OVERPANEL

REQUIRED INTEGRITY : 30minutes

## LEAF SIZE ENVELOPE POINTS

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## ENVELOPE OF APPROVED LEAF SIZES

The above graph represents the envelope of approved leaf sizes for the proposed door leaf configuration.
Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved.
POINT A represents the maximum leaf height and its associated width.
POINT B represents the maximum leaf width and its associated height.



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Envelope of Approved Door Leaf Sizes
ULSADD
In Timber Frames

| Job number: 16553 | |
|---|---|
| Drawn by: CSP | Checked by: WL |
| Not To Scale | Drawn: Dec 2016 |

PAR/16553/01:D04

# APPENDIX E

**Assessed Leaf Size Envelopes using Duocore Leaves**

**Figures PAR/16553/01:E01 to E02**

***The figures in this Appendix are not included in the sequential page numbering of this report***

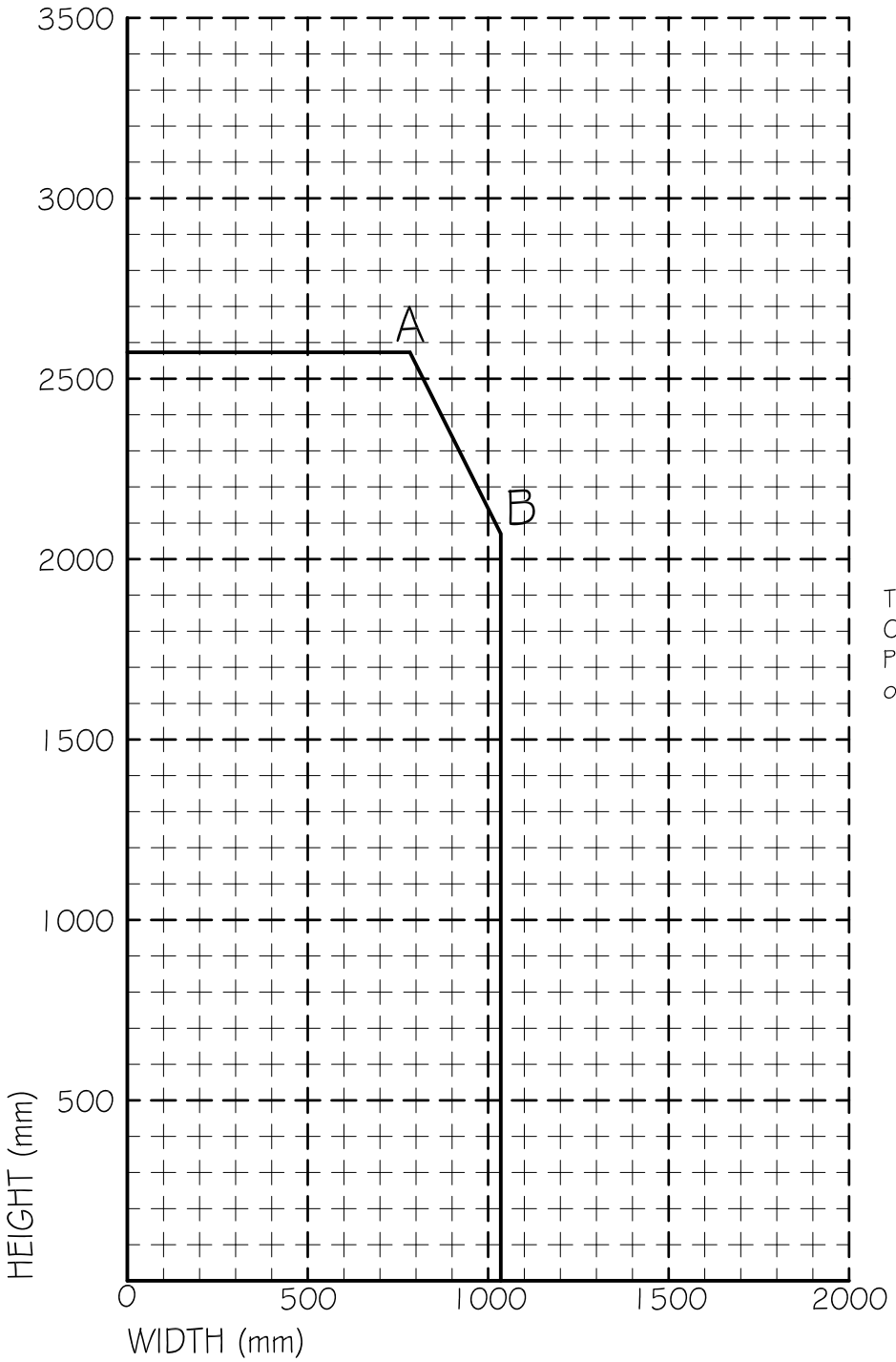
| | Pacifire Litewood Core with Standard Intumescent | |
|---|---|---|
| | A | B |
| Width | 783 | 1035 |
| Height | 2573 | 2070 |

## PROPOSED CONFIGURATION

LATCHED
SINGLE ACTING
SINGLE LEAF
WITHOUT OVERPANEL

## REQUIRED INTEGRITY : 30minutes

## LEAF SIZE ENVELOPE POINTS




This figure forms part of International Fire Consultants Ltd's Field of Application Report PAR/16553/01, which contains full details of the assessed door leaf construction.

## ENVELOPE OF APPROVED LEAF SIZES

The above graph represents the envelope of approved leaf sizes for the proposed door leaf configuration.
Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved.
POINTS A & C represent the maximum leaf height and its associated width.
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PT Group Ltd
30 Minute Timber Lamel Core Door Leaves Installed in Timber Frames

Envelope of Approved Door Leaf Sizes
LSASD
In Timber Frames

| Job number: 16553 | |
|---|---|
| Drawn by: CSP | Checked by: WL |
| Not To Scale | Drawn: Dec 2016 |

PAR/16553/01:E01

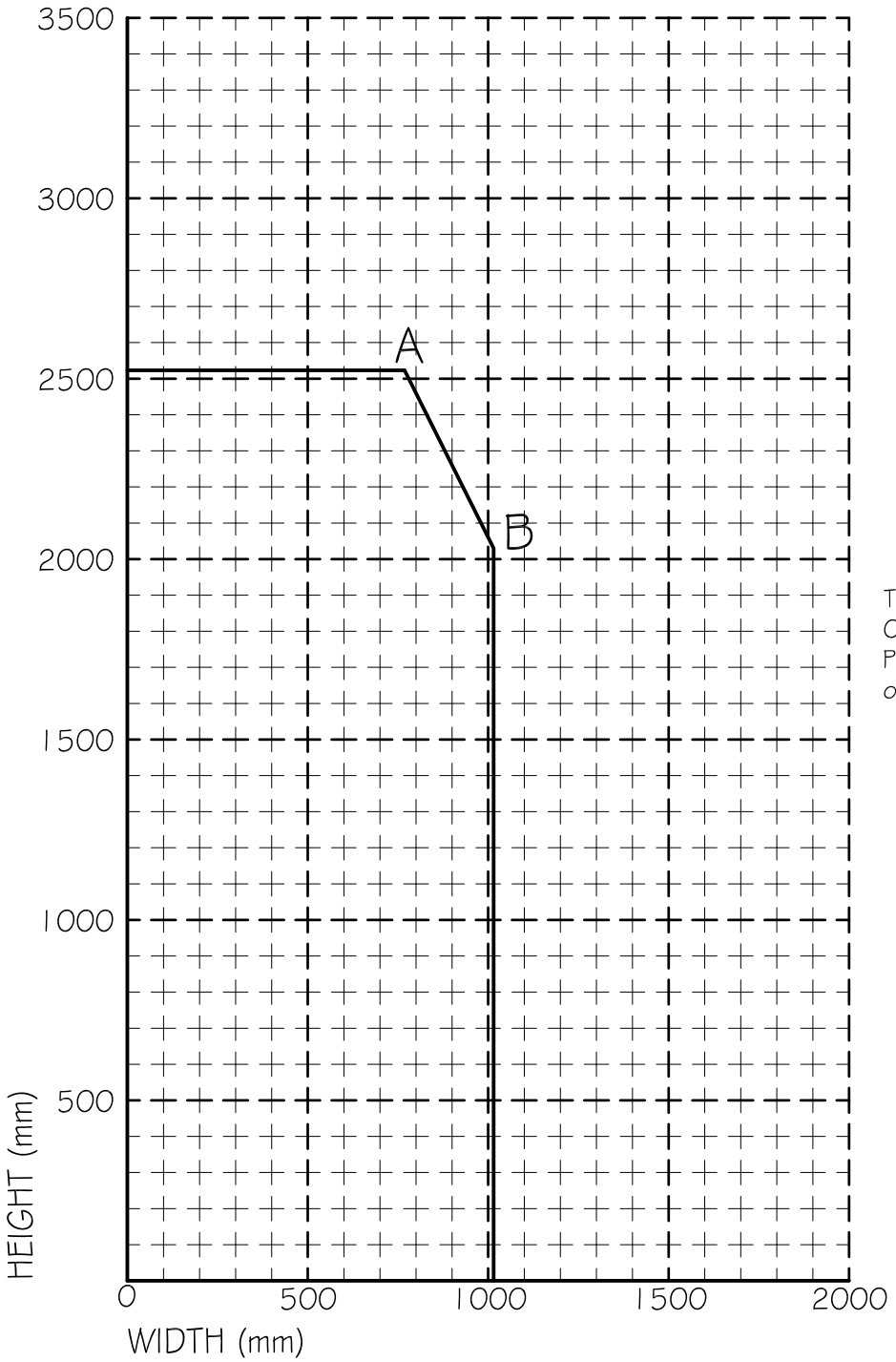
| | Pacifire Litewood Core with Standard Intumescent | |
|---|---|---|
| | A | B |
| Width | 768 | 1015 |
| Height | 2523 | 2030 |

## PROPOSED CONFIGURATION

UNLATCHED
SINGLE ACTING
SINGLE LEAF
WITHOUT OVERPANEL

## REQUIRED INTEGRITY : 30minutes

## LEAF SIZE ENVELOPE POINTS




This figure forms part of International Fire Consultants Ltd's Field of Application Report PAR/16553/01, which contains full details of the assessed door leaf construction.

## ENVELOPE OF APPROVED LEAF SIZES

The above graph represents the envelope of approved leaf sizes for the proposed door leaf configuration.
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POINTS A & C represent the maximum leaf height and its associated width.
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Envelope of Approved Door Leaf Sizes
ULSASD
In Timber Frames

| Job number: 16553 | |
|---|---|
| Drawn by: CSP | Checked by: WL |
| Not To Scale | Drawn: Dec 2016 |

PAR/16553/01:E02

# APPENDIX F

## General Guidance on Installation of Hardware

## General Guidance on Installation of Hardware

### F.1 Hinges

A variety of hinges have been successfully tested with the FD30 door cores referenced in this assessment, and are thus proven to make a positive contribution to the required 30 minutes integrity performance. Examples of tested hinges are;

- Carlisle Brass Ltd Butt Hinge, ref: Enduro Grade 13
- Royde and Tucker lift off type hinge, ref: H101

Other hinges may be used as alternatives providing they comply with the specifications below.

| | | |
|---|---|---|
| Hinge types | : | Fixed pin, washered butt, ball bearing butt, lift off type or journal supported hinges may be used. |
| Minimum number | : | 3no (1½ pairs) per leaf up to 2400mm high<br>4no (2 pairs) per leaf where leaves are greater than 2400mm high |
| Positions | : | The top hinge must be positioned 120-200mm down from the head of the leaf to the top of the hinge and the bottom hinge positioned 150-225mm up from the foot of the leaf to the bottom of the hinge. Central hinges, where installed, to be equispaced between the top and bottom hinges. (All positions ±25mm). |
| Fixings | : | Steel screws, as recommended by the hinge manufacturers, but in no case smaller than No 8 (3.8mm diameter) x 32mm long, and having thread for the full length. Position of screws (in relation to the door face) in blades of alternative hinge types shall be similar to hinges tested with the proposed door type. |
| Hinge blade sizes | : | 1.5–3.5mm thick x 89–110mm high x 30–35mm width. (These dimensions refer to the blade size, i.e. the part of the hinges that are recessed into the edge of the leaves/frame). |
| Hinge materials | : | Brass, Phosphor Bronze, Steel or Stainless Steel. (Aluminium, Nylon or 'Mazac' are not permitted.) No combustible or thermally softening materials to be included. |
| Additional protection | : | None required |

Rising butt, non-cranked butts and spring hinges (single or double action) are not suitable for use on doors approved within the scope of this generic assessment, although may be suitable to form the subject of an individual and specific evaluation.

## F.2 Mortice Latches/Locks

A variety of locks/latches have been successfully tested with the FD30 door cores referenced in this assessment. An example of such a latch/lock is;

- PT Agencies Ltd, EuroSpec 5 lever sashlock

Other mortice latches/locks may be used, subject to compliance with the following specifications.

| | | |
|---|---|---|
| Centre of lock/latch | : | 1000mm (± 200mm), above the bottom of the door leaf |
| Latch/lock types | : | Mortice latches, tubular mortice latches, sashlocks, deadlocks |
| Maximum dimensions | : | Forend plate: 235mm long x 20mm wide or 200mm long x 25mm wide<br>Latch body: 18mm thick x 150mm high x 100mm wide<br>Strikeplate: 235mm long x 20mm wide or 200mm long x 25mm wide |
| Materials | : | Latches must have no essential part of their structure made from polymeric or other low melting point (<800°C) materials, and should not contain any flammable materials. |
| Additional protection | : | Where forend and strike plates are longer than 200mm they should be bedded on 1mm thick low pressure intumescent material. |

Over-morticing is to be avoided; mortices should be as tight as possible to the latch. If gaps either side of the case exceed 2mm, then these must be made good with intumescent mastic or sheet material. Holes for spindles or cylinders should be kept as small as is compatible with the operation of the hardware.

Where doors include glazed apertures, there must be at least 50mm width of door core/stile between the aperture and the mortice for the latch/lock. Depending upon the location of the lock, and the aperture configuration, this may necessitate an increase to the minimum margins defined in Section 3.5.

Where glazing apertures are also incorporated, and are positioned such that locks/latches are included in the margin between the aperture and door edge, care must be taken to ensure that the effective door 'stile' is not weakened by the mortice. It is a condition of this assessment that, except where tubular latches are employed, the margin must be at least 75mm wider than the lock/latch mortice. If the mortice latch/lock is fitted in line with a 'rail' between two apertures, no part of the lock mortice shall be closer than 50mm to the edge of any aperture.

## F.3 Door Closers

Where required by regulatory guidance, each hinged door leaf must be fitted with a self-closing device unless they are normally kept locked shut and labelled as such with an appropriate sign which complies with BS5499: Part 1: 1990.

It is essential that all closers fulfil the requirements of BS EN 1154: 1997 and are of the correct power rating for the width and weight of the door assemblies (minimum power size 3). They must be fitted according to the manufacturer's instructions, and be adjusted so that they are capable of fully closing the door leaf, against any friction imposed by the latch, (and smoke seals, if fitted), from any position of opening.

A variety of closers have been successfully tested with the FD30 door cores referenced in this assessment but other closers may be used, subject to compliance with the specifications below.

Face-fixed overhead door closer (and accessories such as soffit brackets) that have been tested, assessed or otherwise approved for use on unlatched FD30 door leaves may be used. Any accessory that is located within the door reveal must have appropriate test or assessment evidence.

Examples of such closers are;

- Rutland Trading Co. Ltd TS.9205 DABC
- Rutland Trading Co. Ltd TS3204

Transom mounted, jamb mounted or concealed overhead closers must not be incorporated into any of the door assemblies within the scope of this generic scope of this report.

Any accessory that is located within the door reveal must have appropriate test or assessment evidence.

## F.4 Bolts

Unless specific fire test evidence is available, all bolts shall be steel and face fixed. The following limitations and protection apply;

- Bolts shall be fixed so that there is a minimum of 50mm between the bolt and the door edge;
- Surface mounted barrel bolts shall not exceed 400mm in length, but there is no limitation on their width. Screws for fixing bolts must be at least 25mm long, and have thread for the full screw length.

## F.5 Non-Essential Hardware Items

### *F.5.1 Push plates, kick plates, etc.*

Plastic, pvc or metal plates may be surface-mounted to the doors, but, if more than 800mm in length by nominally 200mm wide, they must be attached in a way that would prevent them distorting the door leaf, e.g. glued with thermally softening adhesive or screwed with short aluminium screws and fitted in such a way so they will not be prevented from falling away by being trapped under door stops, glazing beads or handle escutcheons etc.

### *F.5.2 Pull handles*

These may be fixed to the door assemblies, provided that the fixing points are no greater than 800mm apart. Pull handles that are fixed through the leaf should use clearance holes as close fitting as possible to the bolt.

# APPENDIX G

## Summary of Fire Test Evidence

## Summary of Fire Test Evidence

| Test Report | Configuration Tested | Leaf Size | Test Standard | Integrity |
|---|---|---|---|---|
| Chilt/RF12073 | ULSADD | 2135mm high x 915/300mm wide x 44mm thick | BS476: Part 22: 1987 | 42 minutes |
| CFR1607221_1 | ULSASD | 2135mm high x 930mm wide x 44mm thick | BS476: Part 22: 1987 | 37 minutes |
| CFR1608231 | ULSASD | 2130mm high x 933mm wide x 45mm thick | BS476: Part 22: 1987 | 32 minutes |
| | ULSASD | 2456mm high x 1235mm wide x 45mm thick | BS476: Part 22: 1987 | 37 minutes |

**ULSASD** = Unlatched, Single Acting, Single leaf Doorset
**ULSADD** = Unlatched, Single Acting, Double leaf Doorset

***Note:*** *Where appropriate, fire test evidence from glass, hardware, and intumescent seal manufacturers has also been considered when preparing this Field of Application Report.*