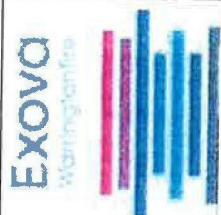
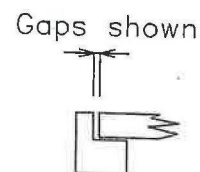


+ : Furnace Thermocouples
 • : Unexposed Face Thermocouples

Viewed From Unexposed Face



Drawn: Mr. [Name], [Address], [City], [Postcode], [Phone]
 Project No. [Number]

Title: Thermocouple positions and leaf/frame gaps
 (All dimensions in mm)

Date Drawn: 19/01/18

Drawn By: ARD

Scale: NTS

Project No.: WF 391787

Appendix



INTERNATIONAL FIRE
CONSULTANTS LIMITED

PRIVATE & CONFIDENTIAL

IFC FIELD OF APPLICATION REPORT

PAR/15928/01

**Field of Application of FD60 Laminated Veneer
Lumber (LVL) Cored Door Leaves Installed in
Various Masterdor Aluminium Composite
Frames, With Optional Glazed Overpanels**

Fire Resistance Standard: BS476: Part 22: 1987

Prepared on behalf of: Masterdor Ltd
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Nether Heage
Derbyshire
DE56 2JJ

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

Issued – November 2016
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ISSUE AND AMMENDMENT RECORD

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Draft	November 2016	RA	DC	-
PAR/15928/01	November 2016	RA	DC	-

Field of Application of FD60 LVL Cored Door Leaves
Installed in Various Masterdor Aluminium Composite
Frames, with Optional Glazed Overpanels

Prepared for: Masterdor Ltd and Sealed Tight Solutions Ltd

International Fire Consultants Ltd

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1. INTRODUCTION

This report has been prepared by International Fire Consultants Ltd (IFC) to define the Field of Application for FD60 laminated veneer lumber (LVL) door leaves installed in Masterdor aluminium composite frames, with optional glazed overpanels, that are required to provide 60 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 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 tested.


2. TEST EVIDENCE

The test evidence used to support this assessment is summarised in Appendix E 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
 <ul style="list-style-type: none">• Latched• Single Acting• Single Door• With or Without Glazed Overpanel	Figure PAR/15928/01:C01 in Appendix C

Field of Application of FD60 LVL Cored Door Leaves
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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, based upon use of the intumescent seal specifications outlined in Appendix B.

3.3 Door Leaf Specification

Detailed constructional specifications of the basic door constructions are given below. These are based upon the test evidence detailed in Appendix E, (and are, therefore, limited to the information available from test reports), but also defines variations and tolerances, where it is considered that these will not adversely affect overall fire resistance.

Component		Species	Dimensions	Minimum Density
Stiles and rails		None fitted	-	-
Core		Spruce ply veneers	Nominally 4.6mm wide x 46.5mm thick	450kg/m ³ <i>Note 1</i>
Facing		Gaboon	4.5mm thick	440kg/m ³ <i>Note 1</i>
Lippings		Hardwood <i>Note 2</i>	36mm overall <i>Note 3</i>	640kg/m ³ <i>Note 2</i>
Adhesives	Core	Miracol 13F2 (PVA)	-	-
	Facing	Urea Formaldehyde	-	-
	Lipping	PVA D4	-	-
Minimum leaf thickness		-	55mm	-
Optional additional decorative finishes		Timber veneer, decorative plastic based laminate, PVC or paint	Maximum 2mm thick	-

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Note 1 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 2 Hardwood, not Beech, 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 3 The lippings are to all four sides and are 36mm overall, including tongued inserts into the leaf core and rebates at the frame reveal at head and jambs, as shown in **Figure PAR/15928/01: A01** in Appendix A.*

3.4 Frames

Various Masterdor aluminium composite frames, to the specifications given, below, may be used as the perimeter framing for all door assemblies in the range of approved sizes and configurations outlined in Appendix C, utilising the intumescent seal specifications outlined in Appendix B.

The approved profiles, are shown on **Figures PAR/15928/01:A01 and A02** in Appendix A.

Product References	Product Description	Minimum Face Width	Minimum Frame Depth	Minimum Stop Depth	Minimum Stop Height
Masterdor MD-AL5 Aluminium CAP24 inner hardwood profile CAP20 outer hardwood profile	Extruded aluminium profile reinforced internally with a 22mm x 37mm hardwood <i>Note 4</i> section, faced on both the outside and inside edge with profiled hardwood <i>Note 4</i> (See Figure PAR/15928/01:A01 in Appendix A)	34mm	60mm	26mm	24mm
Masterdor UG Aluminium CVM56 inner hardwood profile CVM54 outer hardwood profile	Extruded aluminium profile faced on both the outside and inside edge with profiled hardwood <i>Note 4</i> and fixed back to an existing hardwood <i>Note 5</i> frame (See Figure PAR/15928/01:A01 in Appendix A)	37mm	60mm	25mm	15mm

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Product References	Product Description	Minimum Face Width	Minimum Frame Depth	Minimum Stop Depth	Minimum Stop Height
Masterdor UG Aluminium CVM56 inner hardwood profile CVM55 outer hardwood profile	Extruded aluminium profile faced on both the outside and inside edge with profiled hardwood ^{Note 4} and fixed back to an existing hardwood ^{Note 5} frame (See Figure PAR/15928/01:A02 in Appendix A)	37mm	70mm	25mm	23mm
Masterdor UG Aluminium FRM3620 hardwood profile plus hardwood facing	Extruded aluminium profile faced on 3no. sides with hardwood ^{Note 4} and fixed back to an existing hardwood ^{Note 5} frame (See Figure PAR/15928/01:A02 in Appendix A)	20mm	65mm	28mm	20mm
Masterdor MD-AL7 Aluminium transom member CAP29 inner hardwood profile CAP28 outer hardwood profile	Extruded aluminium profile reinforced internally with a 22mm x 37mm hardwood ^{Note 4} section, faced on both the outside and inside edge with profiled hardwood ^{Note 4} (See Figure PAR/15928/01:A03 in Appendix A)	40mm	80mm	40mm	40mm
Masterdor MD-AL5 Aluminium perimeter glazing detail for glazed overpanel CAP 3340 inner hardwood profile CAP 3629 outer hardwood profile	Extruded aluminium profile reinforced internally with a 22mm x 37mm hardwood ^{Note 4} section, faced on both the outside and inside edge with profiled hardwood ^{Note 4} (See Figure PAR/15928/01:A03 in Appendix A)	34mm	60mm	26mm	24mm

Note 4 Hardwood, not Beech, must have a minimum density of 640Kg/m³ at 12% moisture content and of appropriate quality in accordance with BS EN 942: 1996. Moisture content to be 10 ± 2% for UK market (or to suit internal joinery moisture content specification of export countries).

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Note 5 The existing frame must be constructed from hardwood with a minimum 640Kg/m³ density and have the following minimum dimensions: 60mm deep x 30mm high and include a 9mm deep x 30mm wide rebate to which the Masterdor frame is fitted into.

Note 6 The existing frame must be constructed from hardwood with a minimum 640Kg/m³ density and have the following minimum dimensions: 74mm deep x 35mm high and include a 9mm deep x 66mm wide rebate to which the Masterdor frame is fitted into.

Frame extension : Not permitted.

Frame corner joint : Square cut joint. Screw fixed into integral screw port holes.

Threshold : The following threshold can be included within the assembly;

- 75mm wide x 14.9mm high extruded aluminium Stormguard THR-3102 threshold

Transom members : When transom members are used between door leaves and overpanels, the member shall consist of the Masterdor transom member MD-AL7 and associated hardwood profiles jointed.

3.5 Glazed Apertures in Door Leaves

Glazed apertures can be included in the LVL cored door leaves, subject to the limitations, below.

The approved bead size and profile, intumescent material and relevant fixing details, are shown in **Figures PAR/15928/01:A04 and 05** in Appendix A.

3.5.1 Glass types

The following glass types are approved for use in the door leaves considered herein, which are compatible with the identified approved glazing systems given in Section 3.5.3.

- 7mm thick Pyroshield 2 (Pilkington)
- 6mm thick Pyran-S (Schott)
- 10mm thick Pyrodur (Pilkington)
- 11mm thick Pyroguard Clear (Pyroguard)
- 12mm thick Pyrobelite (AGC Flat Glass)
- 13mm thick Pyrodur (Pilkington)

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

- 15mm thick Pyroguard Insulation (Pyroguard)
- 15mm thick Pyrostop (Pilkington)
- 16mm thick Pyrobel (AGC Flat Glass)
- 18mm thick Pyrostop (Pilkington)

Expansion allowance shall be as recommended by the glass manufacturer.

3.5.2 *Bead profiles, glass retention and installation*

Glazing beads are to be formed from hardwood, not Beech, with a minimum measured density of 640kg/m³ 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).

Option 1

The glass is retained in the aperture by means of profiled beads. The tongue of the base bead section is fitted into a recess in the liner and includes 25mm long x 2mm diameter retaining nails fitted at 175mm centres, to hold the glass in place. The secondary bead is then fitted in place and fixed using minimum 70mm long steel screws at a maximum of 175mm centres and at 15° from the face of the glass.

This option can only be utilised where the direction of fire exposure is determined and the glazing beads are installed such that the 'fire side' is as noted in **Figure PAR/15928/01:A04** in Appendix A.

Option 2

The glass is retained in the aperture between beads which are 25mm deep, with a 20° chamfered top, with bolection moulding not less than 4mm deep.

3.5.3 *Glazing materials and systems*

The following glazing materials are approved for use in the door leaves considered herein, which are compatible with the identified approved glass types given in Section 3.5.1.

Option 1

- 20 x 2mm Environmental Seals Ltd product reference G20/10, fitted between the glass and bead both sides, with a 2mm thick Environmental Seals Ltd glazing liner and neutral silicone capping

Option 2

- 25 x 3mm Pyroglaze 60 and Pyroglaze 300 liner by Mann McGowan
- 25 x 4mm Therm-A-Glaze 60 and Therm-A-Line liner by Intumescent Seals
- 25 x 4mm Fireglaze and Therm-A-Line liner by Intumescent Seals
- 25 x 4mm Fireglaze 2000 and Therm-A-Line liner by Intumescent Seals

3.5.4 Assessed aperture sizes

Based upon the size of apertures tested, it is the opinion of IFC that the following limitations apply where glazed apertures are included in the door leaf construction considered herein;

Maximum area of glazed aperture	-	0.24m ²
Maximum aperture height	-	1015mm
Maximum aperture width	-	250mm
Minimum margin from leaf head	-	100mm
Minimum margin from leaf edge	-	100mm

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 3m³/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.

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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.

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

All hardware beyond the scope of the general guidance given in Appendix D 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.

3.9 Overpanels

Door assemblies can include a glazed overpanel, on the other side of a transom member above the leaf. For the frame profile specifications see Section 3.4.

3.9.1 Glass types

The following glass types are approved for use in the overpanels considered herein, which are compatible with the identified approved glazing systems given in Section 3.9.2.

- 7mm thick Pyroshield 2 (Pilkington)
- 6mm thick Pyran-S (Schott)
- 10mm thick Pyrodur (Pilkington)
- 11mm thick Pyroguard Clear (Pyroguard)
- 12mm thick Pyrobelite (AGC Flat Glass)
- 13mm thick Pyrodur (Pilkington)

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

- 15mm thick Pyroguard Insulation (Pyroguard)
- 15mm thick Pyrostop (Pilkington)
- 16mm thick Pyrobel (AGC Flat Glass)
- 18mm thick Pyrostop (Pilkington)

Expansion allowance shall be as recommended by the glass manufacturer.

3.9.2 Bead profiles, glass retention and installation

Glazing beads are to be formed from hardwood, not Beech, with a minimum measured density of 640 kg/m³ 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).

The glass is retained in the aperture by means of profiled beads. The perimeter of the aperture includes 25mm long x 2mm diameter retaining nails fitted at 175mm centres, to hold the glass in place. The loose bead is then fitted in place and fixed using minimum 70mm long steel screws at a maximum of 175mm centres and at 15° from the face of the glass.

Glazed overpanels can only be utilised where the direction of fire exposure is determined and are installed such that the 'fire side' is as noted in **Figure PAR/15928/01:A03** in Appendix A.

3.9.3 Glazing materials and systems

The following glazing materials are approved for use in the overpanels considered herein, which are compatible with the identified approved glass types given in Section 3.9.1.

- 20 x 2mm Environmental Seals Ltd product reference G20/10, fitted between the glass and bead both sides, with a 2mm thick Environmental Seals Ltd glazing liner, and neutral silicone to seal the bead/glass interface

3.9.4 Assessed aperture sizes

Based upon the size of overpanel tested, it the opinion of IFC that the following limitations apply to the apertures considered herein;

Maximum area of individual aperture	-	0.3m ²
Maximum aperture height	-	270mm
Maximum aperture width	-	975mm

3.10 Installation, Supporting Construction, and Door Edge Gaps

The aluminium profile must be fixed back with steel fixings at centres not exceeding 600mm; this applies to jambs and head. The Masterdor UG frame option must be fixed back through the hardwood frame. Screws shall be of sufficient length to penetrate the supporting construction by at least 40mm, and shall be positioned such that they are not exploited by charring/melting of the frame, irrespective of the direction of test exposure; (this may necessitate a twin line of screws).

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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 aluminium door frame profile.

The supporting construction may be either timber or steel stud plasterboard clad 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 door assembly 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 7 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 existing or aluminium frame section shall be exposed once installed and the leaf must not sit proud of the frame profile when in the fully closed position. 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 gap between the door and the frame 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).

4. CONCLUSION

It is the opinion of International Fire Consultants Ltd that, if the proposed FD60 laminated veneer lumber (LVL) door leaves installed in various Masterdor aluminium composite frames, with optional glazed overpanels, were manufactured and installed within the limitations of this assessment, and tested for fire resistance, they would satisfy the integrity criteria of BS476: Part 22: 1987 for 60 minutes.

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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 assembly 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 door 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 door assemblies are installed, to ensure that no parts of the assembly are damaged or faulty. Further, the doors 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 assemblies will invalidate the approval by IFC, and may seriously affect the ability of the assemblies 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.

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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.

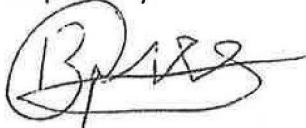
However, unless IFC have been commissioned to liaise with the Authorities that have jurisdiction for the building in question for the purpose of obtaining the necessary approvals, IFC cannot assure that the document will satisfy the requirements of the particular building regulations for any building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

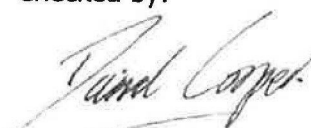
This assessment has been prepared based on International Fire Consultants Ltd's present knowledge of the products described, the stated testing regime and the submitted test evidence. For this reason, anyone using this document after November 2021 should confirm its ongoing validity.

Prepared by:



Rob Axe
Fire Safety Engineer
International Fire Consultants Ltd. (IFC)

Checked by:



David Cooper BEng (Hons) AIMMM AIFireE
Fire Safety Engineering Manager
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APPENDIX A

Frame Profiles and Glazing Details

Figures PAR/15928/01:A01 to A05

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

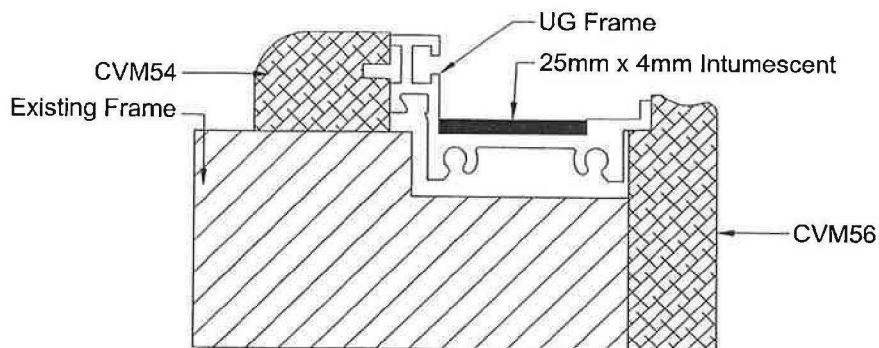
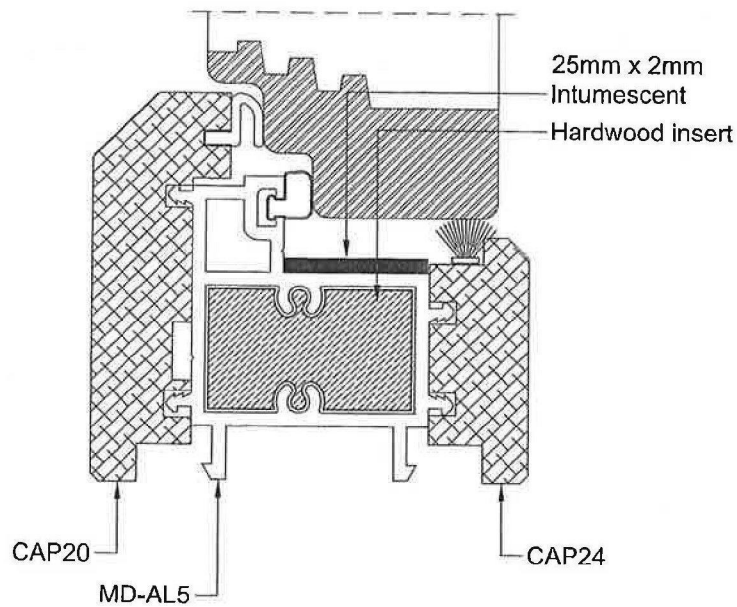
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Contractors must check all dimensions.
Any discrepancies must be reported before
work proceeds.
Only work to dimensions stated on drawing.

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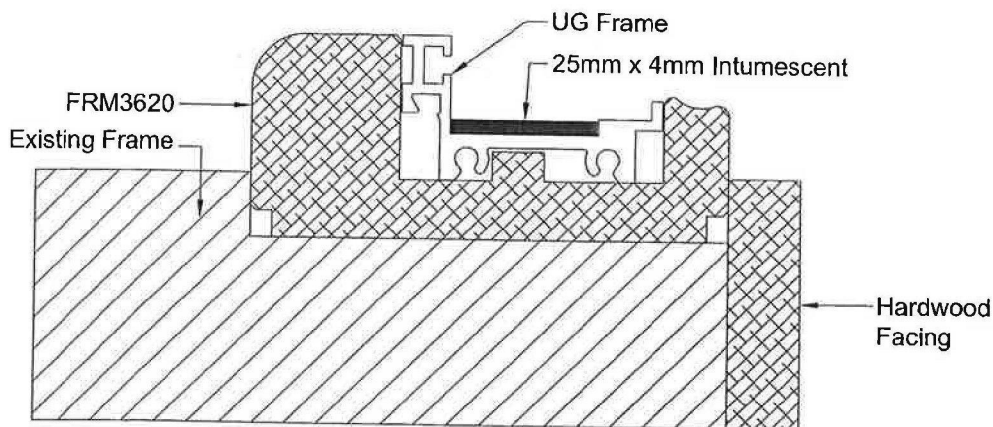
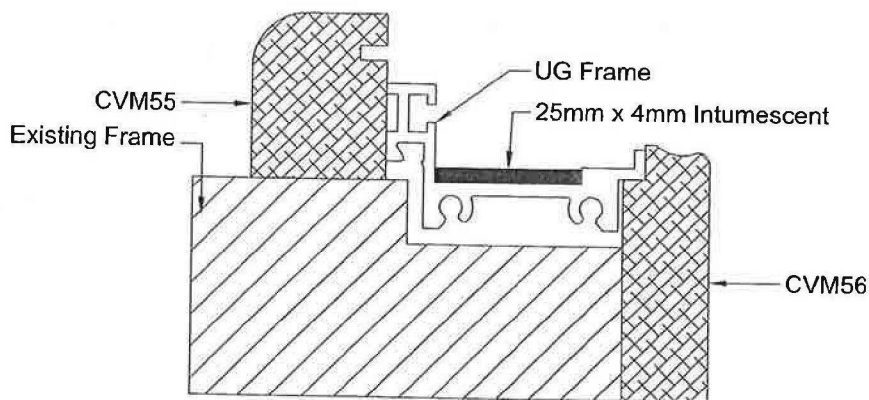
Field of Application Report PAR/15928/01
Masterdor Ltd/Sealed Tight Solutions Ltd
FD60 LVL Door Leaves
Installed in various Masterdor
Aluminium Composite Frames,
with Optional Overpanels

Masterdor Door Frame
Profile Options
Sheet 1 of 3

Job number: 15928

Drawn by: CSP	Checked by: RA
Not To Scale	Drawn: Jul 2016

PAR/15928/01:AO1



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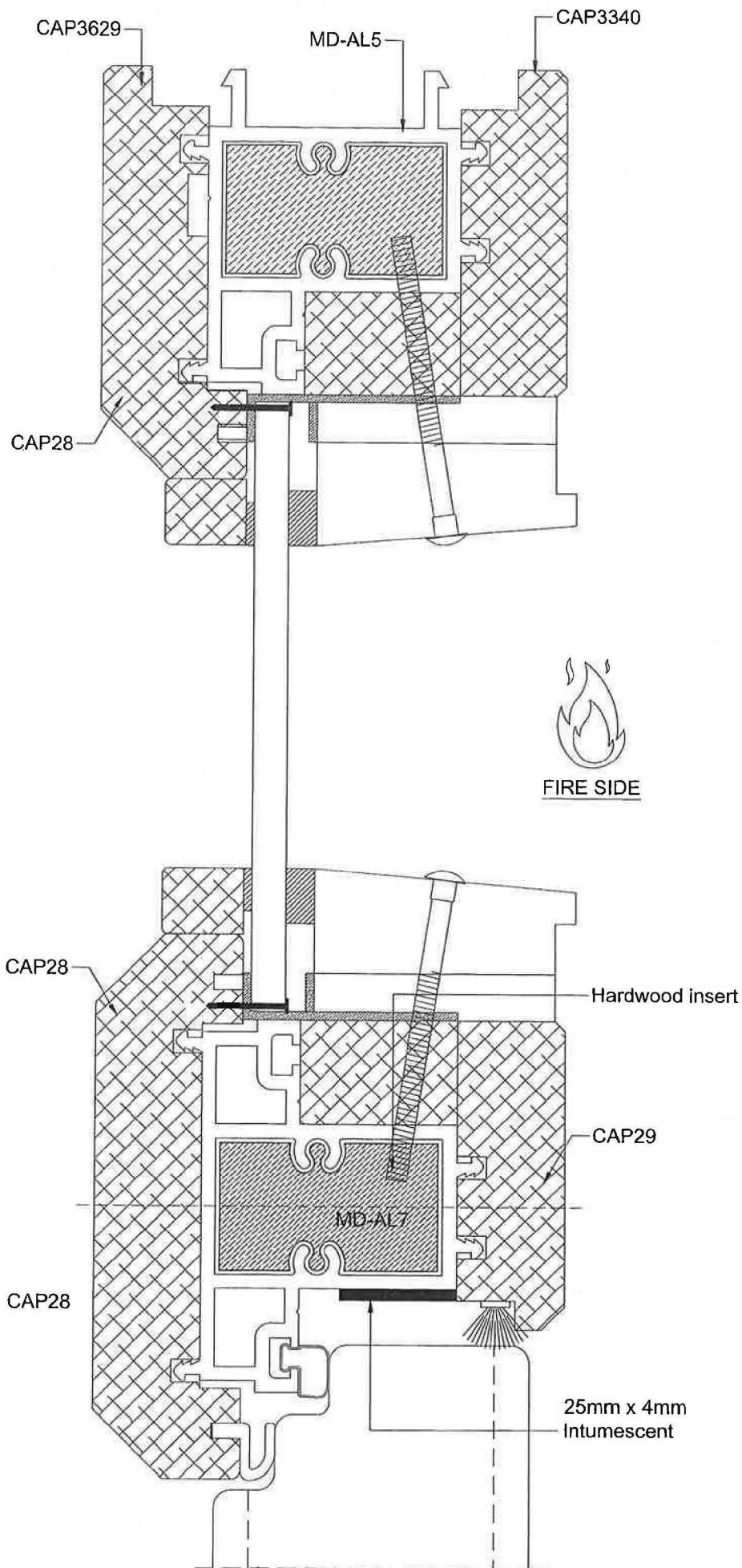
Field of Application Report PAR/15928/01
Masterdor Ltd/Sealed Tight Solutions Ltd
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Installed in various Masterdor
Aluminium Composite Frames,
with Optional Overpanels

Masterdor Door Frame
Profile Options
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Masterdor Ltd/Sealed Tight Solutions Ltd
FD60 LVL Door Leaves
Installed in various Masterdor
Aluminium Composite Frames,
with Optional Overpanels

Masterdor Door Frame
Profile Options
Sheet 3 of 3

Job number: 15928

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APPENDIX B

Assessed Intumescent Seal Specifications

Field of Application of FD60 LVL Cored Door Leaves
Installed in Various Masterdor Aluminium Composite
Frames, with Optional Glazed Overpanels

Prepared for: Masterdor Ltd and Sealed Tight Solutions Ltd

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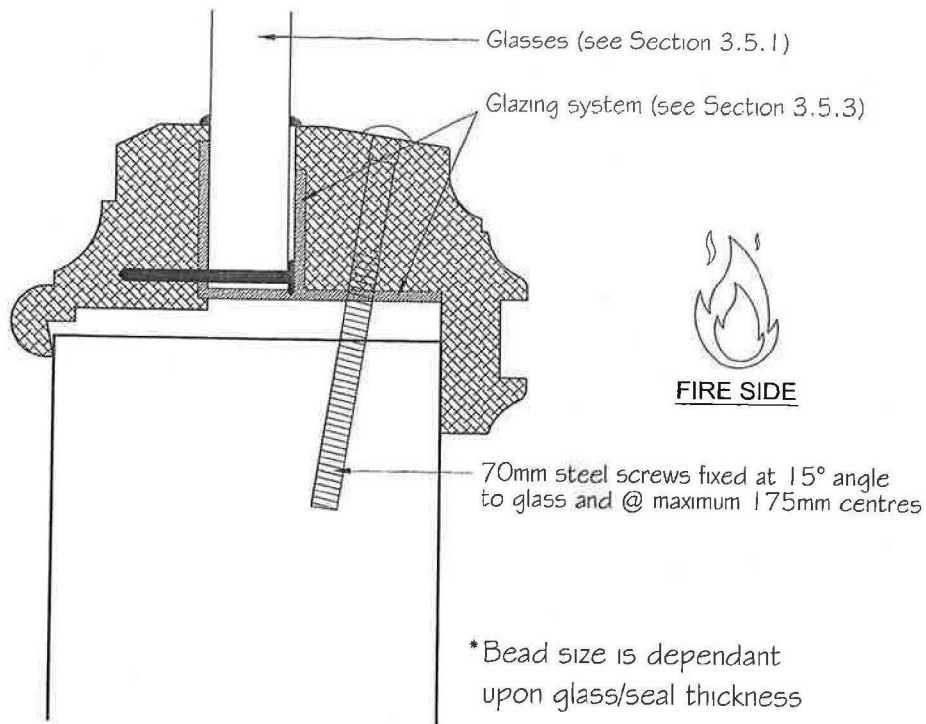
IFC Field of Application Report
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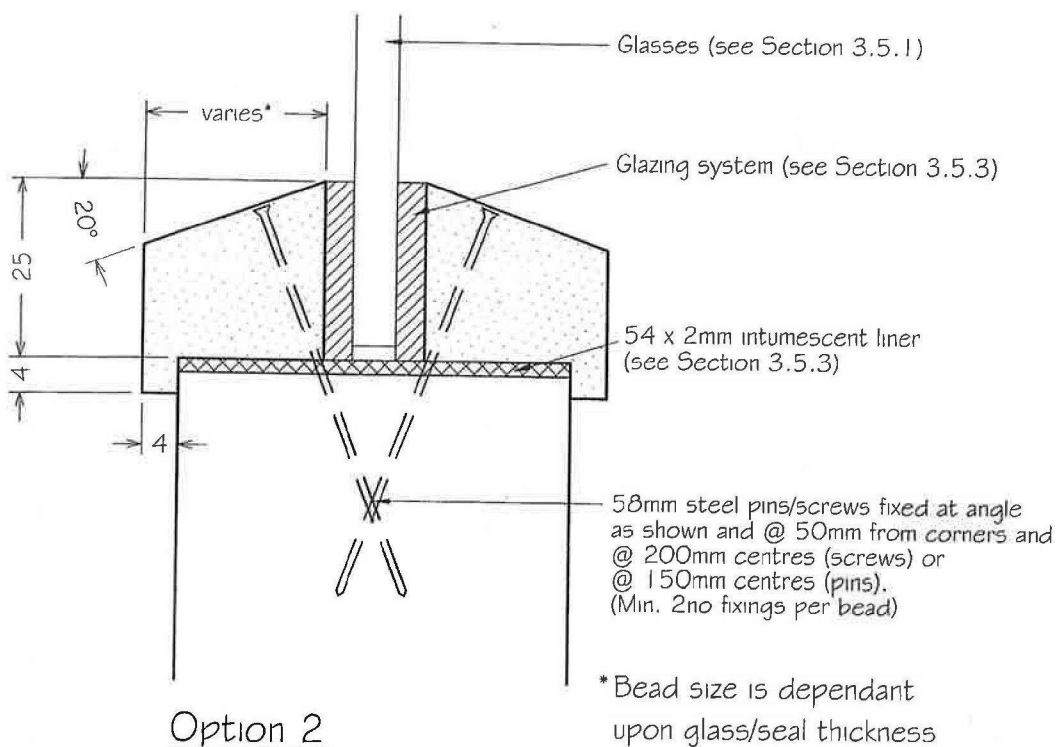
Intumescent Seal Specifications

Location		Size and Position
Door frame stiles/jambs	Frame reveal	1no Sealed Tight Solutions ST 25 x 4mm graphite-based seal
Door frame head	Frame reveal	1no Sealed Tight Solutions ST 25 x 4mm graphite-based seal
Overpanel framing	Frame reveal	1no Sealed Tight Solutions ST 25 x 4mm graphite-based seal

All intumescent seals to be Sealed Tight Solutions graphite-based material.



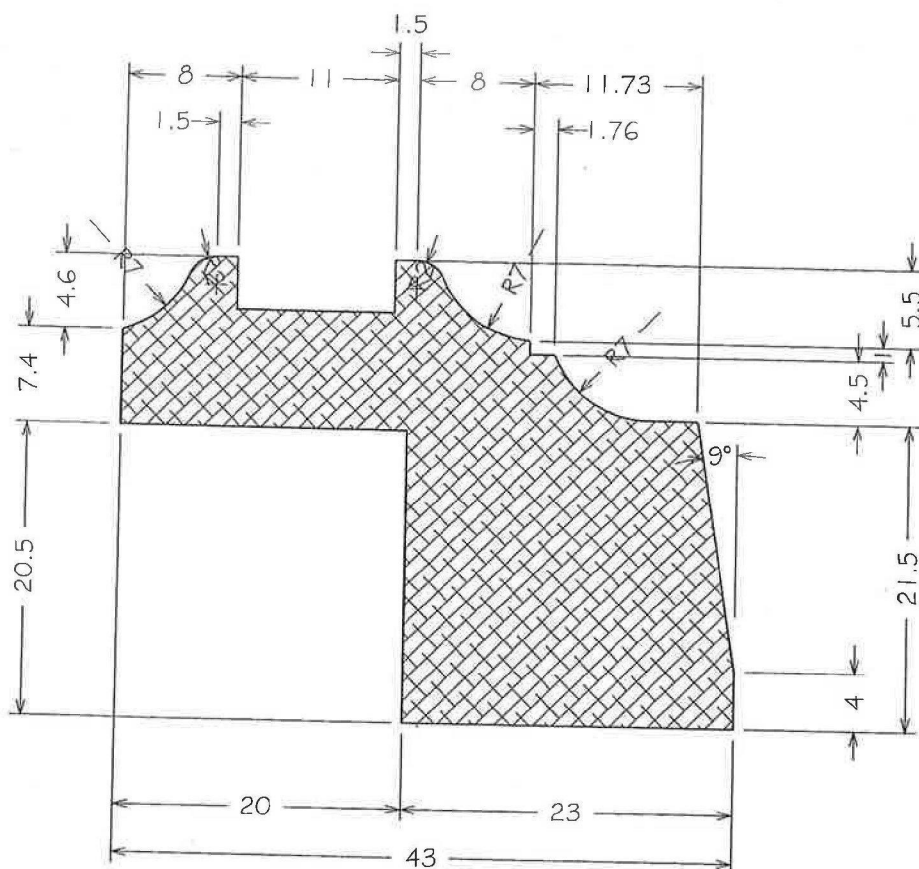
Option 1



Option 2

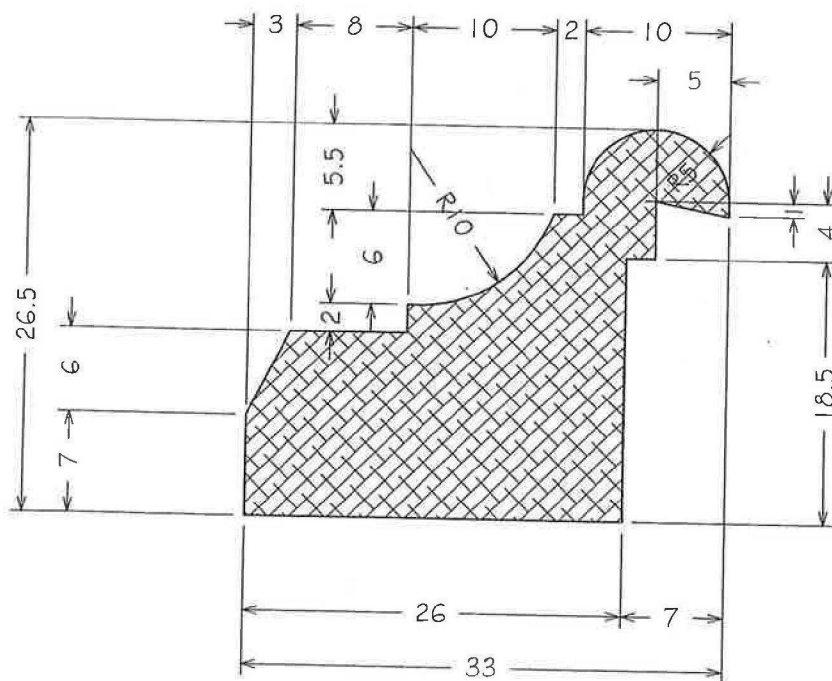
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<p>Field of Application Report PAR/15928/01 Masterdor Ltd/Sealed Tight Solutions Ltd FD60 LVL Door Leaves Installed in various Masterdor Aluminium Composite Frames, with Optional Overpanels</p>	
<p>Masterdor Door Frame Profile Options</p>	
<p>Job number: 15928</p>	
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<p>PAR/15928/01:A04</p>	

FD60 DOOR GLAZING CLAMP



UNSPECIFIED RADS = 0.50

FD60 GLAZING SYSTEM



UNSPECIFIED RADS = 0.50

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Field of Application Report PAR/15928/01
Masterdor Ltd/Sealed Tight Solutions Ltd
FD60 LVL Door Leaves
Installed in various Masterdor
Aluminium Composite Frames,
with Optional Overpanels

Bead Profile
for Option 1

Job number: 15928

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Checked by: RA

Not To Scale

Drawn: Jul 2016

PAR/15928/01:AO5

APPENDIX C

Assessed Leaf Size Envelope

Figure PAR/15928/01:C01

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

Field of Application of FD60 LVL Cored Door Leaves
Installed in Various Masterdor Aluminium Composite
Frames, with Optional Glazed Overpanels

Prepared for: Masterdor Ltd and Sealed Tight Solutions Ltd

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	A	B
Width	744	965
Height	2373	1930

LEAF SIZE ENVELOPE POINTS

Configuration

Composite Aluminium Frames

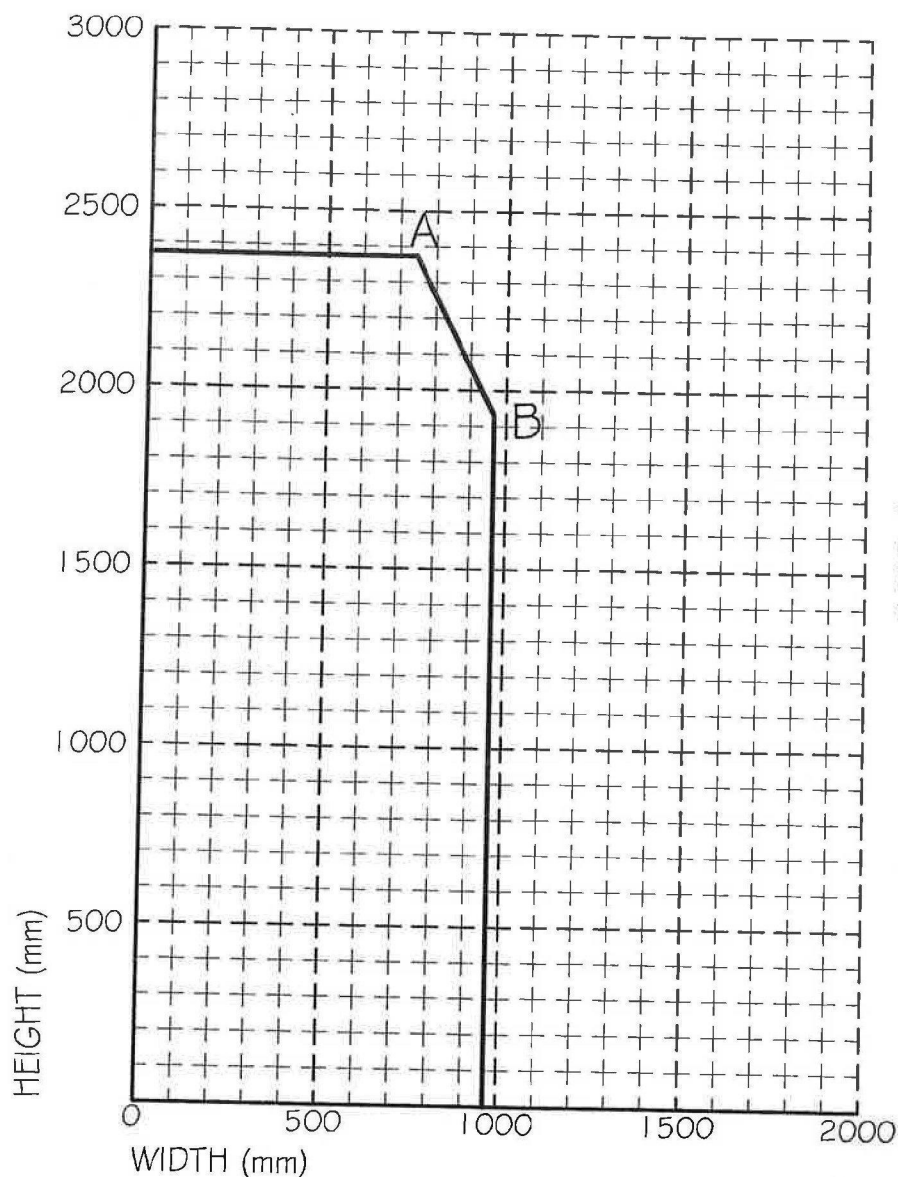
LATCHED

SINGLE ACTING

SINGLE LEAF

WITH or WITHOUT OVERPANEL

REQUIRED INTEGRITY : 60 Minutes



This figure forms part of International Fire Consultants Ltd's Assessment Report PAR/15928/01, which contains full details of the assessed doorset 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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Field of Application Report: PAR/15928/01
Masterdor Ltd/Sealed Tight Solutions Ltd
FD60 LVL Door Leaves
Installed in various Masterdor
Aluminium Composite Frames,
with Optional Overpanels

Envelope of Approved Leaf Sizes:

LSASD

Installed in Various Masterdor
Composite Aluminium Frames

Job number: 15928

Drawn by: CSP

Checked by: RA

Not To Scale

Drawn: Jul 2016

PAR/15928/01:CO1

APPENDIX D

General Guidance on Installation of Hardware

Field of Application of FD60 LVL Cored Door Leaves
Installed in Various Masterdor Aluminium Composite
Frames, with Optional Glazed Overpanels

IFC Field of Application Report
PAR/15928/01

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General Guidance on Installation of Hardware

D.1 Hinges

The door assembly has been tested utilising the following steel butt hinge;

- Select Engineering Asia stainless steel hinge Ref: HNG 1333

These or other hinges may be utilised and will make a positive contribution to the required 60 minutes integrity performance providing they comply with the following specification:

Minimum : 4no per leaf
number

Positions : The top hinge must be positioned 150mm down from the head of the leaf to the top of the hinge and the bottom hinge positioned 180mm up from the foot of the leaf to the bottom of the hinge. Second hinge to be fitted 115mm down from the bottom of the top hinge. Other hinges to be equispaced between the second and bottom hinges. (All positions $\pm 25\text{mm}$).

Hinge blade : 2.5-3.5mm thick x 89-115mm high x 30-36mm width
size

Fixings : Steel screws, as recommended by the hinge manufacturers, but in no case smaller than No 8 (3.8mm 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 : Brass, Phosphor Bronze, Steel or Stainless Steel. (Aluminium, Nylon or
materials 'Mazac' are not permitted). No combustible or thermally softening materials to be included.

Additional : Hinge blades to be bedded on 2mm thick Sealed Tight Solutions graphite-
protection based intumescent material on the leaf side only

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.

D.2 Mortice Latches/Locks

The assessed door assemblies include the Winkhaus Cobra multi-point locking system which includes up to 3no. lock/latch cases morticed into the door leaf, a forend plate 1970mm long and individual keep plates at each lock/latch position. Testing was carried out with only the centre locking point engaged, therefore, the top and bottom locking points need not be engaged, or single point latches may be included for the door assembly to provide 60 minutes fire resistance performance.

The door assemblies may include Winkhaus Cobra or Winkhaus AV2 multi-point locking system or a single point latch and should comply with the following specifications:

- Single point latch or central latch centre : 1000mm (\pm 200mm) above the bottom of the door leaf
- Latch/lock types : Mortice latches, tubular mortice latches, sashlocks, deadlocks
- Maximum dimensions for latch bodies : 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 ($<800^{\circ}\text{C}$) materials, and should not contain any flammable materials.
- Additional protection for multi-point lock : The 3no. latch/lock keeps and the latch/lock bodies shall be bedded on 2mm thick Sealed Tight Solutions graphite-based intumescent material.
- Additional protection for single point latch : The latch body must be encased in and the strikeplate and forend must be bedded on 2mm thick Sealed Tight Solutions graphite-based intumescent material.

Over-morticing is to be avoided; mortices shall 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.

D.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.

Door assemblies have been tested with the Select Engineering Asia DCL-2339 overhead closer. Alternative face-fixed overhead door closers (and accessories such as soffit brackets) that have been tested, assessed or otherwise approved for use on latched FD60 cellulosic door leaves may be used.

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

It is essential that all closers are of the correct power rating for the width and weight of the door assemblies. 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.

APPENDIX E

Summary of Fire Test Evidence

Field of Application of FD60 LVL Cored Door Leaves
Installed in Various Masterdor Aluminium Composite
Frames, with Optional Glazed Overpanels

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Summary of Fire Test Evidence

Test Report	Configuration Tested	Leaf Size	Test Standard	Integrity
Chilt/RF07149	LSASD+OP Doorset A	1970mm high x 900mm wide x 55mm thick	BS476: Part 22: 1987	66 minutes
Chilt/RF07149	LSASD Doorset B	1970mm high x 900mm wide x 55mm thick	BS476: Part 22: 1987	66 minutes

LSASD = Latched, Single Acting, Single leaf Doorset
LSASD+OP = Latched, Single Acting, Single leaf Doorset and Over Panel

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

Field of Application of FD60 LVL Cored Door Leaves
 Installed in Various Masterdor Aluminium Composite
 Frames, with Optional Glazed Overpanels

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IFC FIELD OF APPLICATION REPORT

**Field of Application of the Fire Resistance of
Minimum 44mm Thick FD60 Nan Ya Composite
Door Leaves Installed in Masterdor Ltd Frames**

Fire Resistance Standard: BS476: Part 22: 1987

PAR/14173/01 Revision A

Prepared on behalf of:

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Fire Works
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Derbyshire
DE56 2JJ

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

Revision	Issue Date	Author	Reviewer	Amendments
-	August 2014	PP	DC	-
Draft Revision A	January 2018	CS	RA	Inclusion of SK77960 frame profile, amendment to permitted overhead closers and addition of test data
Revision A	January 2018	CS	RA	Inclusion of SK77960 frame profile, amendment to permitted overhead closers and addition of test data

Field of Application of 44mm thick FD60 Nan Ya Composite
Door Leaves Installed in Masterdor Ltd Frames

Prepared for: Masterdor Ltd

IFC Field of Application Report
PAR/14173/01 Revision A

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Field of Application of 44mm thick FD60 Nan Ya Composite
Door Leaves Installed in Masterdor Ltd Frames

Prepared for: Masterdor Ltd

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1. INTRODUCTION

This report has been prepared by International Fire Consultants Ltd (IFC) to define the Field of Application for minimum 44mm thick Nan Ya composite door leaves installed in Masterdor Ltd frames, that are required to provide 60 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: '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 tested.


2. TEST EVIDENCE

The test evidence used to support this assessment is summarised in Appendix E 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• Without Overpanel	Figure PAR/14173/01A:C01 in Appendix C

Field of Application of 44mm thick FD60 Nan Ya Composite
Door Leaves Installed in Masterdor Ltd Frames

Prepared for: Masterdor Ltd

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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 C, based upon use of the intumescent seal specification shown in Appendix B.

3.3 Door Leaf Specification

A detailed constructional specification of the basic door construction is given below. This is based upon the test evidence detailed in Appendix E, (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		Species/ Material	Dimensions	Minimum Density
Core		Phenolic foam	41mm thick reducing to 26mm at fielded areas	90kg/m ³ <i>Note 1</i>
Stiles	Inner	Mixed timber finger-jointed lamels <i>Note 2</i>	30mm wide x 40mm thick	490-600kg/m ³ <i>Note 1</i>
	Outer		60mm wide x 40mm thick	
Rails	Inner	Mixed timber finger-jointed lamels <i>Note 2</i>	30mm wide x 40mm thick	490-600kg/m ³ <i>Note 1</i>
	Outer		60mm wide x 40mm thick	
Facings		Interlocking GRP (9mm wide interlocking detail)	2mm thick	—
Adhesives	Stiles and rails	Polyurethane	—	—
Minimum leaf thickness		—	44mm	—
Optional additional decorative finish		Paint	Maximum 1mm thick	—

Note 1 Nominal stated density.

Note 2 Mixed timber consisting of Pine, Acacia and Styrax. 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).

Field of Application of 44mm thick FD60 Nan Ya Composite Door Leaves Installed in Masterdor Ltd Frames

Prepared for: Masterdor Ltd

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A detailed drawing of the proposed door leaf construction is given in **Figure PAR/14173/01A:A01** and **A02** in Appendix A.

3.4 Door Frames

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

Product References	Product Description	Minimum Face Width	Minimum Frame Depth	Minimum Stop Depth	Minimum Stop Height
Sheerframe SK77950 and S119	Extruded PVC section reinforced with a 30mm x 35mm x 1.5mm steel box section	70mm	70mm	22mm	20mm
Sheerframe SK77960 and S601	Extruded PVC section reinforced with a 15mm x 35mm x 1.5mm steel box section	52mm	70mm	22mm	20mm

Frame corner joint : Mitred joint with 125 x 125mm bracket (reference Sheerframe SW73174) screw fixed in each corner.

Frame extension : A 25mm wide x 70mm deep extruded PVC section including a ST 30 x 2.5mm intumescent seal (reference Sheerframe SK70131) can be include at the perimeter.

A detailed drawing of the different frame profiles options are given in **Figure PAR/14173/01A:A03** in Appendix A.

3.5 Glazed Apertures

3.5.1 Glass types

The following glass type is approved for use in the Nan Ya door leaves 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.

- 24mm thick double-glazed unit including 7mm thick Pyroguard glass on the unexposed/external side of the door, a 10mm thick steel spacer and a 6.4mm thick laminated clear glass on the exposed/internal side

Expansion allowance shall be as recommended by the glass manufacturer.

3.5.2 Bead profiles, glass retention and installation

The double glazed unit is retained in the aperture by means of the Nan Ya two part steel retaining clips and a glazing cassette. The base section of the retaining clip is fixed with 2no No4 x 25mm long steel screws into the door core centrally at the top and bottom of the aperture. The locking clip slides over the screw fixings to retain the double glazed unit in place. The Nan Ya 9S twin top ABS snap fit glazing cassette is fixed in place around the glass and glazing clips and fixed with cassette fixing screws.

The glazing materials are a 1mm thick Interdens liner at the base of the aperture with a Pyroplex 30 x 2.5mm flexible graphite aperture liner and Alonsons 1101 hybrid polymer clear sealant applied to the perimeter of the glazing cassette.

The approved bead size and profile, intumescent material and relevant fixing details, are shown on **Figure PAR/14173/01A:A01** in Appendix A.

3.5.3 Assessed aperture sizes

Based upon the size of apertures tested, it is the opinion of IFC that the following limitations apply where glazed apertures are included in the Nan Ya door leaf construction considered herein;

Maximum area of aperture	=	0.023m ²
Maximum glass height	=	205mm
Maximum glass width	=	160mm
Minimum margin from leaf head	=	130mm
Minimum margin from leaf edge	=	120mm
Minimum margin between apertures	=	90mm

Field of Application of 44mm thick FD60 Nan Ya Composite Door Leaves Installed in Masterdor Ltd Frames

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PAR/14173/01 Revision A

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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 intumescent products approved in Appendix B), that have been tested to BS476: Part 31: Section 31.1: 1983 and shown not to leak by more than $3\text{m}^3/\text{m/hr}$ 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 building hardware interruption, and leaf configuration, will need to 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 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 doorsets, when fitted in the proposed arrangements.

3.8 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.

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 doorsets of the proposed type.

General guidance for all items of hardware is outlined in Appendix D, 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; 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 either timber or steel stud plasterboard clad 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 3 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 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 should be 2–5mm. 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 doorset 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.

4. CONCLUSION

It is the opinion of International Fire Consultants Ltd that, if the proposed minimum 44mm thick Nan Ya composite door leaves installed in Masterdor Ltd frames, were manufactured and installed within the limitations of this assessment, and tested for fire resistance, they would satisfy the integrity criteria of BS476: Part 22: 1987 for 60 minutes.

5. LIMITATIONS

This 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 door assemblies 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.

This report is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available, IFC reserves the right to withdraw the report unconditionally but not retrospectively.

Where the constructional information in this report is taken from details provided to International Fire Consultants Ltd (IFC) and/or from 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 door 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 door assemblies are installed, to ensure that no parts of the assembly are damaged or faulty. Further, the doors 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 assemblies will invalidate the approval by IFC, and may seriously affect the ability of the assemblies 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.

Field of Application of 44mm thick FD60 Nan Ya Composite
Door Leaves Installed in Masterdor Ltd Frames

IFC Field of Application Report
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This report applies to fire door assemblies that are evaluated to BS476: Part 22: 1987; which is an applicable test method currently referenced within guidance to Building Regulations in the United Kingdom, and in building codes in some other countries. However, IFC have a duty of care to advise that introduction of CE Marking may become compulsory for fire doorsets marketed in the EU, during the validity period of this report; in which case, users should contact IFC for further details/advice.

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. Designers, manufacturers and installers are reminded of their responsibilities under the CDM Regulations; but particularly with regard to installation and maintenance of heavy or inaccessible items.

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 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.

Field of Application of 44mm thick FD60 Nan Ya Composite
Door Leaves Installed in Masterdor Ltd Frames

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6. VALIDITY

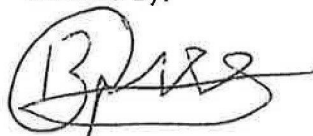
This assessment has been prepared based on International Fire Consultants Ltd's present knowledge of the products described, the stated testing regime and the submitted test evidence. For this reason anyone using this document after January 2023 should confirm its ongoing validity.

Prepared by:



Callum Sempill BSc (Hons)
Fire Safety Engineer
International Fire Consultants Ltd. (IFC)

Checked by:



Robert Axe
Senior Fire Safety Engineer
International Fire Consultants Ltd. (IFC)

Field of Application of 44mm thick FD60 Nan Ya Composite
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APPENDIX A

Nan Ya Door Leaf Details

Figure PAR/14173/01A:A01 to A03

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

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APPENDIX B

Assessed Intumescent Seal Specifications

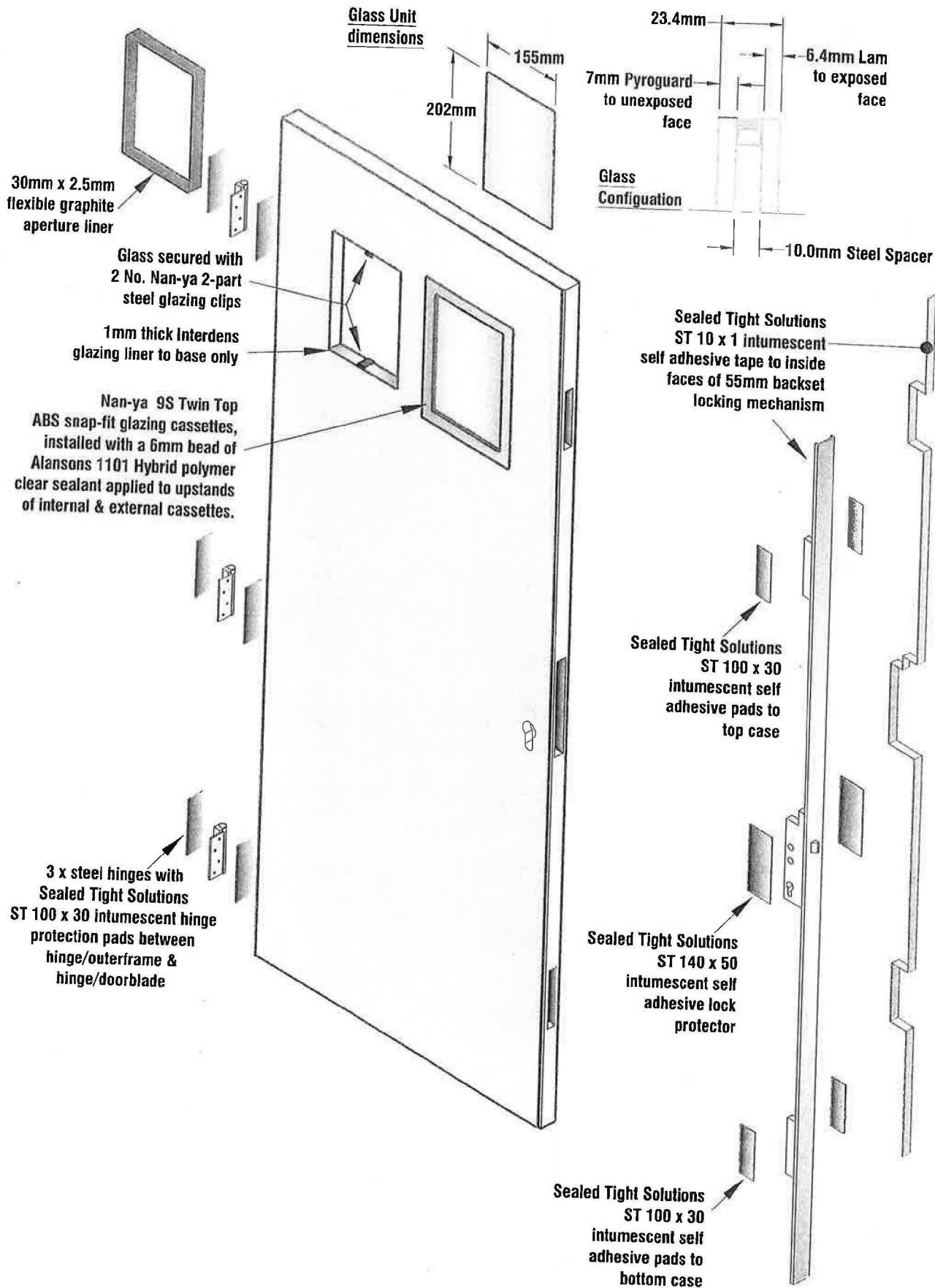
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<small>Information must be checked and approved by the client before any work is carried out. It is the responsibility of the client to ensure that the information is correct and that the work is carried out in accordance with the relevant standards and specifications.</small>	INTERNATIONAL FIRE CONSULTANTS LIMITED 20 Park Street, Princes Risborough Buckinghamshire, HP27 9AH, United Kingdom Tel: [REDACTED] Fax: [REDACTED] Email: ifc@ilcgroup.com - Web: www.ilcgroup.com		Field of Application Report PAR/14173/01 Revision A Masterdor Ltd Minimum 44mm Thick FDGO Nan Ya Composite Door Leaves Installed in Masterdor Frames		Job number: 17874 Drawn by: CSP Not To Scale	
			Nan-ya 44mm FDGO Intumescent Positioning Details		Checked by: CS Drawn: Jan 2018	
					PAR/14173/01A:AO1	

Intumescent Sealed Tight Solutions ST 30 x 2.5 (30mm x 2.5mm)

Intumescent Sealed Tight Solutions ST 25 x 2.5 (25mm x 2.5mm)

SK77950 PVCu Outerframe

S119 Reinforcing

Intumescent Sealed Tight Solutions ST 1 (1mm frame protection)

6.0mm

70mm

30mm

Intumescent 2off 25mm x 2.5mm (Head of door blade only)

5.0mm

Intumescent Sealed Tight Solutions ST 25 x 2.5 (25mm x 2.5mm)

2mm GRP Skin & Interlock

Phonelic Foam Insulation 40mm thick, 26mm thick at fielded areas

Mixed wood 40mm thick

Intumescent Sealed Tight Solutions ST 30 x 2.5 (30mm x 2.5mm)

SK77950 PVCu Outerframe

Intumescent Sealed Tight Solutions ST 10 x 1 (10mm x 1mm continuous to hinge side jamb)

3.5mm

Intumescent Sealed Tight Solutions ST 25 x 2.5 (25mm x 2.5mm, interrupted by hinges)

HORIZONTAL SECTION THRO' HINGE SIDE JAMB

Intumescent Sealed Tight Solutions ST 30 x 2.5 (30mm x 2.5mm)

Intumescent Sealed Tight Solutions ST 10 x 1 (10mm x 1mm continuous to lock side jamb)

9mm

30mm

Nom. 60mm

Intumescent Sealed Tight Solutions ST 25 x 2.5 (25mm x 2.5mm, interrupted by keeps)

HORIZONTAL SECTION THRO' LOCK SIDE JAMB

VERTICAL SECTION 'XX'

3.0mm

INTERNATIONAL FIRE CONSULTANTS LIMITED

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Buckinghamshire, HP27 9AH, United Kingdom

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Field of Application Report
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Masterdor Ltd

Minimum 44mm Thick FD60 Nan
Ya Composite Door Leaves
Installed in Masterdor Frames

Nan-ya 44mm FD60
Horizontal & Vertical Sections

Job number: 17874

Drawn by: CSP

Checked by: CS

Not To Scale

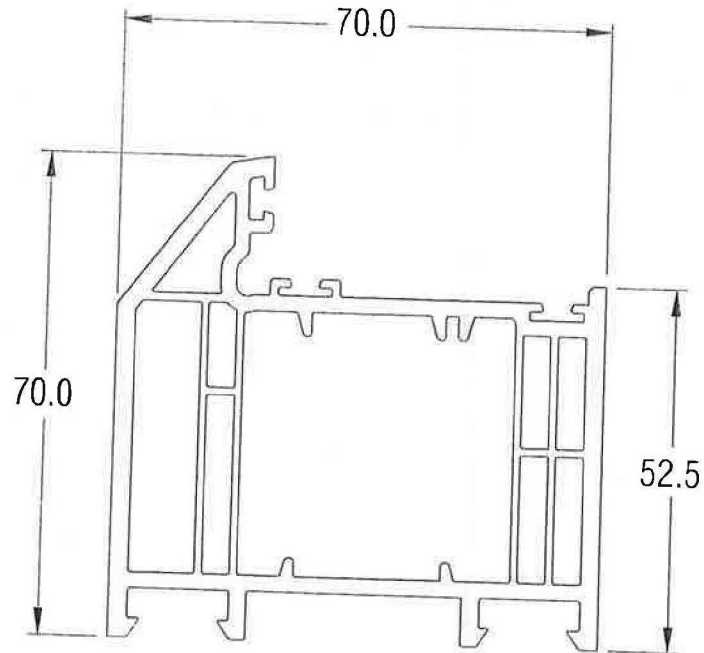
Drawn: Jan 2018

PAR/14173/01A:A02

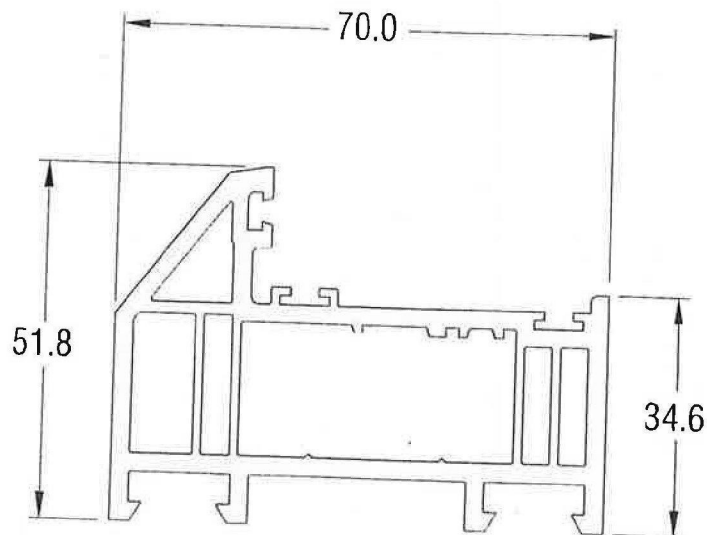
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MET00040104/48
METOC

SK77950 OUTERFRAME



SK77960 OUTERFRAME



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INTERNATIONAL FIRE CONSULTANTS LIMITED

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Field of Application Report
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Masterdor Ltd

Minimum 44mm Thick FD60 Nan
Ya Composite Door Leaves
Installed in Masterdor Frames

SK77950 & SK77960
Outer Frame Details

Job number: 17874

Drawn by: CSP

Checked by: CS

Not To Scale

Drawn: Jan 2018

PAR/14173/01A:A03

Intumescent Seal Specifications

Location		Size and Position
Door frame head	Frame reveal	1no Sealed Tight Solutions ST 25 x 2.5 seal centrally fitted in the frame reveal and 1no Sealed Tight Solutions ST 10 x 2 fitted in the upstand of the stop
	Leaf edge	2no Sealed Tight Solutions ST 25 x 2.5 seals fitted 'back to back' in a 5mm groove set 6mm from the stop face of the leaf
	Frame	1no Sealed Tight Solutions ST 30 x 2.5 seal fitted in the back of the frame and 1mm Sealed Tight Solutions ST flexible graphite fitted to the outer faces of the frame reinforcement
Door frame stiles/jambs	Frame reveal	1no Sealed Tight Solutions ST 25 x 2.5 seal centrally fitted in the frame reveal and 1no Sealed Tight Solutions ST 10 x 2 fitted in the upstand of the stop
	Back of frame	1no Sealed Tight Solutions ST 30 x 2.5 seal fitted in the back of the frame and 1mm Sealed Tight Solutions ST flexible graphite fitted to the outer faces of the frame reinforcement

All intumescent seals to be Sealed Tight Solutions graphite-based material.

Field of Application of 44mm thick FD60 Nan Ya Composite Door Leaves Installed in Masterdor Ltd Frames

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APPENDIX C

Assessed Leaf Size Envelope

Figures PAR/14173/01A:C01

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

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APPENDIX D

General Guidance on Installation of Hardware

Field of Application of 44mm thick FD60 Nan Ya Composite
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D.2 Mortice Latches/Locks

The assessed doorsets include the Winkhaus MDS301 multi-point locking system which includes up to 3no. lock/latch cases morticed into the door leaf, a forend plate in excess of 1000mm long and individual keep plates at each lock/latch position. This system must be included in the assessed doorsets and, as testing was carried out with all of the multi-point locking points engaged, doorsets must include engaged multi-point locks.

A bespoke configuration of intumescent seals (see Appendix B and below) is included to compensate against the potential for integrity failure introduced by the installation of these components.

The main body of the latch, top case and bottom case shall be lined on both faces with 1mm thick ST flexible graphite intumescent material.

The inner face of the backset locking mechanism must be lined with 10 x 1mm Sealed Tight Solutions ST flexible graphite intumescent material.

The latch keeps and inside the hook bolt pockets must be lined with 1mm thick Sealed Tight Solutions ST flexible graphite intumescent material.

Holes bored through the door for handles must be as small as possible to suit the penetrating item.

D.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.

Door assemblies have been tested with a Rutland TS3204 overhead type closer. These closers and other face-fixed overhead door closers (and accessories such as soffit brackets) that have been tested, assessed or otherwise approved for use on latched FD60 cellulosic door leaves may be used. For example, this may be the Rutland TS11204 surface mounted overhead slide arm closer, or the Rutland TS9205 surface mounted overhead closer. Any accessory that is located within the door reveal must have appropriate test or assessment evidence.

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

It is essential that all closers are of the correct power rating for the width and weight of the doorsets. 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.

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APPENDIX E

Summary of Fire Test Evidence

Field of Application of 44mm thick FD60 Nan Ya Composite
Door Leaves Installed in Masterdor Ltd Frames

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REPORT NUMBER
CFR1412101

FIRE RESEARCH

REDUCED SCALE FIRE RESISTANCE TEST
GENERALLY IN ACCORDANCE WITH BS 476: PART 22: 1987

Sponsor: LB Plastics Limited
Address: Firs Works
Nether Heage
Belper
Derbyshire
DE56 2JJ
Date of test: 10th December 2014

Results:

Test duration: 47 minutes (discontinued at the request of the sponsor)
Integrity: 34 minutes
Insulation: 34 minutes



Summary of test specimen :

A latched, single-acting single-leaf glazed doorset comprising a laminated veneered lumber core with Tricoya Extreme MDF facings and Sapele lippings, within a hardwood-clad aluminium frame with an aluminium threshold, tested as a partially insulated doorset with a double glazed vision panel.

Leaf size (h x w x t):
1977 x 754 x 54

Vision panel sight size (h x w):
575 x 427

Cambridge Fire Research Ltd Brewery Road Pampisford Cambridge CB22 3HG
Tel. [REDACTED] **Fax.** [REDACTED] **Email.** testing@cambridge-fire.co.uk

Incorporated in England No. 5602112 Registered Office 5 High Green, Great Shelford, Cambridge CB22 5EG



4319

MET00040104/55
MET00040104/55



1 PREPARATION FOR TESTING

1.1 Specimen conditioning

The specimen components were at Cambridge Fire Research for a total period of 2 days, during which time they were stored, surveyed and prepared for testing. For this duration the temperature and relative humidity were measured and recorded within the range of 7 to 12°C and 60 to 77% respectively.

1.2 Associated construction

Cambridge Fire Research constructed a softwood stud partition which was clad with British Gypsum FireLine board, 15mm thick on exposed face and 12.5mm thick on unexposed face. This provided an aperture for the doorset of 2090 mm high x 865 mm wide.

In accordance with Fire Test Study Group Resolution No. 51 continuity of the threshold was simulated by the installation of a solid non-combustible threshold extension by Cambridge Fire Research, such that the extension was flush with the threshold onto which the specimen was positioned.

1.3 Specimen construction

The specimen was supplied and constructed by the sponsor.

1.4 Specimen verification

Cambridge Fire Research carried out a detailed survey of the specimen to verify the information provided by Sponsor. This included verifying the weight, densities, materials and dimensions of construction components wherever possible.

Details and drawings of the construction are shown in Appendix 1.

Photographs of details of the construction taken before the test are shown in Appendix 2.

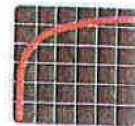
1.5 Specimen installation and fixity

The sponsor installed the specimen into the associated construction. The specimen was asymmetrical and fitted such that the door opened towards the heating conditions of the test. The leaf was latched and the 3 point locking was engaged prior to the start of the test.

The specimen was affixed to the associated construction as described in Appendix 1.

1.6 Specimen selection

Cambridge Fire Research was not involved in any selection or sampling procedures for the tested specimen.



2.2 Closer force measurement

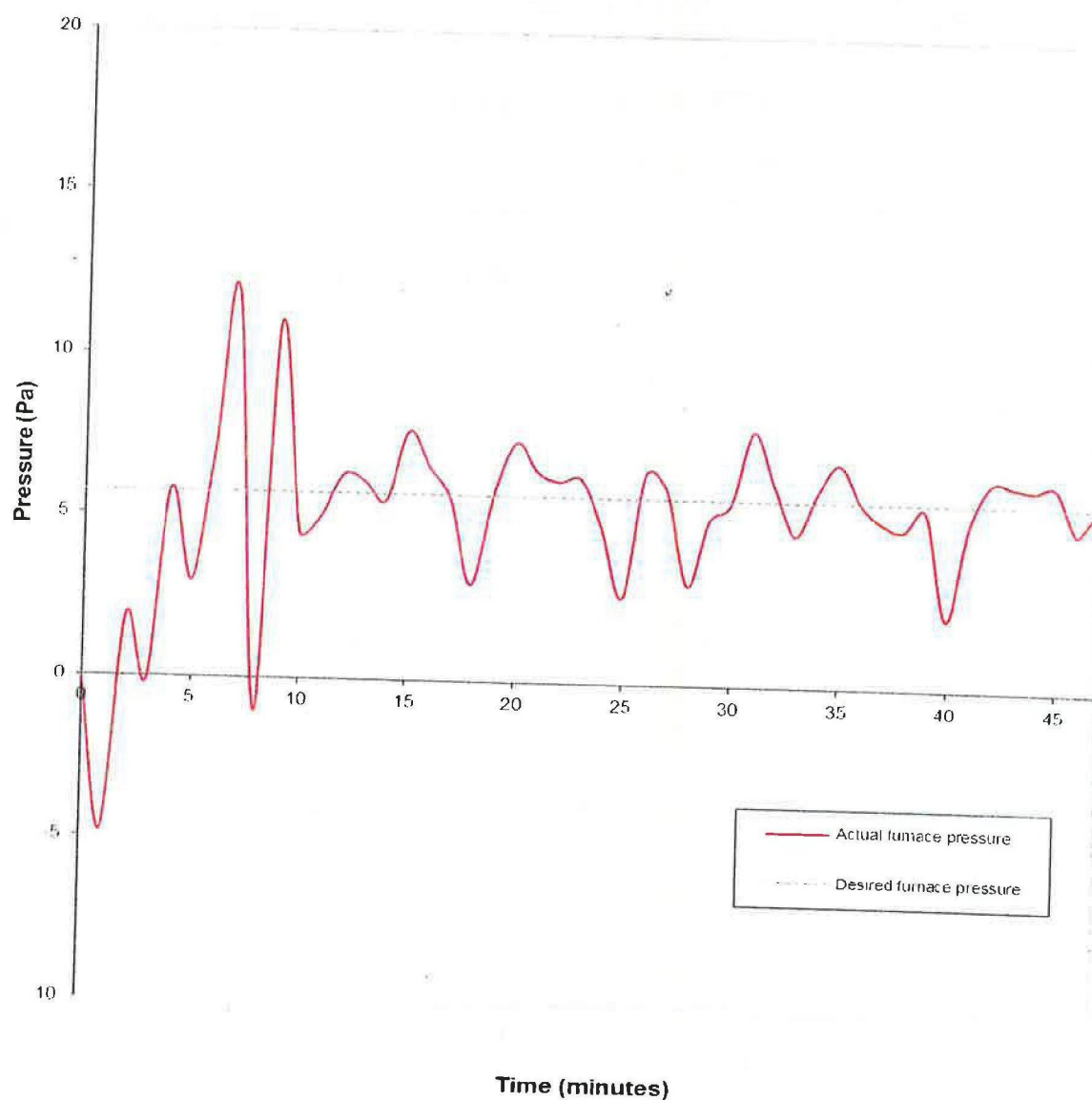
The door opening and closing forces for the right hand leaf were measured in accordance with Fire Test Study Group Resolution No. 63, except that the force was measured at 600 mm from the hinge position, and the calculated moments are shown in the following table.

Direction	Closing force (N)	Closing moment (Nm)	Opening force (N)	Opening moment (Nm)
Opening towards the heating conditions	14.6	8.8	49.1	29.5



3.2 Furnace pressure

Furnace pressure was maintained for the duration of the test at a nominal + 5.7 Pa measured at the pressure sensing head. When a linear pressure gradient of 8.5 Pa/m is applied this equates to + 0 Pa at 1 m above the notional floor level. The furnace pressure was controlled within the tolerances permitted in the test standard except for nine instantaneous occasions which were transient events. The following graph shows the actual and desired furnace pressure/time data.



3.3 Ambient temperature

Ambient temperature remained at 11°C for the duration of the test.



FIRERESEARCH

3.5 Irradiance

Irradiance from the unexposed face of the doorset was monitored during the test. A 60° field of view water cooled heat flux meter was positioned with its target 1.918 m from and parallel to the unexposed face of the specimen and at its geometric centre. The flux meter showed zero throughout the test.