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IFC FIELD OF APPLICATION REPORT

PAR/13088/01

Field of Application of TriSound S3D FD60 Timber-Based Multi-Layer Door Leaves Installed in Timber Frames

Prepared on behalf of:

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1. INTRODUCTION

This report has been prepared by International Fire Consultants Ltd (IFC) to define the field of application of TriSound S3D timber-based multi-layer door leaves installed in timber frames, that are required to provide 60 minute 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 60 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 proven in tests summarised herein.

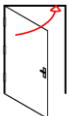
2. TEST EVIDENCE

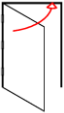
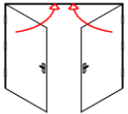
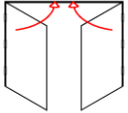
The test evidence used to support this Field of Application Report is summarised in Appendix F of this report.

3. SCOPE OF APPROVAL

3.1 Doorset Configuration

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

Configuration	Envelope of Approved Leaf Size
 <ul style="list-style-type: none">● Latched● Single Acting● Single Door● With or Without Transomed Overpanel <i>Note 1</i>	Figure PAR/13088/01:D01 in Appendix D

Configuration	Envelope of Approved Leaf Size
 <ul style="list-style-type: none"> ● Unlatched ● Single Acting ● Single Door ● With or Without Transomed Overpanel <i>Note 1</i> 	<p align="center">Figure PAR/13088/01:D02 in Appendix D</p>
 <ul style="list-style-type: none"> ● Latched ● Single Acting ● Double Doors <i>Note 2</i> ● With or Without Transomed Overpanel <i>Note 1</i> 	<p align="center">Figure PAR/13088/01:D03 in Appendix D</p>
 <ul style="list-style-type: none"> ● Unlatched ● Single Acting ● Double Doors <i>Note 2</i> ● With or Without Transomed Overpanel <i>Note 1</i> 	<p align="center">Figure PAR/13088/01:D04 in Appendix D</p>

Note 1 Overpanels may be fitted, provided they are separated from the door leaf by a transom member.

Note 2 Double leaf door assemblies within the scope of this Field of Application Report may have square edged or unequally rebated meeting stiles.

3.2 Maximum Assessable Door Leaf Sizes

The calculated envelopes of assessed leaf dimensions for each mode and configuration covered by this Field of Application Report are given in Appendix D, based upon use of the intumescent seal specification shown in Appendix C.

Leaves in double door assemblies may each be of the same width, up to the maximum width indicated in Appendix D. If leaves are both unlatched/unbolted and of unequal width, the smaller leaf must not be more than 250mm narrower than the larger leaf. This is to reduce the level of differential deflection that may otherwise occur with the varying of leaf widths. If the smaller leaf is bolted, then there is no limit on the ratio of leaf widths, (although the large leaf must still be within limitations in Appendix D), since the bolts will restrict deflection, irrespective of the leaf width. In any case, the width of the small leaf shall not be less than 300mm, since this will affect its vertical stability relative to that of the larger leaf.

3.3 Transomed Overpanels

Transomed overpanels are permitted across the entire range of doorset configurations. The intumescent seal specification around the overpanel perimeter shall be as defined in Appendix C. Transom members shall be in accordance with Section 3.5, and installation shall be as defined in Section 3.8.

The size of overpanels is limited to the full width of the leaf/leaves contained within the doorset and the following maximum height:

Single leaves: 2000mm high
 Double leaves: 1500mm high

In all cases, the overpanel must be a single piece panel across the frame width; i.e. a “double door” overpanel shall not be used above double door leaves. Approval of an overpanel size by IFC does not indicate that such a size can be fabricated, this should be checked with the manufacturer, and will be subject to the ability of the supporting construction providing adequate restraint/support.

3.4 Door Leaf and Overpanel Specification

A detailed constructional specification of the basic door and overpanel construction is given below. This is based upon the test evidence detailed in Appendix F, (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.

Component		Material		Density	Dimensions	
Core <i>Note 3</i>	Central layers	TriSound S3D by Sauerland	Extruded Chipboard	560kg/m ³ <i>Note 4</i>	45mm	3no. layers of 13mm thick
	Outer layers		Cork	220kg/m ³ <i>Note 4</i>		3mm thick
Stiles and rails <i>Note 3</i>	Inner	Sapele		650kg/m ³ <i>Note 4</i>	45mm thick x 38mm wide	
	Outer	Sapele		650kg/m ³ <i>Note 4</i>	45mm thick x 32mm wide	
Facings <i>Note 3</i>		High Density MDF		850kg/m ³ <i>Note 4</i>	6mm thick	
Lippings <i>Note 3</i>	Hanging, closing and flush meeting edges	Hardwood		630kg/m ³ <i>Note 4</i>	5 – 9mm thick	
	Rebated meeting edges <i>Note 5</i>				17 – 21 mm thick, to accommodate a 12mm rebate	
Fixings/ adhesive	Core	Retained on confidential file by IFC <i>Note 6</i>		–	–	
	Facing to core	PVA D3 or Urea Formaldehyde adhesives		–	–	
	Lippings	PVA D3 adhesives		–	–	

Component	Material	Density	Dimensions
Optional additional decorative finishes	Timber veneer, decorative plastic based laminate, PVC or paint	–	Maximum 2mm thick

Note 3 Leaf construction to be in accordance the Method Statement included in Appendix A.

Note 4 Nominal stated density.

Note 5 Where rebated meeting stiles are employed they should be 12mm deep, with a 39mm wide rebate in one leaf and 18mm wide rebate in the other leaf.

Note 6 Any adjustments to leaf size greater than 6mm will require remedial actions in accordance with the Method Statement included in Appendix A.

Square and unequal width rebated meeting stile details are approved across the range of sizes covered by this Field of Application Report for double leaf door assemblies.

3.5 Frames

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

Material	Density	Minimum Face Width	Minimum Frame Depth	Minimum Stop Depth
Hardwood	650kg/m ³ <i>Note 7</i>	32mm, excluding stop <i>Note 8</i>	95mm	12mm <i>Note 9</i>

Note 7 Timber 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 8 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 9 The doorstop 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.

The overall frame depth may be increased by the use of extension linings, but the joint between the main frame and the extension lining must not intrude into the plane of the door thickness. Where an integral architrave is used, the face of the door may protrude beyond the face of the wall, providing the thickness of the architrave is no greater than 10mm and it protrudes 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).

3.6 Glazing Apertures

3.6.1 Glass types

The following glass types are approved for use in the doors considered herein, which are compatible with the identified approved glazing systems given in Section 3.6.2, although some restrictions on size may be given in subsequent sections.

- 12mm thick Pyrobelite (AGC Flat Glass)
- 23mm thick Pyrostop (Pilkington)

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

3.6.2 Glazing material

The following glazing materials are approved for use in the doors considered, herein, and are compatible with the identified approved glass types listed above. (See also **Figure PAR/13088/01:B01** in Appendix B).

- 2no. 10 x 2mm Interdens F (Various) with 54 x 2mm Norseal glazing liner (use with 12mm thick Pyrobelite)
- 10 x 2mm Kerafix 2000 (Kuhn) with 54 x 2mm Norseal glazing liner (use with 23mm thick Pyrostop)

3.6.3 Bead profile and installation

The approved bead sizes and profiles, and relevant fixing details, are shown on **Figure PAR/13088/01:B01** in Appendix B.

Glazing beads must be formed from good quality, straight grained hardwood, with 640kg/m³ minimum density (measured at 12% moisture content). Timber should be of appropriate quality in accordance with BS EN 942: 1996 with a moisture content of 10 ±2% for UK market (or to suit internal joinery moisture content specification of export countries).

3.6.4 Assessed aperture sizes

Apertures are created by cutting directly into the door slab with 3mm thick x 17mm deep grooves cut along the joint between core layers. Into the grooves 2.5mm thick x 15mm deep hardwood inserts are to be bonded with EPI adhesive. The glazing details are shown on **Figure PAR/13088/01:B01** in Appendix B.

Based upon the size of apertures tested, it is the opinion of IFC that the following limitations apply to glazed apertures in the door leaves considered herein;

Maximum area of single aperture	-	0.166m ² <i>Note 10</i>
Maximum vertical length of aperture	-	905mm
Maximum horizontal length of aperture	-	200mm
Minimum distance from leaf edge (top)	-	135mm
Minimum distance from leaf edge (sides)	-	140mm
Minimum distance from bottom of leaf	-	250mm
Minimum distance between apertures	-	200mm

More than one aperture may be included in each leaf subject to the individual limitations above, and a maximum area of apertures of 0.283m².

Note 10 Any aperture(s) for intumescent air transfer grilles, (see Appendix E), must also be included in the total area permitted for apertures given above. Margins between apertures apply whether for glazing or grilles.

3.7 Hardware

Some of the various items of hardware to be used with the proposed doorsets 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.

General guidance for all items of hardware is outlined in Appendix E, based upon the range of items tested. All hardware beyond the scope of the general guidance 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.

3.8 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 on the vertical edges (minimum 200mm from the top and bottom), and a minimum of one fitted centrally across the width of the frame head of double doors. 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 60 minutes fire resistance, at the required size, when incorporating doorset openings. If fitted into timber or steel stud partitions, the method of forming the doorset aperture must be as tested by the partition and/or doorset manufacturer.

Note 11 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 doorsets in proprietary 'demountable' partitions, which must be subject to a full and independent appraisal of the particular system and doorsets therein.

No part of the rear of the frame section shall be exposed once installed, (except for integral architraves) and the leaf must be flush with the face of the wall. 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 Table 3 in BS8214: 2008, "Code of practice for fire door assemblies", 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 gaps between door and frame should be 1.5–4mm; the gaps 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 in accordance with BS8214 (see also Section 3.10 regarding suitability of smoke seals).

The doorset design should be such that leaves are fully flush within the frame when closed. The face of leaves in double doorsets should be flush with each other at meeting stiles when closed.

3.9 Intumescent Seals

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

3.10 Ambient Temperature Smoke/Acoustic Seals

Ambient temperature smoke/acoustic sealing was included in the tested doorset in the form of Norseal NOR 710 at the frame reveal/stop interface and combined intumescent and smoke seals at the meeting stiles.

Other separate or combined intumescent, acoustic and/or smoke seals (using one of the intumescent products approved in Section 3.9), that have been tested to BS476: Part 31: Section 31.1: 1983 and shown not to leak by more than 3m³/m/hr at 25Pa may be used in conjunction with the proposed doorsets to provide smoke control.

The orientation of the seals, door edge gaps, degree of hardware interruption, and leaf configuration must be as tested to 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 C, 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 doorsets, when fitted in the proposed arrangements.

4. CONCLUSION

It is the opinion of International Fire Consultants Ltd that if the proposed TriSound S3D timber-based multi-layer 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 60 minutes.

5. LIMITATIONS

This Field of Application Report 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 doorset 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 International Fire Consultants Ltd 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 doorsets are installed, to ensure that no parts of the assembly are damaged or faulty. Further, the doorsets must open and close without the use of undue force. The edge gaps/alignment of door leaves must be in accordance with the tolerances defined, herein, when the doors are closed. Any such shortfalls in respect to the condition of the doorsets 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 doorsets 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 International Fire Consultants Ltd, 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 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 to 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 June 2018 should confirm its ongoing validity.

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Senior Fire Safety Engineer
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APPENDIX A

Construction Method Statement

***The Method Statement in this Appendix is not
Included in the sequential page numbering of this report***

TriSound S3D by Sauerland Acoustic Blank Construction

Method Statement

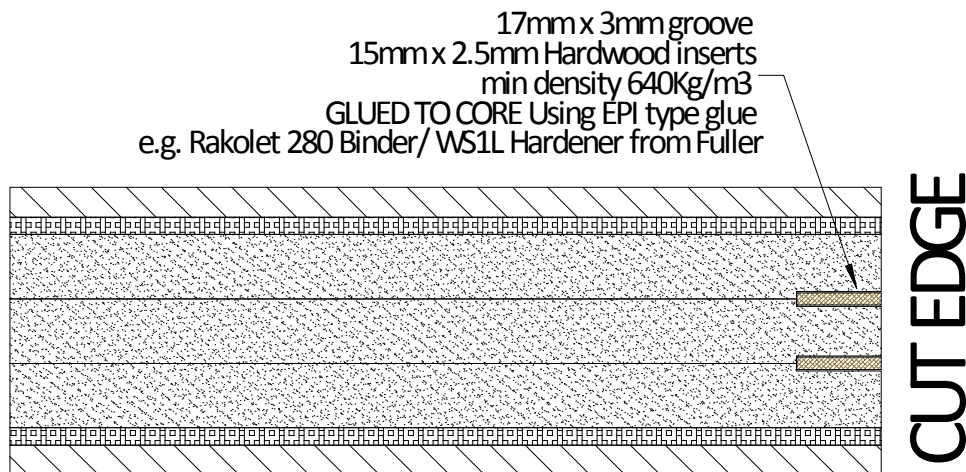
Tel: +44(0)7815 589447
 Email: kshepherd@afdsl.com

Materials

- TriSound S3D by Sauerland 45mm thick 3-Ply acoustic core with Cork outer layers (nom 2000x800mm)
- Sapele (min density 630kg/m³ at 12% mc) 45x38mm section perimeter timber
- 2no 6mm High Density MDF (min density 850kg/m³ at 12% mc) sheets for substrates
- Min 20x12mm steel staples
- PVA D3 or UF adhesive (and EPI adhesive if core is to be reduced in width)
- Sapele (min density 630Kg/m³ at 12% mc) 15x2.5mm IF core is to be reduced in width

Method

1. Cut Core to internal size:
 - a. Core Height: Blank Height – 152mm (see section ii below)
 - b. Core Width: Blank Width – 152mm (see section iii below)
 - c. Where Fire performance is required the following conditions must be adhered to:
 - i. the core must only be used in the “portrait” orientation
 - ii. When cutting the core to height it is imperative to ensure that the required amount is ONLY trimmed from one end of the core. The cut end MUST be located at the bottom of the leaf. If the top (non-cut) end requires squaring-up this can be achieved by trimming a maximum of 6mm before the remainder is trimmed from the opposite end.
 - iii. When cutting the core to width it is imperative to ensure that the required amount is ONLY trimmed from one edge of the core. Where greater than 6mm is removed from the edge, two grooves 17mm deep by 3mm wide MUST be cut along the CUT edge positioned along the joint between core layers (see diagram below). The grooves are to be filled with 15mm x 2.5mm Sapele inserts glued to the cores using an EPI type glue (e.g. Rakolet280 Binder/WS1L hardener from Fuller).



If the non-cut edge requires squaring-up this can be achieved by trimming a maximum of 6mm before the remainder is trimmed from the opposite edge as above.

- iv. The core is normally supplied at 2000x800mm dimensions. If a wider core size is required this must be custom-manufactured.
- v. In any event the overall leaf sizes should be limited to the permissible envelope provided with the fire performance evidence.

2. Cut Perimeter Timber:

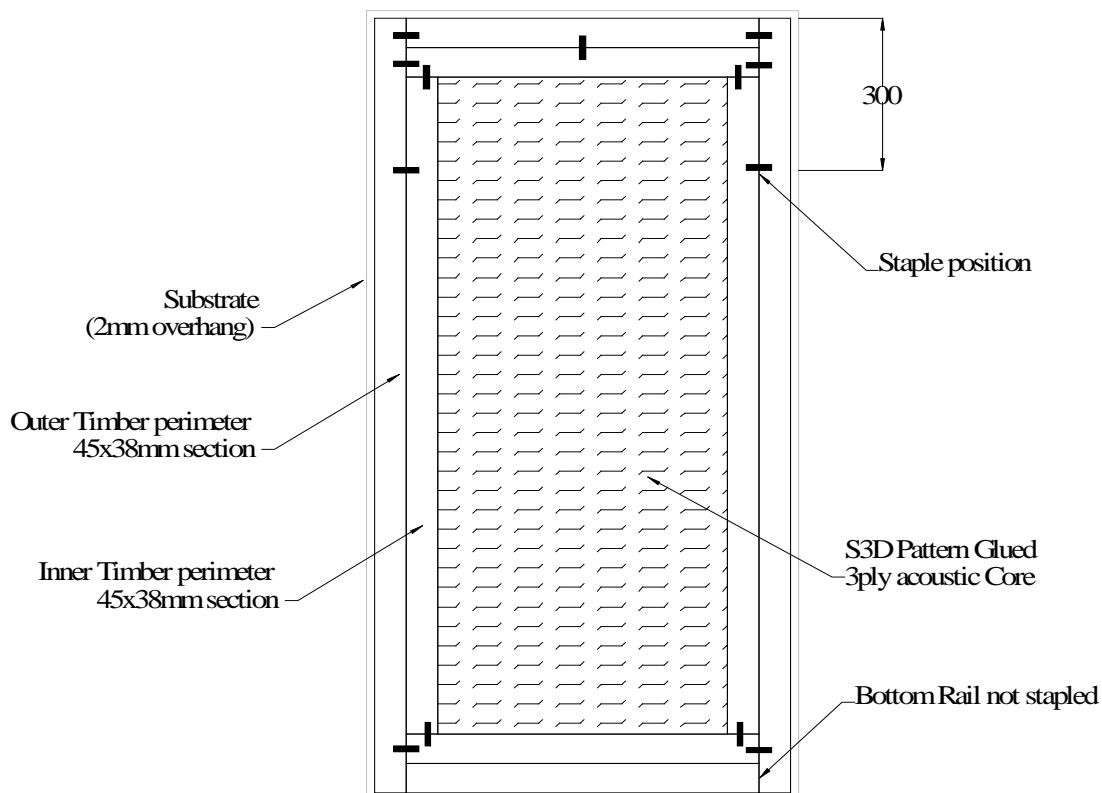
- a. Outer stiles: Blank Height
- b. Inner stiles: Blank Height – 152mm
- c. All rails: Blank Width – 76mm

3. Cut substrate

(2no 6mm substrates):

- a. Height: Blank Height + 4mm
- b. Width: Blank Width + 4mm

4. Assemble Perimeter using steel staples from both faces, in locations shown below, ensuring tight fit of timber at joints and where butted up. Gaps of > 0.5mm are unacceptable. Note that the bottom rail is not stapled.



- 5. Coat one substrate with PVA-D3 or UF adhesive. Place (adhesive side up) on pressing platform
- 6. Place perimeter onto substrate with 2mm overlap all round
- 7. Place the bottom rail ensuring tight fit

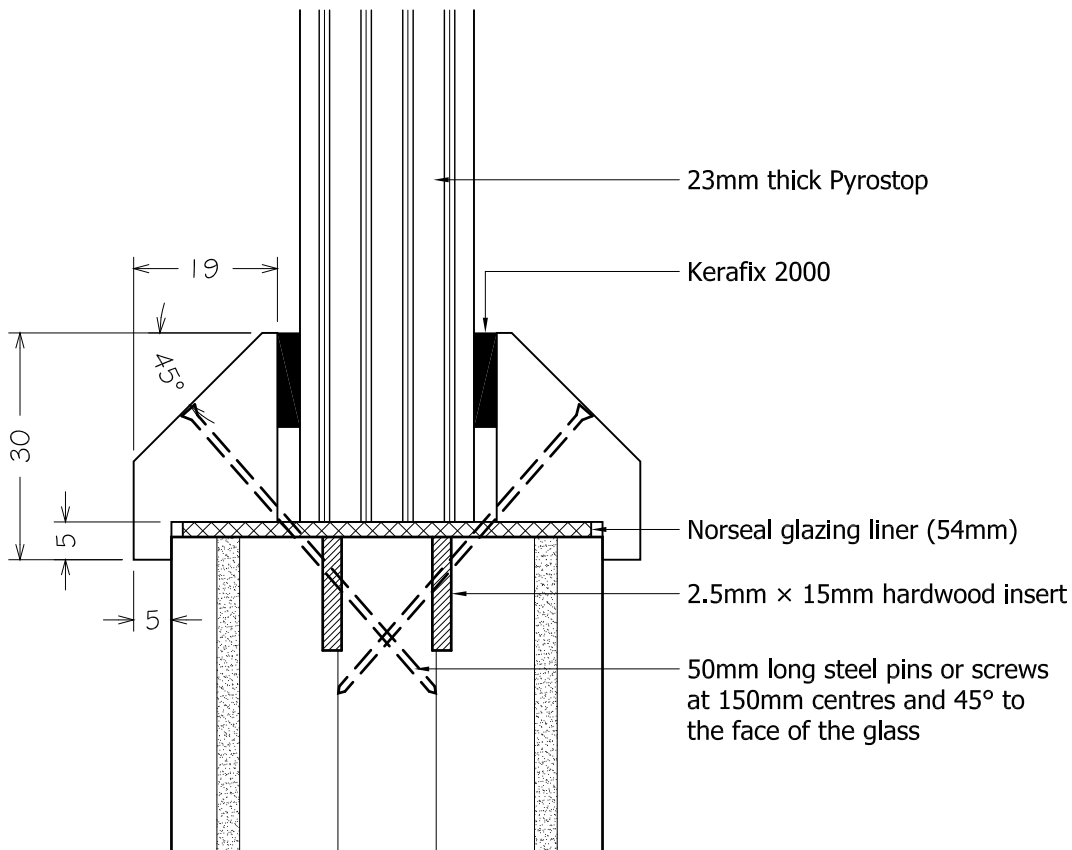
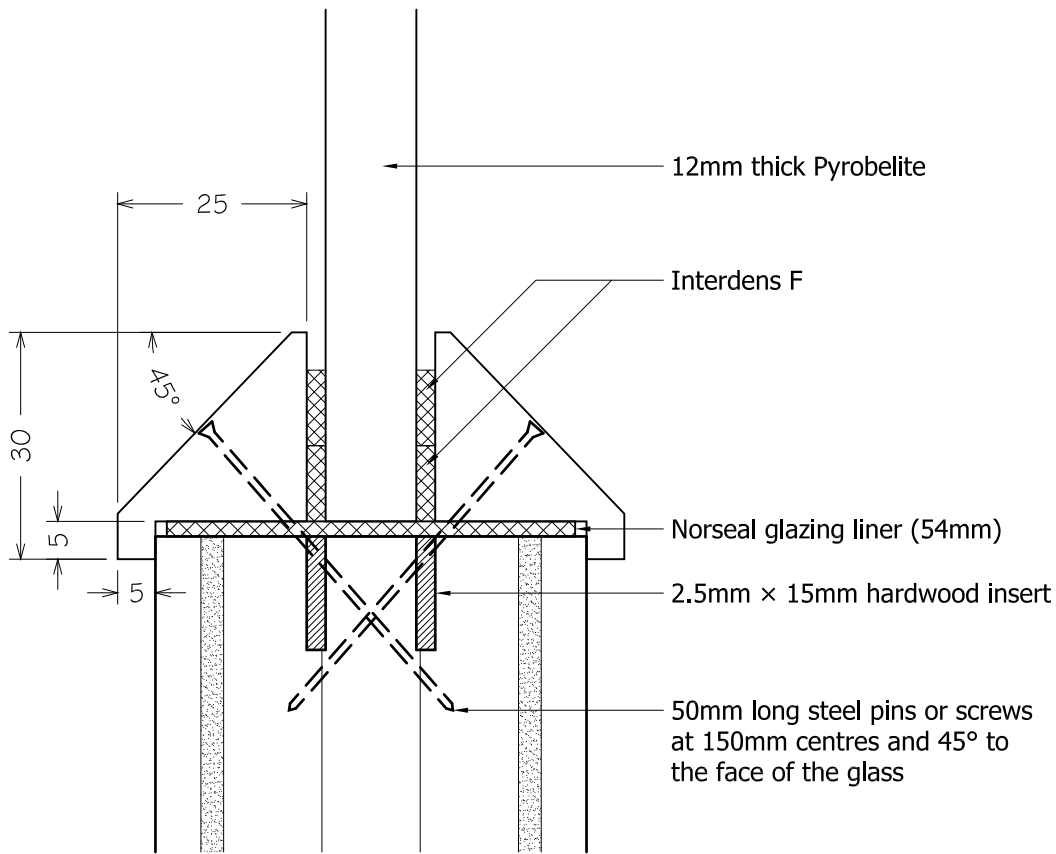
8. Place cut-to-size core material into the perimeter ensuring tight fit and that the top end of the core (see section 1-ii) is at the top end of the leaf
9. Coat second substrate with PVA-D3 or UF adhesive place on top of core/perimeter with 2mm overhang all round.
10. Press in a hot press until adhesive is cured to the handling stage. Suggested time in a hot press would normally be around 20-30 minutes but the time required will vary due to press temperature and other conditions. It is possible to use a cold press although pressing time to reach the handling stage will be significantly increased, e.g. in a 21°C environment the handling stage would normally be reached in around 75 minutes, although again this will vary due to conditions. For more information see the adhesive manufacturers Technical Data Sheet
11. Once the handling stage of curing is reached the blank can be removed from the press but handling should be kept to a minimum until full cure has been achieved. Time required to achieve full cure varies with temperature and other conditions but as a guide a blank stored in normal conditions should achieve full cure after around 24 hours.
12. Mark “Top” on the top perimeter frame.
13. Once full cure has been reached the blank can be trimmed and lipped.
14. The blank can now be veneered/trimmed/primed/painted according to requirements. See the relevant Technical Manual for more information regarding use of the blank.

APPENDIX B

Figure PAR/13088/01:B01

Glazing Details

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



This drawing is Copyright©
Contractors must check all dimensions.
Any discrepancies must be reported before
work proceeds.
Only work to dimensions stated on drawing.

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Field of Application Report PAR/13088/01
Sauerland Spanplatte GmbH & Co KG
TriSound S3D FDGO Timber-Based
Multi-Layer Door Leaves Installed
in Timber Frames

Glazing Details

Job number: 13088

Drawn by: CSP

Checked by: DJC

Not To Scale

Drawn: Apr 2013

PAR/13088/01:BO1

APPENDIX C

Assessed Intumescent Seal Specification

Intumescent Seal Specification

Location	Size and Position
Stile/jamb	2no 15 x 4mm seals, fitted 10mm apart, centrally, in the frame reveal
Head	2no 15 x 4mm seals, fitted 10mm apart, centrally, in the frame reveal
Flush meeting stiles	2no 10 x 4mm seals, fitted 10mm apart, centrally, in the active leaf and 1no. 10 x 4mm seal, fitted centrally, in the passive leaf
Unequally rebated meeting stiles	2no 10 x 4mm seals fitted 10mm apart, centrally, in the 39mm rebate and 1no. 10 x 4mm seal, fitted centrally, in the 18mm rebate

Note:

The intumescent seals are to be pvc encased graphite based. All seals should be obtained from members of the Intumescent Fire Seals Association (IFSA). Combined intumescent/smoke seals may be used, maintaining the widths specified above (and subject to the conditions outlined in Section 3.9).

APPENDIX D

Figures PAR/13088/01:D01 to D04

Assessed Leaf Size Envelopes

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

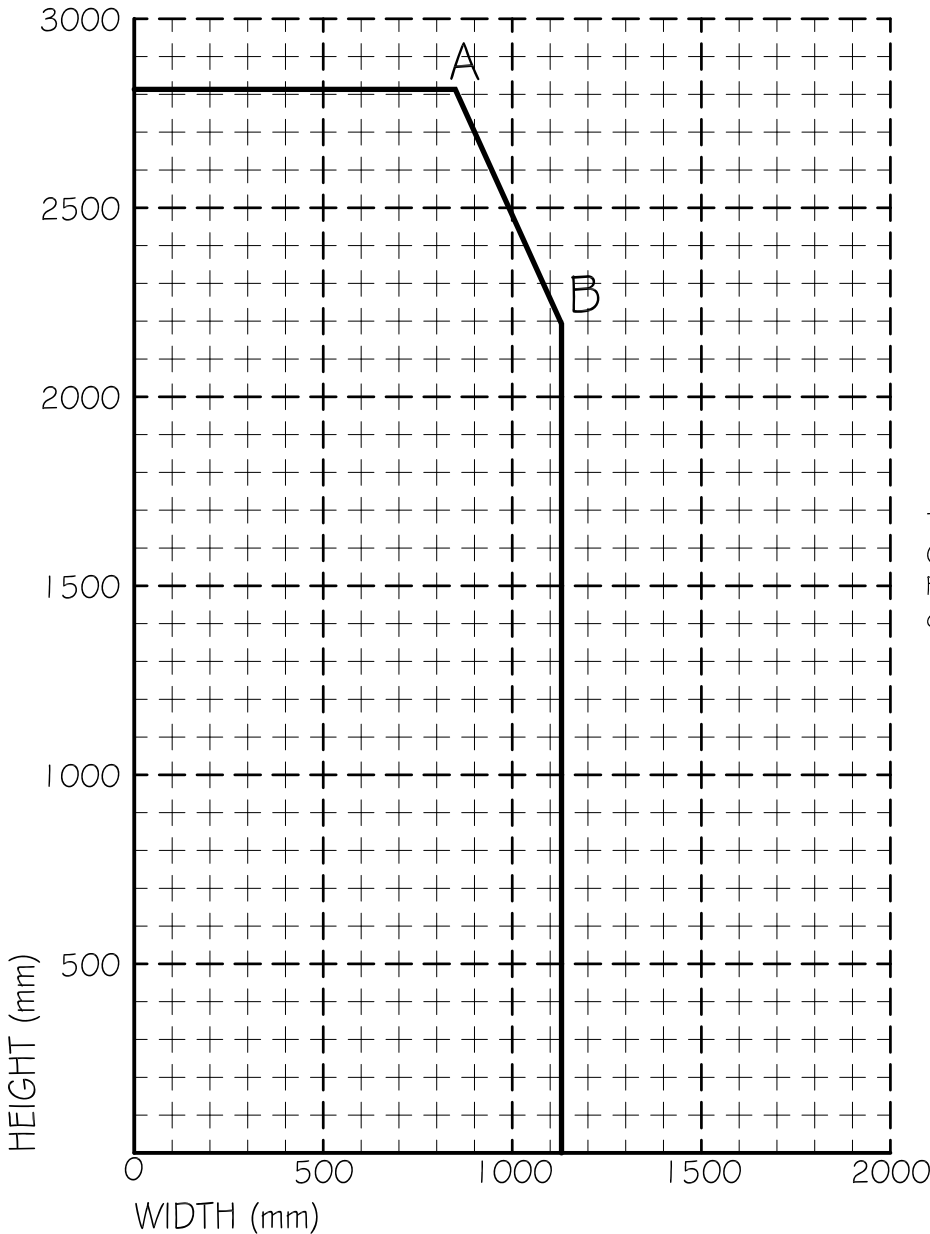
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Width	849	1130
Height	2813	2193

LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

LATCHED
 SINGLE ACTING
 SINGLE LEAF
 WITH or WITHOUT
 TRANSOMED OVERPANEL
 REQUIRED INTEGRITY : 60 Minutes



This figure forms part of International Fire Consultants Ltd's Field of Application Report PAR/13088/01, which contains full details of the assessed doorset construction.

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 Any discrepancies must be reported before
 work proceeds.
 Only work to dimensions stated on drawing.

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Field of Application Report PAR/13088/01
 Sauerland Spanplatte GmbH & Co KG
 TriSound S3D FD60 Timber-Based
 Multi-Layer Door Leaves Installed
 in Timber Frames

Envelope of Approved
 Door Leaf Sizes

LSASD

In Timber Frames

Job number: 13088

Drawn by: CSP

Checked by: DJC

Not To Scale

Drawn: Apr 2013

PAR/13088/01:DOI

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.

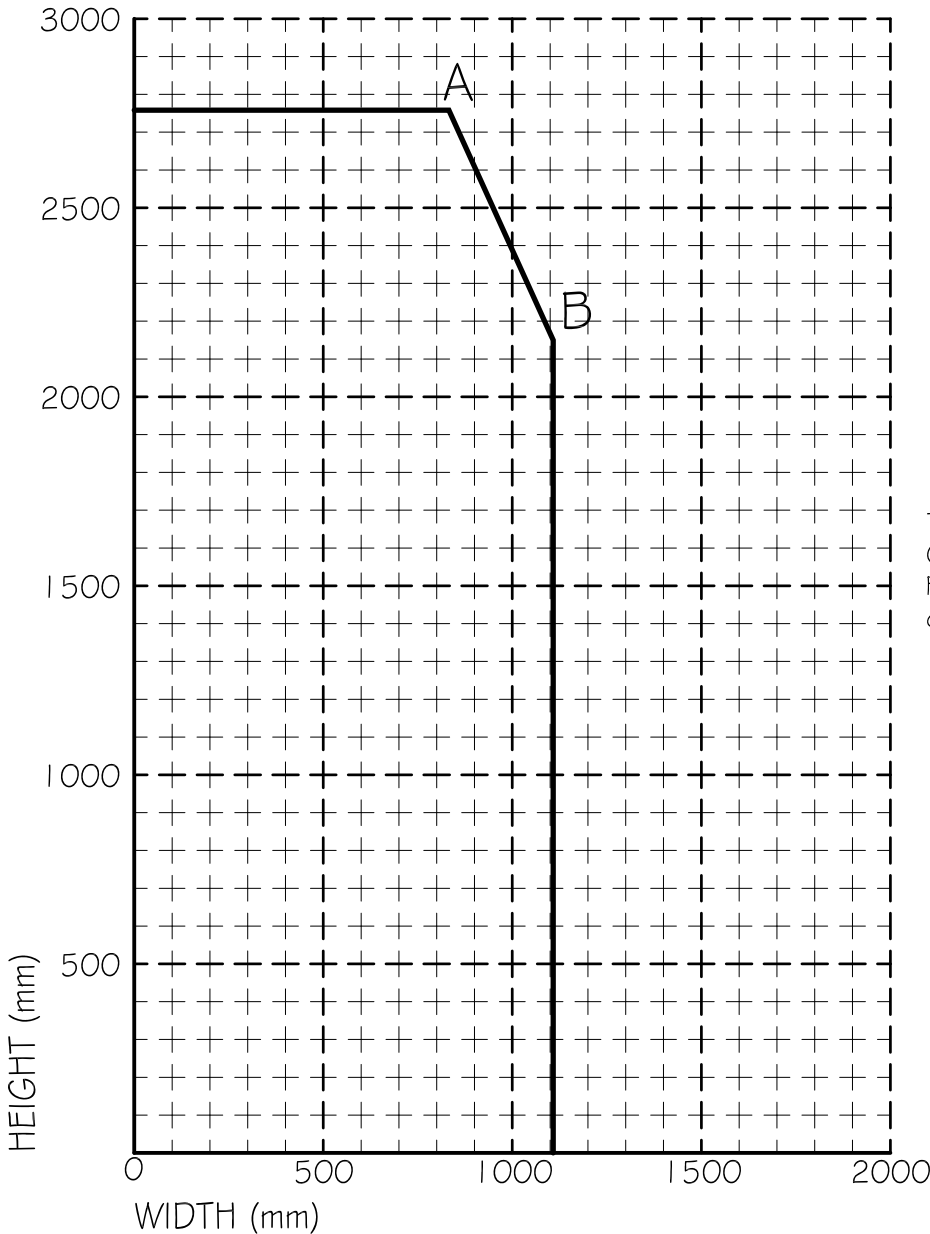
	A	B
Width	832	1108
Height	2758	2150

LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

UNLATCHED
 SINGLE ACTING
 SINGLE LEAF
 WITH or WITHOUT
 TRANSOMED OVERPANEL
 REQUIRED INTEGRITY : 60 Minutes



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ULSASD
 In Timber Frames

Job number: 13088

Drawn by: CSP Checked by: DJC

Not To Scale Drawn: Apr 2013

PAR/13088/01:DO2

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.

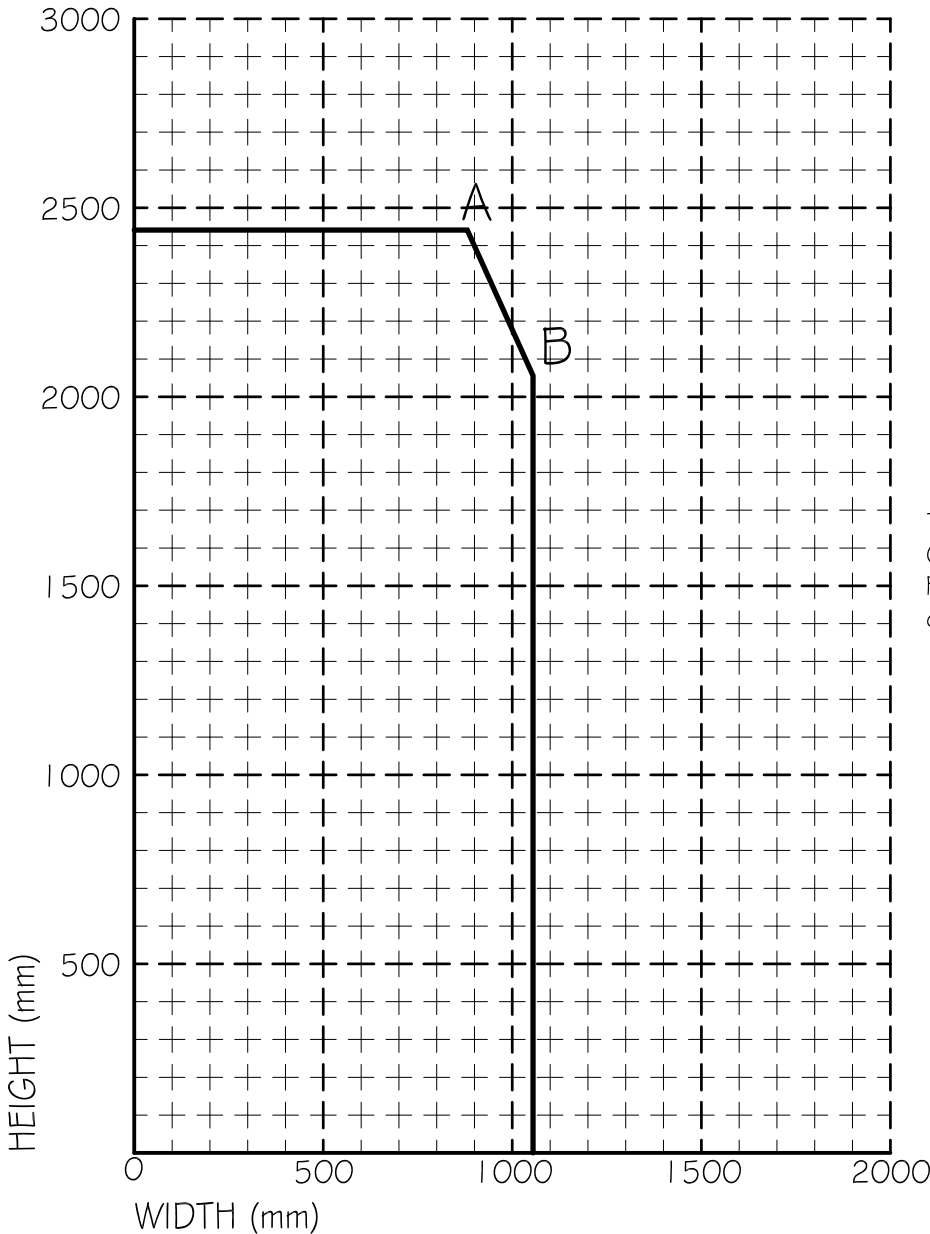
	A	B
Width	881	1055
Height	2441	2056

LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

LATCHED
 SINGLE ACTING
 DOUBLE LEAF
 WITH or WITHOUT
 TRANSOMED OVERPANEL
 REQUIRED INTEGRITY : 60 Minutes



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Envelope of Approved
 Door Leaf Sizes
LSADD
 In Timber Frames

Job number: 13088

Drawn by: CSP Checked by: DJC

Not To Scale Drawn: Apr 2013

PAR/13088/01:DO3

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.

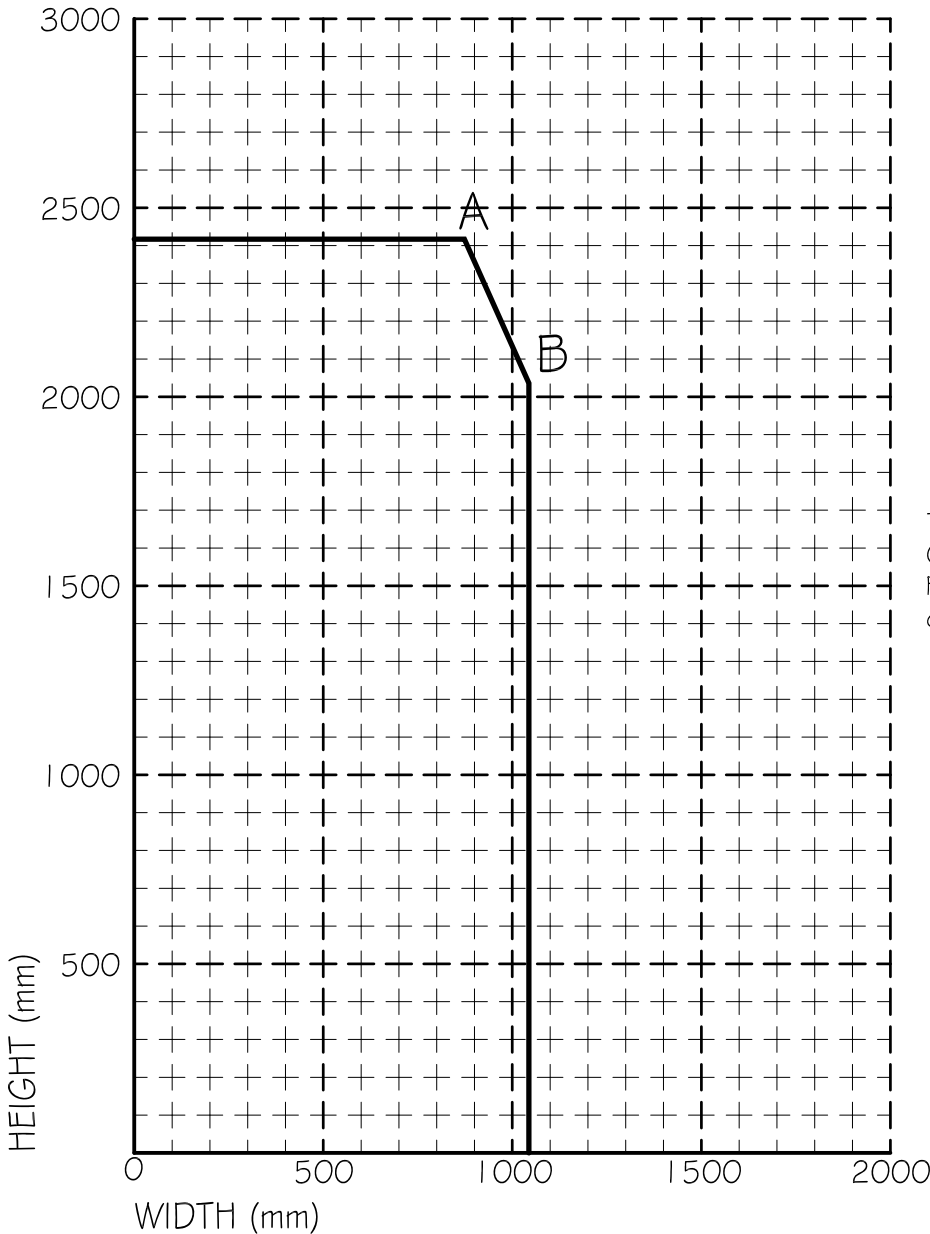
	A	B
Width	873	1044
Height	2417	2036

LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

UNLATCHED
 SINGLE ACTING
 DOUBLE LEAF
 WITH or WITHOUT
 TRANSOMED OVERPANEL
 REQUIRED INTEGRITY : 60 Minutes



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ULSADD
 In Timber Frames

Job number: 13088

Drawn by: CSP Checked by: DJC

Not To Scale Drawn: Apr 2013

PAR/13088/01:DO4

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.

APPENDIX E

General Guidance on Installation of Hardware

General Guidance on Installation of Hardware

E.1 Hinges

The doorsets have been tested utilising Hafele SUS 304 hinges which are thus proven to make a positive contribution to the required 60 minutes integrity performance. Other makes of hinge may be used as alternatives providing they comply with the following specification:

Hinge types: Fixed pin, washered butt, ball bearing butt, lift-off type or journal supported hinges may be used.

Number of hinges: 3no (1½ pairs) per leaf

Positions: The top hinge must be positioned 200mm down from the head of the leaf to the top of the hinge and the bottom hinge positioned 200–250mm up from the foot of the leaf to the bottom of the hinge. The middle hinge(s) must be either equispaced between the top and bottom hinge, or 1000mm below the head of the door leaf.

Fixings: Steel screws, as recommended by the hinge manufacturers, but in no case smaller than 4mm diameter x 30mm 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: 2.5–3.5mm 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: Hinge blades to be bedded on minimum 1mm thick non-pressure forming intumescent sheet (e.g. Interdens or Therm-A-Strip).

Rising butt, non-cranked butts and spring hinges are not suitable for use on doors approved within the scope of this generic assessment, although they may be suitable on the basis of an individual and specific fire engineering evaluation.

E.2 Mortice Latches/Locks

The doorset have been tested with a Laidlaw LA60SS/R mortice lock centrally fitted in the large nib of the unequally rebated edge meeting stiles. This mortice lock is thus proven to make a positive contribution to the required 60 minutes integrity performance. Other mortice latches/locks may be used, subject to compliance with the specifications below:

Latch/lock types:	Mortice latches, tubular mortice latches, sashlocks, deadlocks
Positioning:	Centred at 1000mm (\pm 200mm), above the bottom of the door leaf
Maximum dimensions:	Forend plate: 235mm long x 20mm wide or 200mm long x 25mm wide Latch body: 20mm thick x 165mm high x 100mm wide 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:	Minimum 1mm thick non-pressure forming intumescent sheet encasing latch body and in double leaf doorsets minimum 1mm non-pressure forming sheet material under the strike plate, with minimum 1mm thick pressure forming sheet (e.g. Norseal graphite sheet) lining the keep cut out.

Over-morticing is to be avoided; mortices should be as tight as possible to the latch. If gaps around 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 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.

E.3 Door Closers

Where required by regulatory guidance or specific fire strategy each hinged door leaf must be fitted with an overhead surface mounted self-closing device unless it is normally kept locked shut and labelled as such with an appropriate sign which complies with BS5499: Part 1: 1990.

Concealed overhead and jamb mounted closers are not permitted in the doorsets covered by this Field of Application Report.

The door closer should have been incorporated in a successful fire resistance test to BS476: Part 22: 1987 when fitted to the exposed face of an unlatched timber door assembly, and/or have been assessed to be suitable for inclusion in a timber fire resisting doorset. It should fulfil the requirements of BS EN 1154: 1997 and have a minimum power size of 3.

The closing force of the closer must be sufficient to overcome the resistance of the latch, and smoke seals where fitted. The closer may not be used in any mode of operation which requires any part of the closer to penetrate the gap between the door and the frame, or which requires the stop to be interrupted or morticed.

E.4 Flush Bolts

The doorset have been tested with Laidlaw 34 002.2 flush bolts centrally fitted in the passive leaf edge at the meeting stiles. These flush bolts are thus proven to make a positive contribution to the required 60 minutes integrity performance. Other flush bolts may be utilised subject to compliance with the specifications below:

- All bolts shall be steel, unless specific fire test evidence is available.
- Maximum size of flush bolt is 250mm long x 21mm wide and 20mm deep.
- The frame reveal should contain a minimum 5mm width of intumescent material local to the bolt/keep plate.
- The body of the bolt should be bedded on minimum 0.5mm thick non-pressure forming intumescent material.
- Edge fixed bolts shall be positioned centrally in the leaf thickness, or centrally in the larger rebate/nib section (the intumescent seals defined in Appendix C shall be fitted in the active leaf).
- Face fixed flush 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.

E.5 Non-Essential Hardware Items

E.5.1 Dropseals

The doorset was tested with a Norsound NOR 810S drop seal fitted 10mm from the exposed face of the leaves. This dropseal is thus proven to make a positive contribution to the required 60 minutes integrity performance.

Norsound NOR 810S drop seals can be utilised without additional intumescent protection if the intumescent seals are in the frame reveal, or encased in 1mm thick Intumescent Seals Ltd Therm-A-Strip or an alternative 1mm thick low-pressure intumescent gasket if the intumescent seals are in the leaf edges. At meeting stiles at least a total of 10mm width of seal should be continuous alongside the drop seal.

E.5.2 Push plates, kick plates, etc.

Plastic, pvc or metal plates may be surface-mounted to the doorsets, 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.

E.5.3 Pull handles

Pull handles may be fixed to the doorsets, provided that the fixing points are no greater than 1065mm apart. Pull handles that are fixed through the leaf should use clearance holes as close fitting as possible to the bolt.

E.5.4 Intumescent air transfer grilles

Intumescent air transfer grilles must be tested, assessed or otherwise approved for use with minimum 54mm thick cellulosic FD60 doors. They must be fitted fully in accordance with the manufacturer's instructions, including all intumescent liners and cloaking grilles/beads, with the aperture formed as outlined in Section 3.6.4. They must be no larger than that for which test or assessment evidence exists. See Section 3.6.4, for restrictions on maximum size and placement of any apertures; these apply to those for grilles, which must also be included in the total area permitted for apertures given in Section 3.6.4.

Note E1 The installation of such items in a door leaf may compromise its performance as a smoke control doorset.

APPENDIX F

Summary of Fire Test Evidence

Summary of Fire Test Evidence

Test Report	Configuration Tested	Leaf Size Tested	Integrity
Chilt/RF13011	ULSADD	2100 x 970 + 958 x 57mm	62 minutes

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.