INTERNATIONAL FIRE CONSULTANTS LIMITED

PRIVATE & CONFIDENTIAL

IFC FIELD OF APPLICATION REPORT

Field of Application for 44mm Thick Moralt LAMINESSE FireSound FD30 Timber Door Leaves Installed in Timber Frames

Fire Resistance Standard: BS476: Part 22: 1987

IFC Report PAR/14559/01 Revision A

Prepared on behalf of: Moralt AG
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ISSUE AND AMENDMENT RECORD

Rev	Date	Project No	Author	Review	Section	Amendments
-	January 2015	#14559	PP	DC	-	-
A	February 2020	#20466	CA/CPH	DC	All	Review of test data and reformatting the full report

CONTENTS

1. INTRODUCTION

This report has been prepared by International Fire Consultants Ltd (IFC), on the instruction of Moralt AG, to define the Field of Application for 44mm thick Moralt LAMINESSE FireSound FD30 timber door leaves, installed in timber frames, that are required to provide 30 minutes fire resistance performance, when adjudged against BS476: Part 22: 1987.

This assessment has been produced using the principles outlined in the Passive Fire Protection Forum (PFPF): *'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence, 2019, Industry Standard Procedure'*.

When establishing the variations in the construction that can achieve the required fire resistance performance, IFC complies with the principles found in the following documents:

- BS ISO/TR 12470-2: 2017 *'Fire resistance tests - Guidance on the application and extension of results from tests conducted on fire containment assemblies and products. Part 2: Non-load bearing elements'*

- EN 15725: 2010: *'Extended application reports on the fire performance of construction products and building elements'*

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

It is more onerous to test timber door assemblies, hinged or pivoted, with the specimen installed with the leaf opening in towards the furnace. Testing in this orientation is therefore incorporated into Field of Application Reports to cover doors opening in the opposite direction. The principle is only applicable when the door construction, and any features within the door leaf, such as glazing, are symmetrical.

Unless stated otherwise, herein, this Field of Application considers the scope of approval for door assemblies that may be installed in either orientation, that being with either face exposed to fire conditions.

2. TEST EVIDENCE

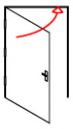
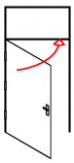
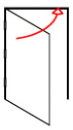
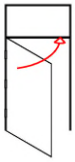
The test evidence used to support this Field of Application Report is summarised in Appendix E of this report.

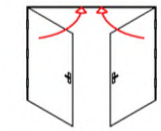
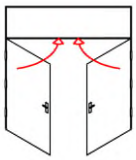
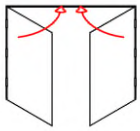
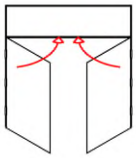
Some of the test evidence referenced in this Engineering Assessment Report is more than 5 years old. In accordance with industry practice, IFC have reviewed this test evidence, and have concluded that the evidence is still valid, and suitable to form the basis of this approval.

3. SCOPE OF APPROVAL

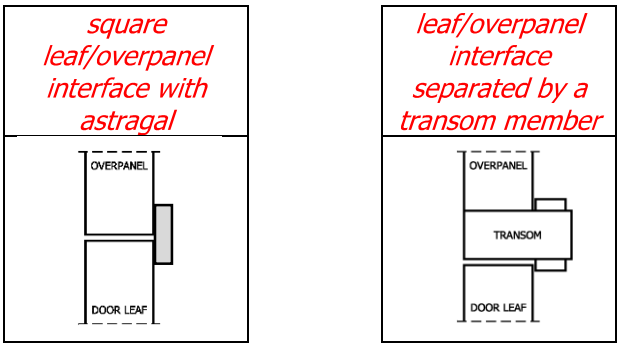
3.1 Door Assembly Configuration

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

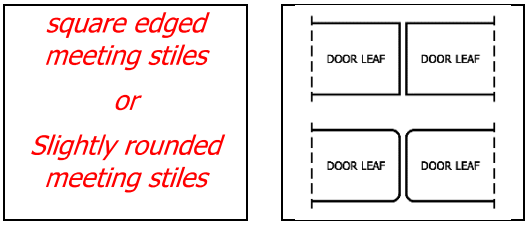
Configuration	Envelope of Approved Leaf Size
 • **Latched** • **Single Acting** • **Single Door** • **Optional Transommed Overpanel**	**Figure PAR/14559/01A:C01 in Appendix C**
 • **Latched** • **Single Acting** • **Single Door** • **Flush Overpanel** *Note 1*	**Figure PAR/14559/01A:C02 in Appendix C**
 • **Unlatched** • **Single Acting** • **Single Door** • **Optional Transommed Overpanel**	**Figure PAR/14559/01A:C03 in Appendix C**
 • **Unlatched** • **Single Acting** • **Single Door** • **Flush Overpanel** *Note 1*	**Figure PAR/14559/01A:C04 in Appendix C**

Configuration	Envelope of Approved Leaf Size
 • **Latched** • **Single Acting** • **Double Doors** *Note 2* • **Optional Transommed Overpanel**	**Figure PAR/14559/01A:C05 in Appendix C**
 • **Latched** • **Single Acting** • **Double Doors** *Note 2* • **Flush Overpanel** *Note 1*	**Figure PAR/14559/01A:C06 in Appendix C**
 • **Unlatched** • **Single Acting** • **Double Doors** *Note 2* • **Optional Transommed Overpanel**	**Figure PAR/14559/01A:C07 in Appendix C**
 • **Unlatched** • **Single Acting** • **Double Doors** *Note 2* • **Flush Overpanel** *Note 1*	**Figure PAR/14559/01A:C08 in Appendix C**

Note 1 *Door assemblies which include flush overpanels must include an astragal at the door leaf/overpanel interface. Hardwood minimum density 640kg/m^3, minimum dimension 50mm wide x 18mm thick x full width.*



Note 2 *Double leaf door assemblies within the scope of this Field of Application Report must have square edged, or slightly rounded, meeting stiles.*



3.2 Maximum Assessable Door Leaf Sizes

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

Double door assemblies may comprise leaves of the same width, up to the maximum width indicated in Appendix C. There is no limit on the ratio of leaf widths, (although the large leaf must still be within the limitations outlined in Appendix C) however, the small leaf shall not be less than 250mm wide, since this will affect its vertical stability relative to that of the larger leaf.

3.3 Door Leaf and Overpanel Specification

A detailed specification of the basic door and overpanel construction is given below.

The leaf construction is based upon the details contained within the test evidence referenced in Appendix E, and defines variations and tolerances, where it is considered that these will not adversely affect the intended fire resistance performance. The construction details are limited to the information available from the test reports.

The Moralt Laminesse FireSound 44mm thick leaf construction is described below:

Component		Species/Material	Dimensions	Minimum Density
Moralt LAMINESSE FireSound 44mm		Held on confidential file by IFC	Minimum 43.5mm thick	–
Lippings *Note 3*		Hardwood	6–10mm thick	720kg/m³
Adhesives	Lippings	Polyurethane	–	–
Minimum leaf thickness		–	43.3mm	–
Optional additional decorative finishes (to leaf faces only)		Timber veneer, decorative plastic based laminate or PVC	Maximum 2mm thick	–
		Varnish or paint	Maximum 0.5mm thick	–

Note 3 *Lippings must be fitted to all four leaf edges. Lippings to be straight grained hardwood, with minimum measured density at 12% moisture content and of appropriate quality in accordance with BS EN 942: 2007. Moisture content to be 11 ± 2% for UK market in heated buildings between 12-21°C (or to suit internal joinery moisture content specification of export countries).*

The leading edge of single acting, single or double doors, shall not remove more than 2mm thickness of lippings on the door face, but the minimum lipping thickness (defined in the table above) must be maintained.

3.4 Transommed or Flush Overpanels

Overpanels must have a square junction between the leaf head and the bottom of the overpanel, or be separated by a transom member. Intumescent seals at the panel/frame interface shall be as defined in Appendix B. Transom members shall be in accordance with Section 3.5 and the 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 door assembly 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 and have a hardwood (minimum density 720kg/m^3) 'astragal' measuring 50mm wide x 18mm thick running the full width of the overpanel. The astragal is to be screw fixed to the bottom edge of the overpanel using 50mm long steel screws fitted at 150mm centres overlapping onto the head of the leaves by a minimum of 15mm.

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. The overpanel must always be on the same plane as the door(s) below.

3.5 Frames and Transom Members

Timber frames and transom members, to the specification 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.

Material	Minimum Density	Minimum Face Width	Minimum Frame Depth	Minimum Stop Depth
Hardwood	510kg/m³ *Note 4*	32mm, excluding stop *Note 5*	95mm	14mm *Note 6*
Lathams WoodEx Engineered European Ash FSC	640kg/m³	30mm, excluding stop *Note 5*	95mm	12mm *Note 6*

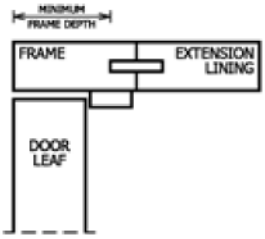
Note 4 *Timber must have a minimum measured density at 12% moisture content. The timber must be straight grained and of appropriate quality in accordance with BS EN 942: 2007. The moisture content shall be 11 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).*

Note 5 *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.*

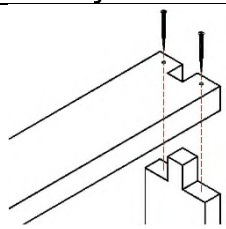
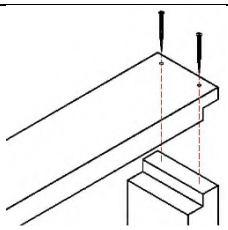
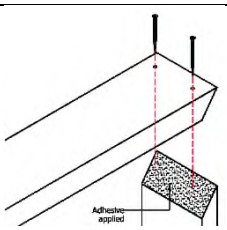
Note 6 *The door stop is to comprise the same material as the door frame (or made from MDF – minimum density 700kg/m^3, if planted) and may be either planted and pinned using 40mm steel pins at nominally 300mm centres, or integral with the main door frame, providing the minimum frame thickness remains 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 in the plane of the minimum frame depth.

No joints permitted within the minimum frame depth section outlined within this report.



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.

Mortice and tenon joint	Half-lapped joint	Mitred joint
		

Architraves : Where the face of the frame, and the door, are flush with the face of the wall, loose architraves are optional, and have no fire performance requirements, and so can be freely specified, subject to adequate fire stopping. (See Section 3.8 regarding wall/frame gaps).

Transom members : When a transom is used between a door and an overpanel, the member shall be at least 70 x 38mm, and shall include minimum 14mm thick door stops on both sides (i.e. making a minimum 70 x 62mm thick overall section). The overpanel must always be on the same plane as the door(s) below.

3.6 Glazed 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.

- 7mm thick Pyrobelite (by AGC Flat Glass or Promat Securiglass)
- 7mm thick Pyrodur Plus (by Pilkington)
- 9mm thick Pyranova (by Schott)
- 10mm thick Pyrodur (by Pilkington)
- 11mm thick Pyroguard (by CGI)
- 12mm thick Pyrobelite (by AGC Flat Glass or Promat Securiglass)
- 15mm thick Pyranova 30-S2.0 (by Schott)
- 15mm thick Pyranova 30-S2.1 (by Schott)
- 15mm thick Pyrostop (by Pilkington)
- 15mm thick Pyroguard Insulation (by CGI)
- 16mm thick Pyrobel 16 (by AGC Flat Glass or Promat Securiglass)

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

3.6.2 Glazing materials and systems

The following glazing materials are approved for use in the doors considered, herein, which are compatible with the identified approved glass types listed above.

- 10 x 2mm Therm-A-Strip (by Intumescent Seals Ltd)
- 10 x 2mm Therm-A-Glaze 45 (by Intumescent Seals Ltd)

3.6.3 Bead profiles and installation

The approved bead sizes and profiles, and relevant fixing details, are shown on the **Figure PAR/14559/01A:A01** in Appendix A, which also defines any limitations upon options of interchangeability with glass types, glazing systems and bead profiles.

- 14mm deep, 20^{o} chamfered top, with bolection moulding not less than 4mm deep.
- 14mm deep, flat top, with bolection moulding not less than 4mm deep.

Glazing beads formed from good quality hardwood, with 720kg/m^3 minimum density (measured density at 12% moisture content). The timber must be straight grained and of appropriate quality in accordance with BS EN 942: 2007. The moisture content shall be 11 ± 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. Based upon the size of apertures tested, and subsequent analysis, the following limitations apply to glazed apertures in the door leaves considered herein;

Maximum area of single apertures	-	0.29m² *Note 7*
Maximum vertical length of aperture	-	1370mm *Note 7*
Maximum horizontal length of aperture	-	290mm *Note 7*
Minimum distance from leaf edge (top)	-	135mm
Minimum distance from leaf edge (sides)	-	135mm
Minimum distance between apertures	-	110mm
Minimum distance from bottom of leaf	-	200mm

Use of certain hardware items may impose further limits upon margins; refer to Appendix D.

Note 7 *More than one aperture may be included in each door leaf, subject to the individual limitations above and a maximum total area of 0.54m².*

3.7 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 must have been subjected to fire resistance testing, and/or assessed by IFC 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.

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

Note 8 *Reference to steel stud partitions is in the context of permanent elements, such as those designed and proven by the plasterboard manufacturers, with plasterboard on both faces of the studs. 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 frame section shall be exposed once installed and leaves must not project beyond the exposed face of the door frame.

There shall be no feature rebates or shadow gaps at the junction of the frame and wall with timber frames (such features could, however, be assessed on an individual basis).

This report only applies to scenarios where the frame is fully aligned within the plane of the fire-resisting wall/partition. The approval in this report does not apply where the wall/partition includes decorative 'cladding' on the face of the fire-resisting construction, (e.g. timber panelling on battens, or plasterboard on studs/dabs), such that any part of the frame is aligned within the plane of this decorative cladding. This detail is likely to adversely affect the fire resistance of the door assembly, and IFC should be consulted for specific advice, to determine upgrading measures that will be required in such cases.

The gap sealing between the supporting construction and timber frames should follow the recommendations of Tables 2 and 3 in BS8214: 2016, *'Timber-based fire door assemblies – Code of practice'*, using a product proven in such timber applications. Alternatively, tested, assessed or Third Party Certificated solutions may also be utilised using a product proven in such timber applications, and with reference to the correct depth of seal to suit the width of gap between wall and frame.

The gap between the door and the frame or between meeting stiles (and between double doors and overpanel, where applicable) should be 1.5–4mm. Gaps under the door(s) shall not exceed 6mm for fire performance, although, if smoke control is also required, these gaps shall only be 3mm, or smoke seals shall be included (see also Section 3.10 regarding suitability of smoke seals).

The door assembly design shall be such that, when closed, single acting leaves are fully flush within the frame and double acting doors should be centred on the frame depth. The face of leaves in double door assemblies shall be flush with each other at meeting stiles, when closed.

Overpanels shall be secured into the frame using steel screws fixed through the rear of the frame members, passing at least 40mm into the centre line of the overpanel thickness. (Screws must not be fixed through the overpanel into the stops, or vice versa). Screws must be no more than 100mm from each corner of the overpanel, and at maximum 400mm centres, with a minimum of 2no screws per overpanel edge. The gap between overpanel and frame should not exceed 3mm.

3.9 Intumescent Seals

Graphite based or Lorient 617 type, pvc encased, seals manufactured by Mann McGowan Fabrications Ltd, Lorient Polyproducts Ltd, Intumescent Seals Ltd, Pyroplex or Sealed Tight Solutions may be employed across the complete range of door sizes and configurations approved herein. It is recommended that the intumescent seals are manufactured or supplied by members of the Intumescent Fire Seals Association (IFSA) or that the product is included in a Third Party Certification scheme, such as that provided by IFC Certification, to ensure product quality and consistency.

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

Intumescent protection is required for specific items of building hardware and this is detailed in Appendix D based upon details tested.

3.10 Ambient Temperature Smoke Seals

Smoke seals, or combined intumescent/smoke seals (using the specification approved in Section 3.10), that have been tested in accordance with BS EN 1634-3: 2004 (ambient temperature) or BS476: Part 31: Section 31.1: 1983 and shown not to leak by more than $3m^3/m/hr$ at 25Pa may be used in conjunction with the proposed door assemblies to provide smoke control.

The orientation of the seals, door edge gaps, degree of hardware interruption, and leaf configuration, will need to be as tested in accordance with BS EN 1634-3: 2004 (ambient temperature) or BS476: Part 31: Section 31.1: 1983 to achieve the desired level of smoke control, unless these conflict with the intumescent seal widths and positions as described in Appendix B, in which case, the latter shall take precedence; and smoke sealing may not be effected.

Test evidence to BS476: Part 22: 1987 (or EN1634-1) shall be available to demonstrate that the smoke seals will not adversely affect the overall fire resistance of timber door assemblies, of similar design and thickness, when fitted in the proposed arrangements.

4. CONCLUSION

Based upon the available test evidence, and subsequent analysis performed by International Fire Consultants Ltd, if the proposed door assemblies utilising 44mm thick Moralt LAMINESSE FireSound door leaves, installed in timber frames, were manufactured and installed within the limitations of this Field of Application Report and tested for fire resistance, they would satisfy the integrity criteria of BS476: Part 22: 1987 for 30 minutes.

This Field of Application Report considers that the door assemblies within the scope of approval, herein, may be installed in either orientation and so be exposed to fire conditions from either face.

5. DECLARATION BY THE APPLICANT

IFC Engineering Assessment Report	PAR/14559/01 Revision A
Client	Moralt AG
Product	44mm thick Moralt LAMINESSE FireSound

We, the undersigned, confirm that we have read and complied with the obligations placed on us by the Passive Fire Protection Forum (PFPF), details of which are outlined in the following document;

Passive Fire Protection Forum (PFPF)

'Guide to undertaking technical assessment of the fire performance of construction products based on fire test evidence'
Industry Standard Procedure (2019)

- We understand that this assessment is based on test evidence and will be withdrawn should evidence become available that causes the conclusion to be questioned. In that case, we accept that new test evidence may be required.

- We are not aware of any information that could affect the conclusions of this assessment. If we subsequently become aware of any such information, we agree to ask International Fire Consultants Ltd (IFC) to withdraw the assessment.

Signature	
Name	Klaus Feile
Position	Managing Director
Company	Moralt AG
Date	17.03.2020

6. 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 assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available to International Fire Consultants Ltd (IFC) the assessment will be unconditionally withdrawn and the applicant will be notified in writing. Similarly, the assessment evaluation is invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence.

As per the guidance outlined in the Passive Fire Protection Forum (PFPF): *'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence, 2019, Industry Standard Procedure',* appropriate action has been taken to mitigate the risk of a conflict of interest arising during the preparation of this report. All individuals involved in the production, or subsequent review, of this assessment have declared any perceived conflicts of interest, with regards to the sponsor or subject(s) of this report, prior to working on this project.

The assessors and reviewer have been deemed suitable for involvement in the production of this assessment in accordance with the guidance outlined in the Passive Fire Protection Forum (PFPF): *'Guide to undertaking technical assessments of the fire performance of construction products based on fire test evidence, 2019, Industry Standard Procedure'.*

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.

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 evaluation 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 evaluation 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.

7. VALIDITY

This Field of Application Report 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.

The revised assessment is valid for a period of five years after which time it is recommended that it be submitted to International Fire Consultants Ltd for re-evaluation. For this reason, anyone using this document after February 2025 should confirm its ongoing validity.

This assessment report is not valid unless it incorporates the declaration, in Section 5, duly signed by the applicant.

Prepared by:

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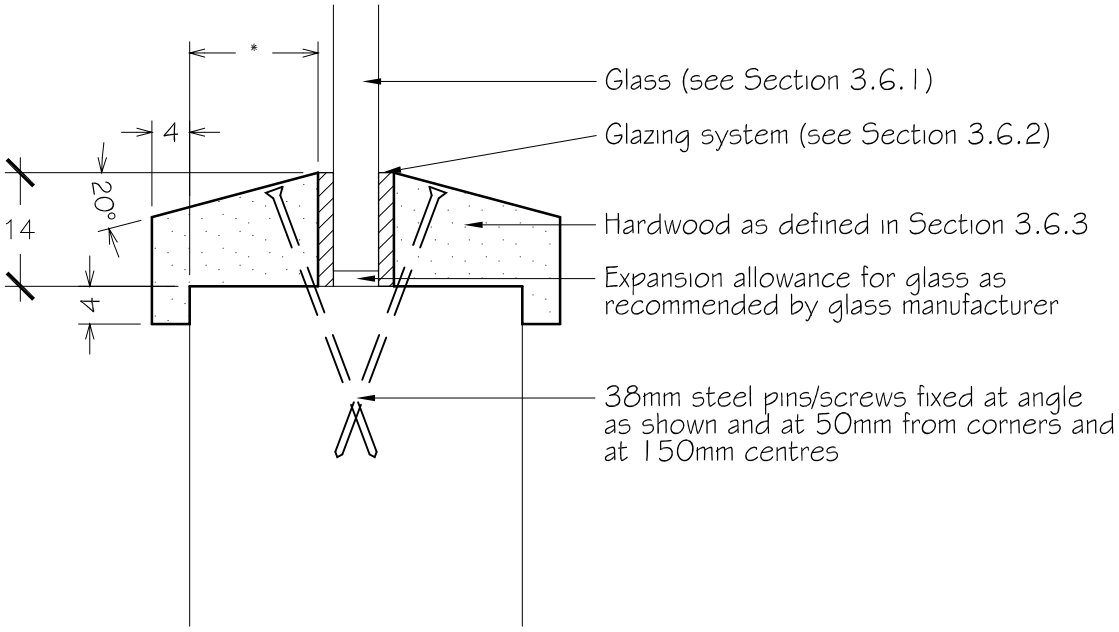
APPENDIX A

Figures PAR/14559/01A:A01

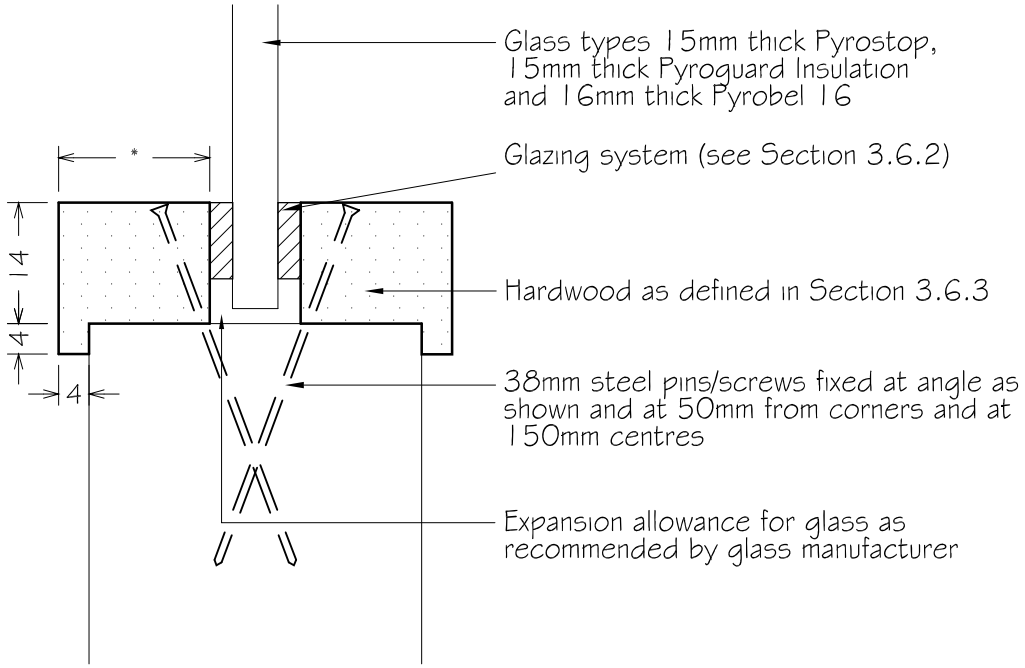
Glazing Details

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



BEAD DETAIL B1

*Bead size is dependant upon glass/seal thickness



BEAD DETAIL B2

*Bead size is dependant upon glass/seal thickness

Refer to text of Report for details of glass and seal types

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Field of Application Report
PAR/14559/01 Revision A
Moralt AG
Moralt LAMINES5E FireSound
44mm Thick FD30 Door Leaf Range
Installed in Timber Door Frames

Glazing Details

Job number: 20466	
Drawn by: CSP	Checked by: CH
Not To Scale	Drawn: Feb 2020

PAR/14559/01A:A01

APPENDIX B

Assessed Intumescent Seal Specification

Location	Size and Position	
	Without Overpanel	**With Overpanel**
Hanging and closing edge (Stiles/jambs)	1no. 15 x 4mm seal fitted centrally in the leaf edge or frame reveal	1no. 15 x 4mm seal fitted centrally in the leaf/overpanel edge or frame reveal
Head	1no. 15 x 4mm seal fitted centrally in the leaf head or frame reveal (Increase to 20 x 4mm seal for leaves over 2400mm high)	1no. 15 x 4mm seal fitted centrally in the overpanel head or frame reveal
Square meeting stiles	1no. 15 x 4mm seal, fitted centrally in the active leaf edge only	1no. 15 x 4mm seal, fitted centrally in the active leaf edge only
Overpanel or transom junction with leaf head	N/A	1no. 20 x 4mm seal fitted centrally in the bottom edge of the overpanel or transom (or in the opposing leaf head)

Note:

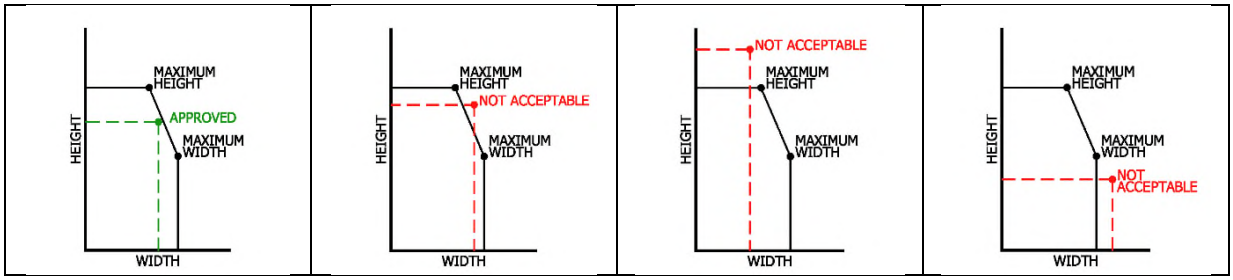
The seals are to be graphite based or Lorient 617 type in a pvc case. Seals should be obtained from Mann McGowan Fabrications Ltd, Lorient Polyproducts Ltd, Intumescent Seals Ltd, Pyroplex or Sealed Tight Solutions. Combined intumescent/smoke seals may be used, maintaining the widths specified above (and subject to the conditions outlined in Section 3.10).

APPENDIX C

Figures PAR/14559/01A:C01 to C08

Assessed Leaf Size Envelopes for 44mm Thick Moralt LAMINNESE FireSound FD30 Timber Door Leaves Installed in Timber Frames

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



	A	B
Width	924	1240
Height	3113	2481

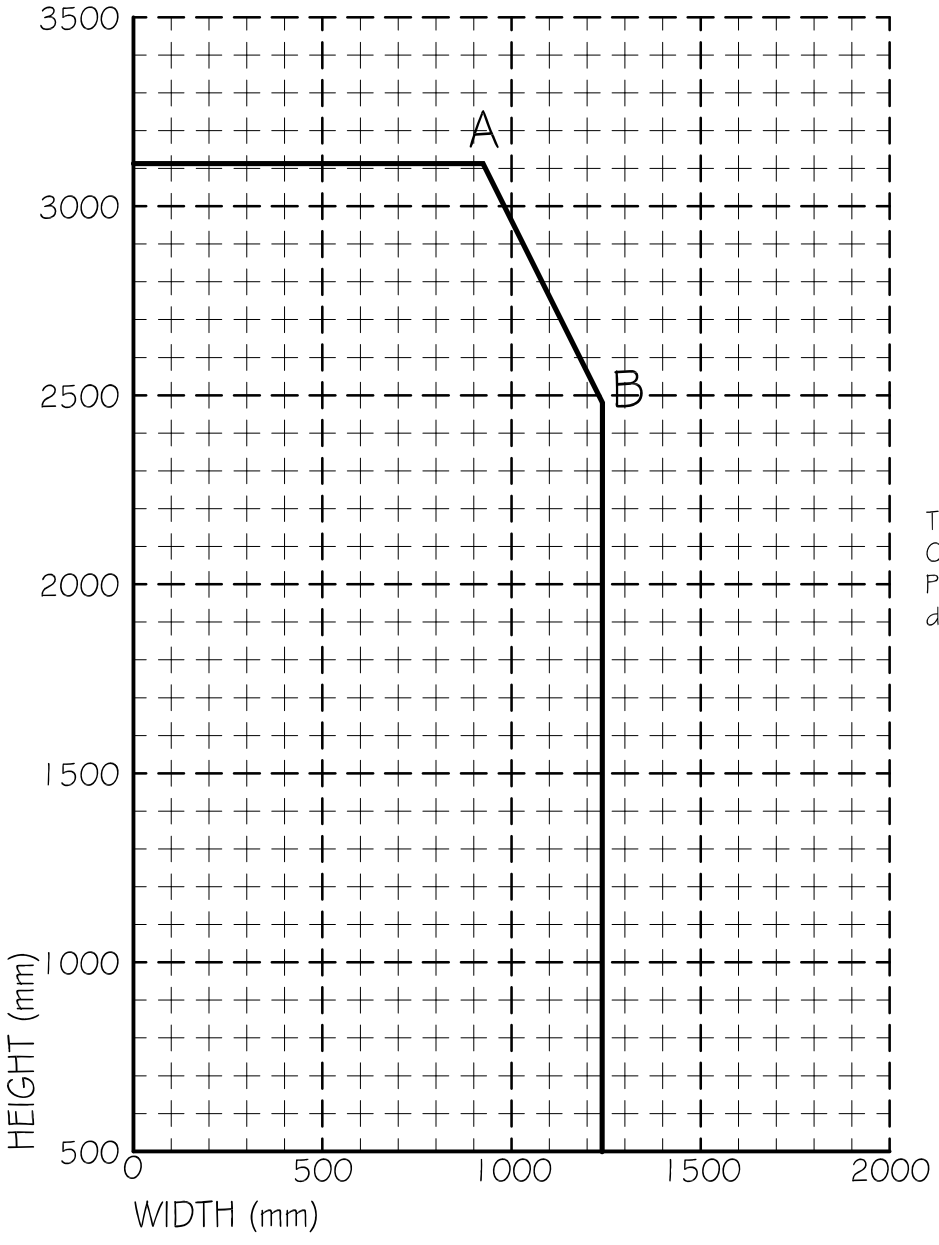
LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

LATCHED
SINGLE ACTING
SINGLE LEAF
OPTIONAL
TRANSOMMED OVERPANEL

REQUIRED INTEGRITY : 30 Minutes



This figure forms part of International Fire Consultants Ltd's Field of Application Report PAR/14559/01 Revision A, which contains full details of the assessed door construction.

ENVELOPE OF APPROVED LEAF SIZES

The above graph represents the envelope of approved leaf sizes for the proposed door leaf configuration.
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POINT B represents the maximum leaf width and its associated height.

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Field of Application Report
PAR/14559/01 Revision A
Moralt AG
Moralt LAMINESSE FireSound
44mm Thick FD30 Door Leaf Range
Installed in Timber Door Frames

Envelope of Approved
Door Leaf Sizes
LSASD+OTOP
In Timber Frames

Job number: 20466	
Drawn by: CSP	Checked by: CH
Not To Scale	Drawn: Feb 2020

PAR/14559/01A:C01

	A	B
Width	910	1222
Height	3068	2444

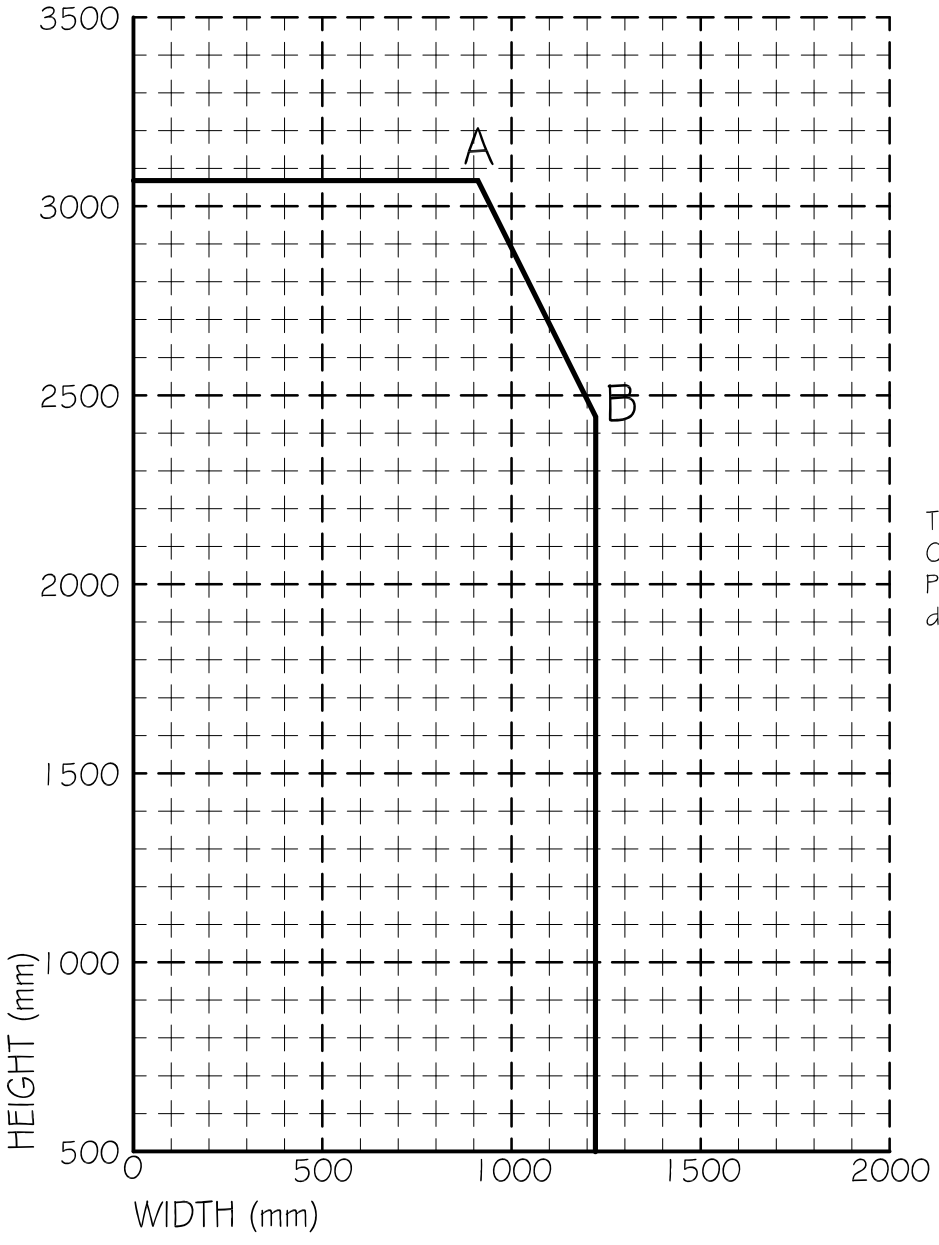
LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

LATCHED
SINGLE ACTING
SINGLE LEAF
WITH FLUSH OVERPANEL

REQUIRED INTEGRITY : 30 Minutes



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Envelope of Approved
Door Leaf Sizes
LSASD+FOP
In Timber Frames

Job number: 20466	
Drawn by: CSP	Checked by: CH
Not To Scale	Drawn: Feb 2020

PAR/14559/01A:C02

	A	B
Width	906	1216
Height	3053	2433

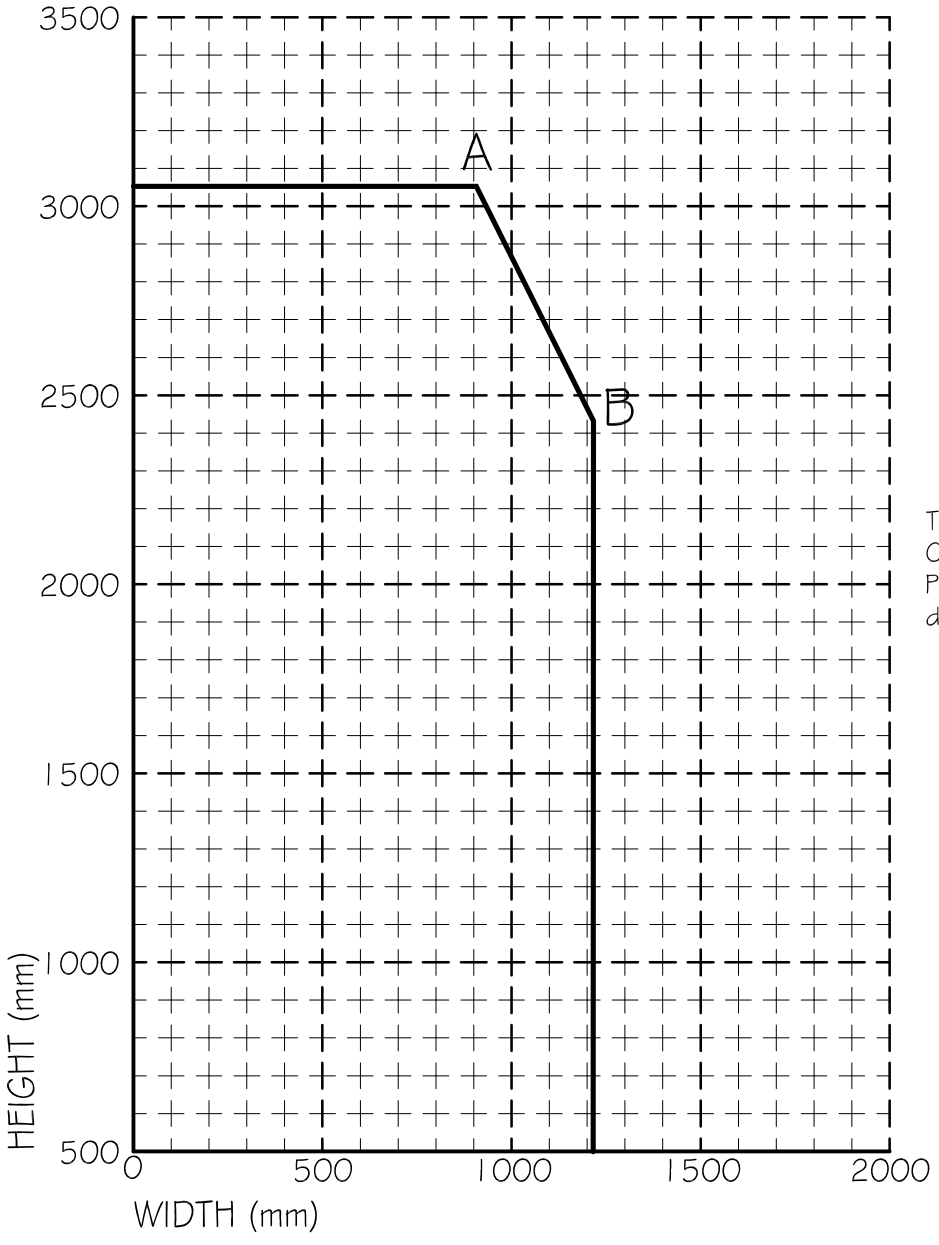
LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

UNLATCHED
SINGLE ACTING
SINGLE LEAF
OPTIONAL
TRANSOMMED OVERPANEL

REQUIRED INTEGRITY : 30 Minutes



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44mm Thick FD30 Door Leaf Range
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Envelope of Approved Door Leaf Sizes
ULSASD+OTOP
In Timber Frames

Job number: 20466	
Drawn by: CSP	Checked by: CH
Not To Scale	Drawn: Feb 2020

PAR/14559/01A:C03

	A	B
Width	893	1198
Height	3008	2397

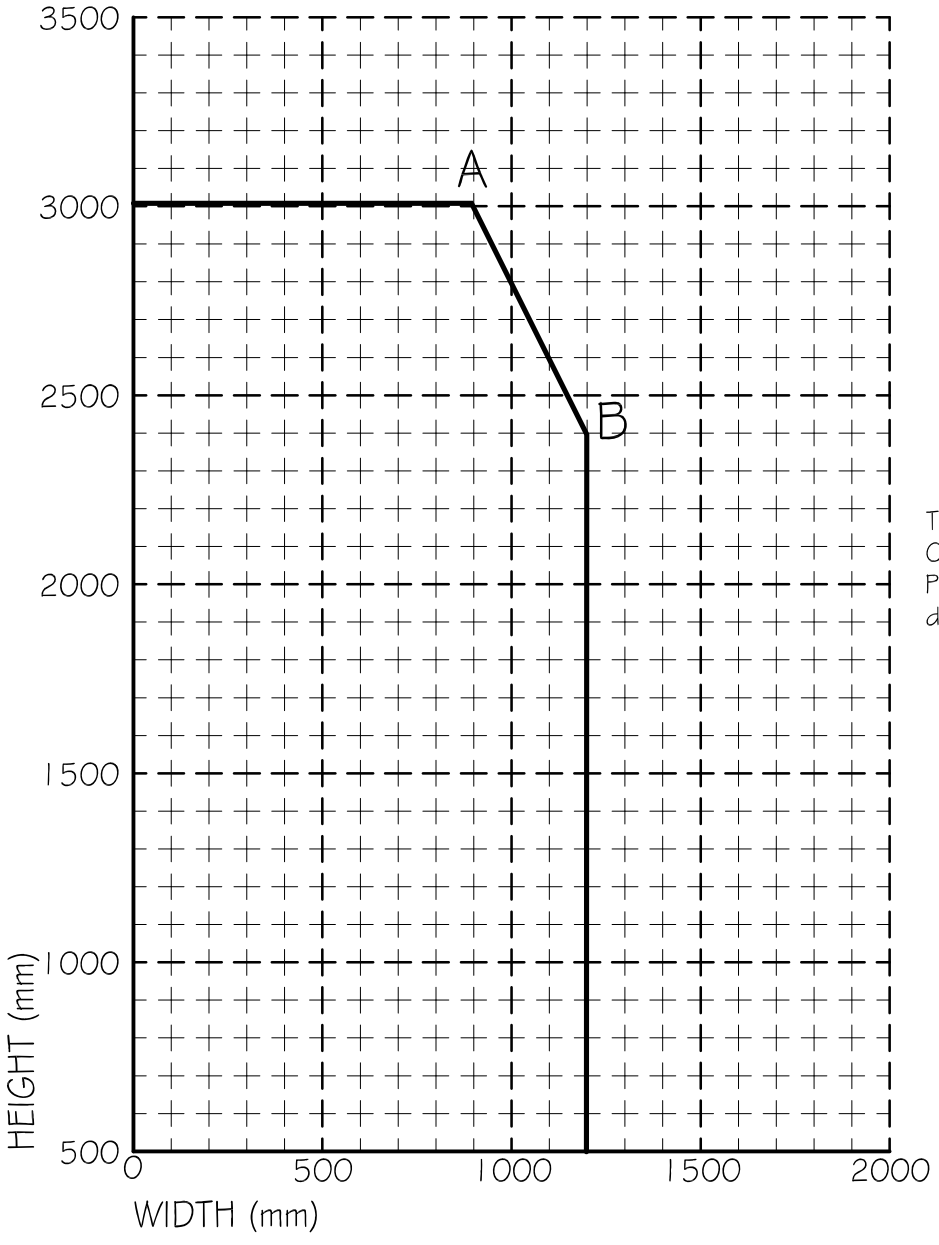
LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

UNLATCHED
SINGLE ACTING
SINGLE LEAF
WITH FLUSH OVERPANEL

REQUIRED INTEGRITY : 30 Minutes



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ULSASD+FOP
In Timber Frames

Job number: 20466	
Drawn by: CSP	Checked by: CH
Not To Scale	Drawn: Feb 2020

PAR/14559/01A:C04

	A	B
Width	980	1159
Height	2813	2456

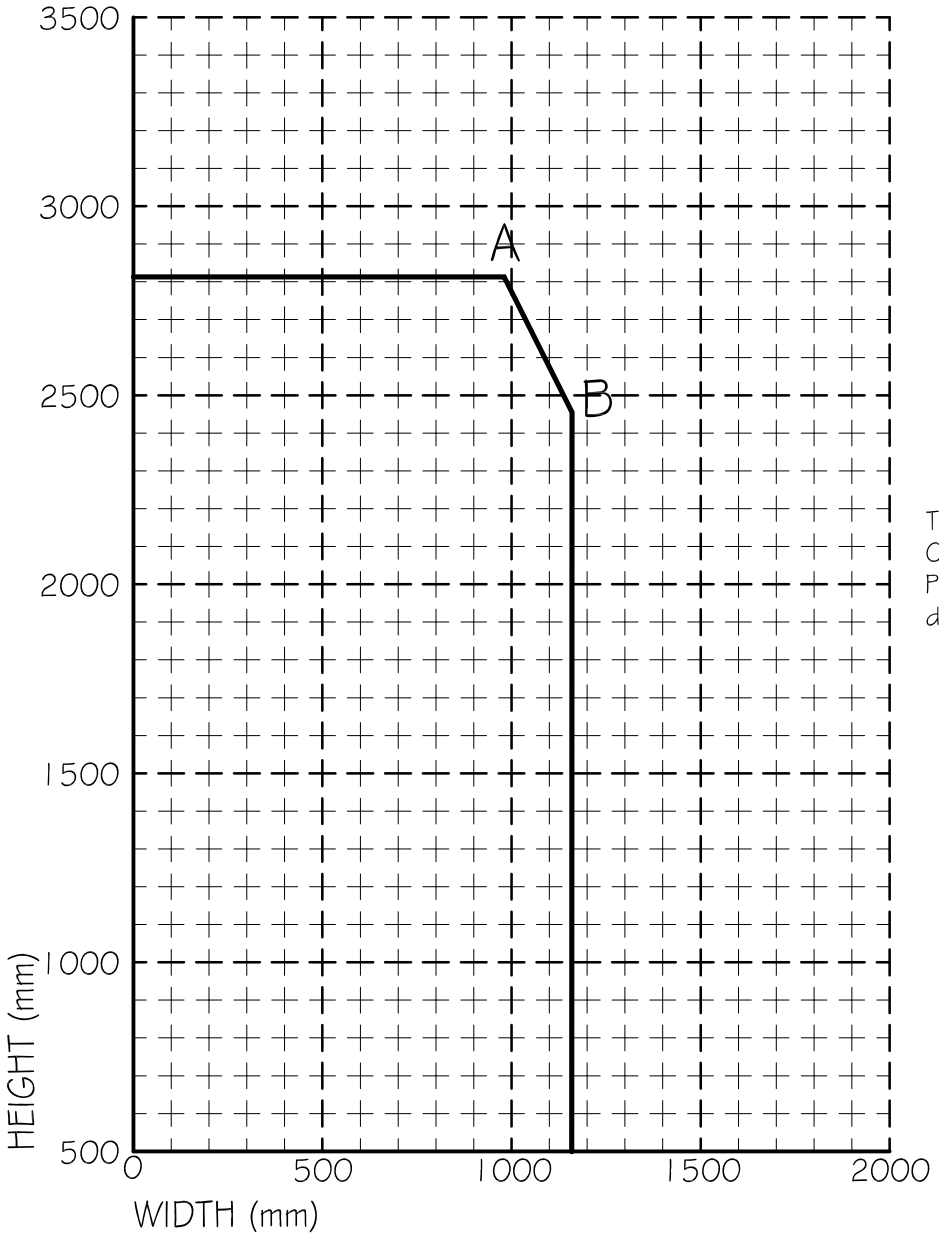
LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

LATCHED
SINGLE ACTING
DOUBLE LEAF
OPTIONAL
TRANSOMMED OVERPANEL

REQUIRED INTEGRITY : 30 Minutes



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ENVELOPE OF APPROVED LEAF SIZES

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44mm Thick FD30 Door Leaf Range
Installed in Timber Door Frames

Envelope of Approved Door Leaf Sizes
LSADD+OTOP
In Timber Frames

Job number: 20466

Drawn by: CSP	Checked by: CH
Not To Scale	Drawn: Feb 2020

PAR/14559/01A:C05

	A	B
Width	952	1126
Height	2732	2385

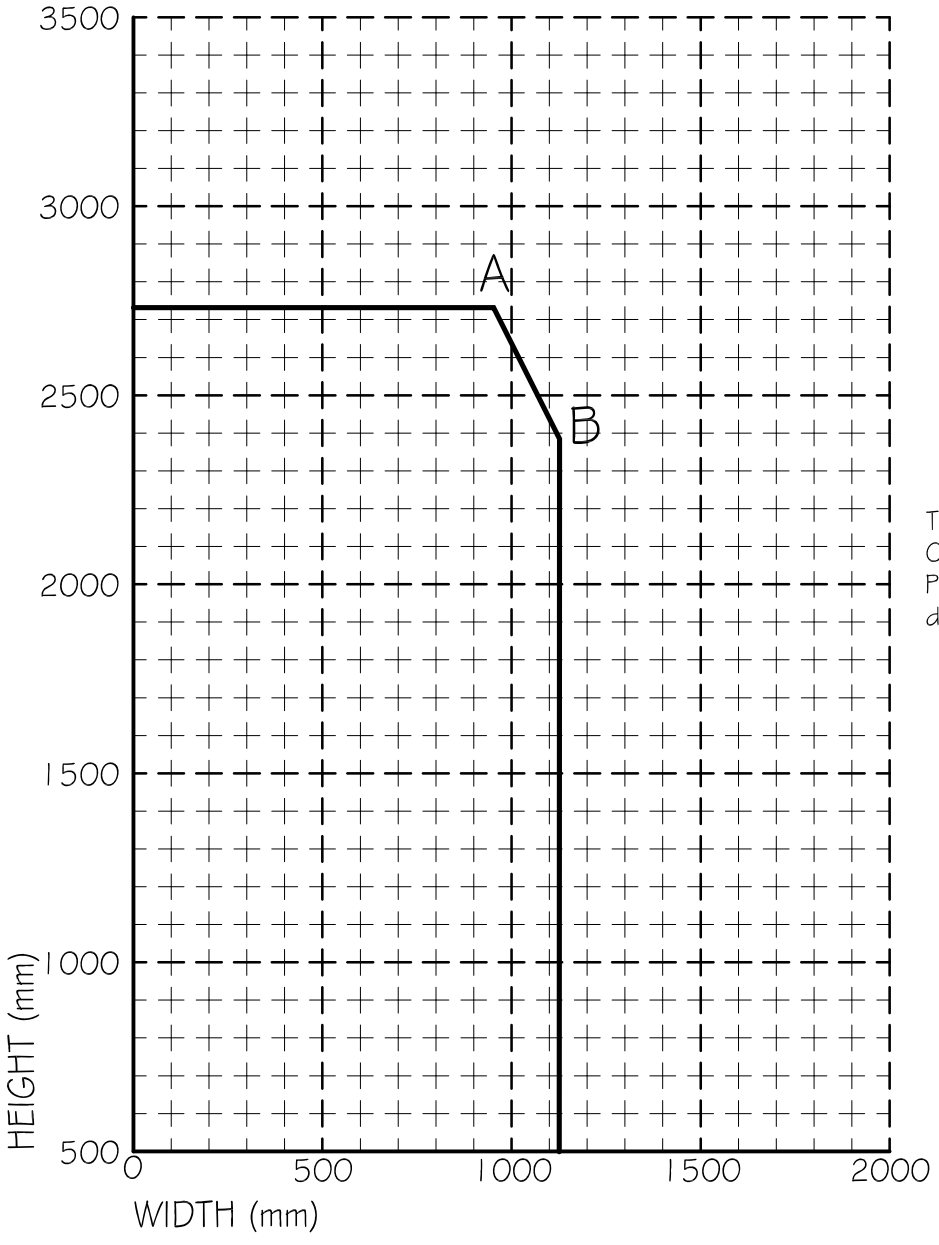
LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

LATCHED
SINGLE ACTING
DOUBLE LEAF
WITH FLUSH OVERPANEL

REQUIRED INTEGRITY : 30 Minutes



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Envelope of Approved Door Leaf Sizes
LSADD+FOP
In Timber Frames

Job number: 20466

Drawn by: CSP	Checked by: CH
Not To Scale	Drawn: Feb 2020

PAR/14559/01A:C06

	A	B
Width	971	1148
Height	2785	2432

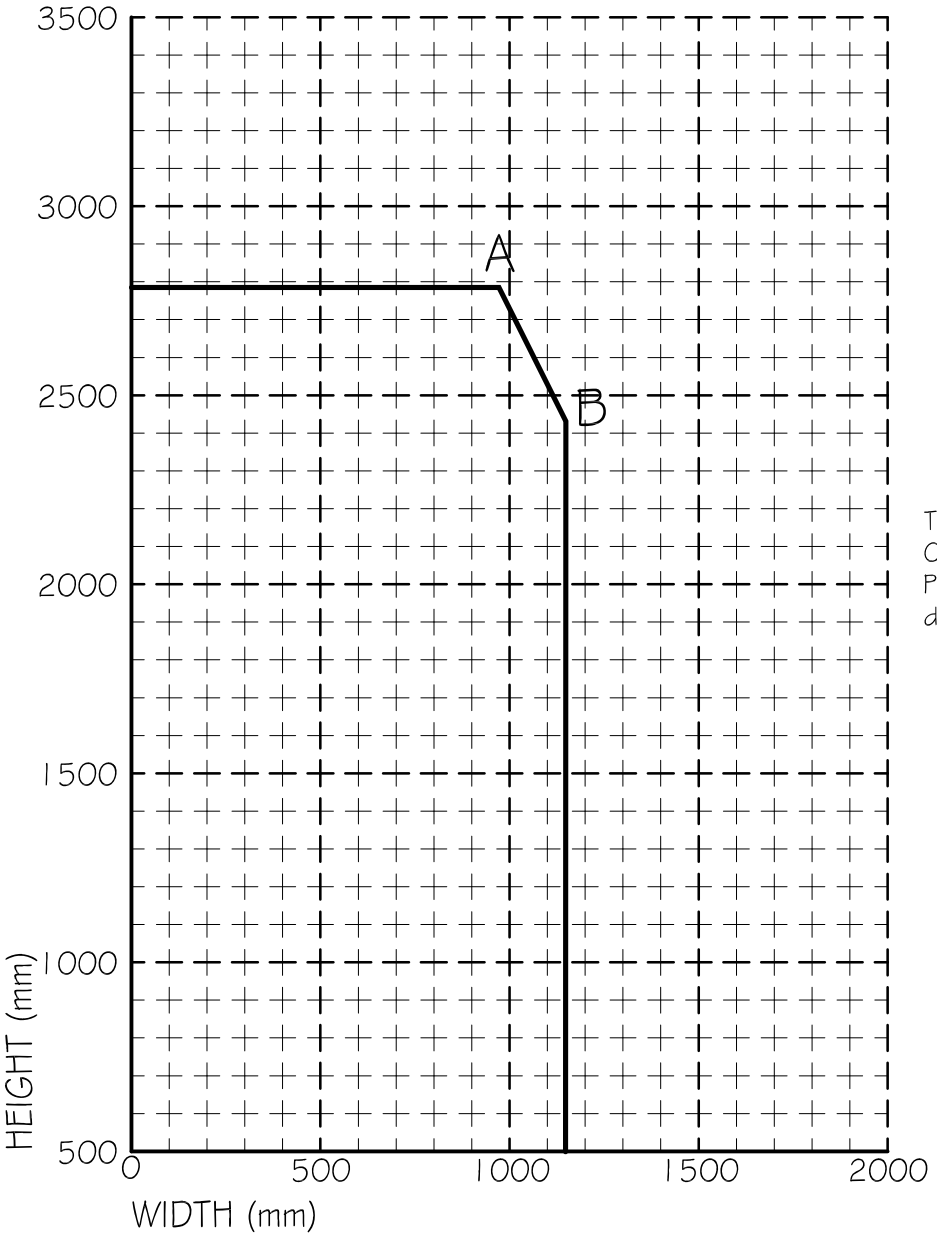
LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

UNLATCHED
SINGLE ACTING
DOUBLE LEAF
OPTIONAL
TRANSOMMED OVERPANEL

REQUIRED INTEGRITY : 30 Minutes



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ULSADD+OTOP
In Timber Frames

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Not To Scale	Drawn: Feb 2020

PAR/14559/01A:C07

Configuration

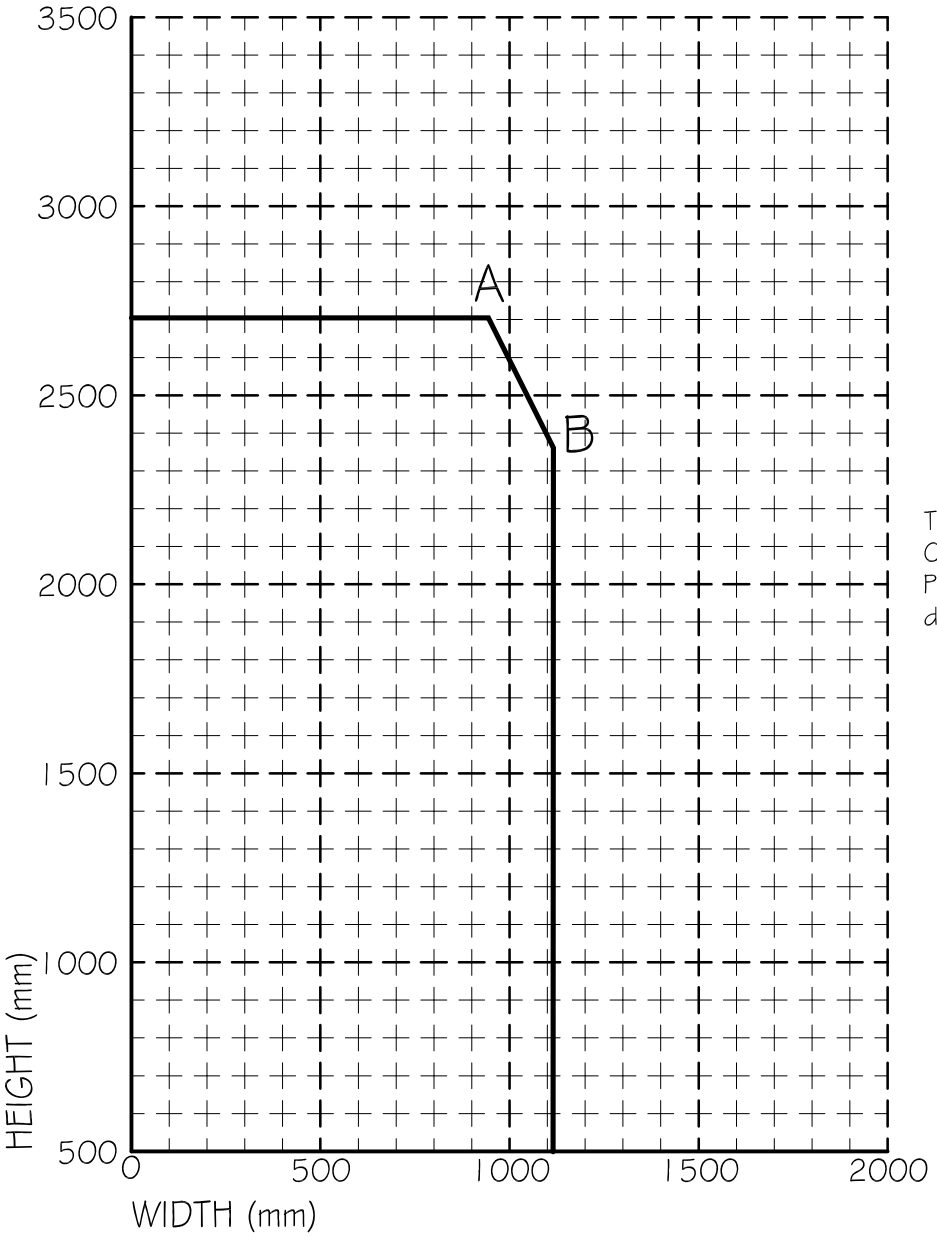
Timber Frames

UNLATCHED
SINGLE ACTING
DOUBLE LEAF
WITH FLUSH OVERPANEL

REQUIRED INTEGRITY : 30 Minutes

	A	B
Width	943	1115
Height	2705	2362

LEAF SIZE ENVELOPE POINTS



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ULSASD+FOP
In Timber Frames

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PAR/14559/01A:C08

APPENDIX D

General Guidance on Installation of Hardware

D.1 Hinges

Element		Specification	
Hinge type		Fixed pin, washered butt, ball bearing butt, lift-off type or journal supported.	
Blade height		90 - 110mm	
Blade width		30 - 36mm	
Blade thickness		2.5 - 3.5mm	
Material		Brass, Phosphor Bronze, Steel or Stainless Steel. (No combustible or thermally softening materials to be included).	
Fixings		Steel screws, as recommended by the hinge manufacturer, but no smaller than 32mm long x 3.8mm diameter (No.8)	
Minimum number		3no. hinges per leaf for leaves up to 2400mm high 4no. hinges per leaf for leaves above 2400mm high, or if required for mechanical purposes	
Positions	3no	Top	125 - 200mm down from the leaf head to the top of the hinge
		Middle	Either equi-spaced between the top and bottom hinges or positioned 200 – 250mm below the top hinge
		Bottom	150 - 225mm up from the bottom of the leaf to the bottom of the hinge blade
	4no	Top	125 - 200mm down from the leaf head to the top of the hinge
		Second and third	Either equi-spaced between the top and bottom hinges or second hinge positioned 200 – 250mm below the top hinge and the third hinge equi-spaced between the second and bottom hinge
		Bottom	150 - 225mm up from the bottom of the leaf to the bottom of the hinge blade
Intumescent protection		All hinge blades must be bedded on 1mm thick graphite based or low-pressure forming intumescent sheet material (e.g. Therm-A-Strip or Interdens)	

Rising butt, cranked butts and spring hinges (single or double action) are not suitable for use on doors approved within the scope of this Field of Application Report, although they may be suitable on the basis of an individual and specific fire engineering evaluation.

D.2 Mortice Latches/Locks

Element	Specification
Latch/Lock Type	Mortice latches, tubular mortice latches, sashlocks and deadlocks
Maximum Forend Dimensions	235mm x 20mm wide
Maximum Strike Plate Dimensions	145mm x 25mm wide
Maximum Body Dimensions	165mm high x 100mm wide x 18mm thick
Material	Steel based with no essential part of the lock/latch to comprise polymeric or other low melting point (<800°C) materials and should not contain any flammable materials
Position	Centred at 1000mm (± 200mm) above the bottom of the door leaf
Intumescent Protection	The strike plate and forend must be bedded on 1mm thick graphite based or low-pressure forming intumescent sheet material
Additional Requirements /Notes	• Where glazed 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 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 • Over-morticing is to be avoided; mortices shall be as tight as possible to the latch • If there are gaps around the case (not exceeding 2mm) then these must be made good with intumescent mastic or sheet material • Holes for spindles or cylinders shall be kept as small as is compatible with the operation of the hardware

D.3 Surface Mounted Door Closers

General Requirements/Notes
• Where required by regulatory guidance or specific fire strategy, each hinged door leaf must be fitted with a self-closing device unless it is normally kept locked shut and labelled with an appropriate sign with complies with BS5499: Part 1: 1990 • Surface mounted door closers must 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 • Surface mounted door closers must have been fire tested or assessed by IFC for use on unlatched FD30 timber door leaves hung within timber frames • If a surface mounted closer is to be fitted within 100mm (in the vertical plane) of glazed apertures containing uninsulated glass, the selected closer model must have been tested on the unexposed face of an uninsulated steel door, or a fully glazed door fitted with uninsulating glass

D.4 Flush Bolts

Element	Specification
Maximum Dimensions	250mm long x 20mm wide x 19mm deep
Material	Steel based with no essential part of the flush bolt to comprise polymeric or other low melting point (<800°C) materials and should not contain any flammable materials
Position	• Positioned at the top and bottom of the vertical meeting edge • Must be located on the centre line of the leaf thickness
Intumescent Protection	• The body of the bolt must be bedded on graphite based or low-pressure forming intumescent sheet material, at least 2mm thick • The forend plate of the bolt keep must be bedded on graphite based intumescent material, at least 2mm thick
Additional Requirements /Notes	• The meeting stile intumescent seals defined in Appendix B shall be fitted in the active leaf

D.5 Surface Mounted Bolts

Element	Specification
Maximum Dimensions	400mm high x 40mm wide
Material	Steel based with no essential part of the barrel bolt to comprise polymeric or other low melting point (<800°C) materials and should not contain any flammable materials
Position	Fixed to the face of the door leaf so that there is a minimum of 50mm between the bolt and the door edge and any adjacent aperture
Intumescent Protection	None required
Additional Requirements /Notes	Screws for fixing bolts must be at least 25mm long and have thread for the full screw length

D.6 Non-Essential Hardware Items

D.6.1 Push plates, kick plates, etc.

Element	Specification
Maximum Dimensions	No limitations
Fixing	Glued with a thermally softening adhesive (e.g. PVA or contact adhesive)
Material	Steel, aluminium or PVC
Intumescent protection	None required
Additional Requirements/Notes	• Must not be trapped under door stops, glazing beads or handle roses/escutcheons etc. • Push/kick plates must not return around the leaf edges • Push/kick plates must be surface fixed only – these items are not permitted to be recessed into the leaf face

D.6.2 Pull handles

Element	Specification
Maximum Dimensions	No limitation on height/length but outer fixing points must be no greater than 500mm apart
Material	Steel or aluminium
Intumescent Protection	None required
Additional Requirements /Notes	• Pull handles that are fixed through the leaf shall use clearance holes as close fitting as possible to the bolt • Handles/fixings shall be at least 40mm away from the door edge and from any aperture

D.6.3 Security viewers

Element	Specification
Maximum Dimensions	15mm diameter barrel
Material	Steel or brass with no essential part of the door viewer to comprise polymeric or other low melting point (<800°C) materials and should not contain any flammable materials
Position	Centred at a maximum of 1600mm (± 200mm) from the bottom of the door leaf
Intumescent Protection	The barrel of the door viewer must be wrapped in minimum 1mm thick graphite based or low-pressure forming intumescent sheet material
Additional Requirements /Notes	• Holes bored through the door must be no greater than 1mm larger than the door viewer barrel (when wrapped in the intumescent protection described above) • Viewers shall be at least 40mm away from the door edge and from any glazed aperture

D.6.4 Dropseals

Element	Specification
Maximum Dimensions	35mm high x 14mm thick x full width of the door leaf
Material	Metal/alloy
Position	• Fitted in the bottom leaf edge • Fitted centrally in the leaf thickness
Intumescent Protection	None required
Additional Requirements /Notes	None

D.6.5 Lever Handles

Element	Specification
Maximum Dimensions	No limitations
Material	Metal/alloy – should not contain any flammable materials
Position	• Faced fixed to one, or both faces, of the door leaf • Centred at 1000mm (± 200mm) above the bottom of the door leaf
Intumescent Protection	None required
Additional Requirements /Notes	• Holes through the leaf shall be as close fitting as possible to the spindles and/or fixing screws; which must be steel • This generic approval only applies to traditional 'mechanical' lever handles and does not apply to electro-mechanical handle sets (with security functions); which must be the subject of independent fire testing, and further analysis by IFC

APPENDIX E

Summary of Primary Fire Test Evidence

Test Laboratory and Report No	Test Date	Configuration Tested	Leaf Size Tested	Test Standard	Integrity
BM Trada BMT/FEP/F14205 Revision A	4 November 2014	ULSADD+OP	2250mm high x 950/950mm wide x 44mm thick	BS476: Part 22: 1987	30 Minutes *

** Note – The latch failed 30 minutes into the test, followed by the glazing perimeter at 37 minutes, then leaf perimeter at 45 minutes.*

Summary of Secondary Fire Test Evidence

Test Laboratory and Report No	Test Date	Configuration Tested	Leaf Size Tested	Test Standard	Integrity
Chilt/RF10007	1 April 2010	LSADD	2145mm high x 933/933mm wide	BS EN 1634-1:2000	56 Minutes
Chilt/RF08162	27 November 2008	LSASD	2135mm high x 914mm wide x 59mm thick	BS EN1634-1:2000	30 Minutes (glazing) 77 Minutes (leaf perimeter)
Chilt/F11169A	20 December 2011	LSASD	2040mm high x 926mm wide x 59mm thick	BS EN1634-1:2000	26 Minutes
Chilt/F11169B	20 December 2011	ULSASD	2040mm high x 826mm wide x 59mm thick	BS EN1634-1:2000	50 Minutes (glazing) 57 Minutes (forend) 63 Minutes (lock)
Chilt/RF13181	9 July 2013	LSADD	2135mm high x 915/490mm wide x 59mm thick	BS476: Part 22: 1987	58 Minutes
		LSASD	2135mm high x 915mm wide x 59mm thick		59 Minutes

Test Laboratory and Report No	Test Date	Configuration Tested	Leaf Size Tested	Test Standard	Integrity
Chilt/13193	15 August 2013	LSADD	2135mm high x 915/490mm wide x 59mm thick	BS476: Part 22: 1987	59 Minutes
		LSASD	2135mm high x 926mm wide x 59mm thick		57 Minutes
Chilt/RF13225	8 October 2013	LSADD	2135mm high x 915/490mm wide x 59mm thick	BS476: Part 22: 1987	69 Minutes
		LSASD	2135mm high x 915mm wide x 59mm thick		64 Minutes
ZAG st. P 1009/14-530-1	16 October 2014	LSASD	2135mm high x 915mm wide x 54mm thick	BS EN1634-1: 2008	64 Minutes
		LSADD	2135mm high x 915/490mm wide x 56mm thick		82 Minutes
BMT/FEP/F14102	8 July 2014	ULSADD	2040mm high x 926/303mm wide x 54mm thick	BS476: Part 22: 1987	42 Minutes

** Note – This test report is used with the permission of the test sponsor and it is noted that failure occurred due to issues relating to the intumescent protection at the lock/latch mechanism in the doorset tested. This report is included to provide evidence for the frame material and the lock/latch area was sealed and the test continued. Further failures did occur at the meeting stiles, but there was no failure at the leaf/frame interface when the test was terminated at 71 minutes.*

LSASD = Latched Single Acting Single Door assembly
ULSASD = Unlatched, Single Acting. Single Door assembly
ULSADD = Unlatched, Single Acting, Double Door assembly
ULSADD.OP = Unlatched, Single Acting, Double Door assembly with Overpanel

The test evidence referenced in this Field of Application Report is more than 5 years old. In accordance with industry practice, IFC have reviewed this test evidence, and have concluded that the evidence is still valid, and suitable to form the basis of this approval.

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