



INTERNATIONAL FIRE
CONSULTANTS LIMITED

PRIVATE & CONFIDENTIAL

IFC FIELD OF APPLICATION REPORT

Field of Application of FD30 Tubeboard Core Door Leaves Installed in Timber Frames

Fire Resistance Standard: BS476: Part 22: 1987

IFC Report PAR/13211/01 REVISION A

Prepared on behalf of:

Sauerland Spanplatte GmbH + Co. KG
Zur Schefferei
D-59821 Arnsberg
Germany

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International Fire Consultants Ltd

Head & Registered Office: Park Street Business Centre, Princes Risborough, Buckinghamshire, England HP27 9AH

Tel: +44(0)1844 275500, Fax: +44(0)1844 274002, E-mail: ifc@intfire.com

Registered No: 2194010 England

An International Fire Consultants Group Company

ISSUE AND AMENDMENT RECORD

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Draft	November 2013	PP	MB	-	-
-	January 2014	PP	MB	-	-
Revision A Draft 1	May 2019	MB	CPH	Various	Review and revalidation. Update to suit current IFC format. Update references to latest standards. Revisions to scope (intumescent seals, glazing, and leaf sizes).
Revision A Draft 2	July 2019	MB	CPH	Various	Update to new IFC format. Minor edits following clients' review of draft 1.
Revision A	July 2019	MB	CPH	-	No changes following acceptance of draft by client.

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1. INTRODUCTION

This report has been prepared by International Fire Consultants Ltd (IFC), on the instruction of Sauerland Spanplatte GmbH + Co. KG, to define the Field of Application for FD30 Tubeboard core 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 assemblies, without reducing their potential to achieve a 30 minute integrity rating, if tested in accordance with the method and criteria of BS476: Part 22: 1987. The omission of information on any components or manufacturing methods does not imply a lack of approval of those details but these would need to be the subject of a separate analysis. Only variations specifically mentioned are supported by this assessment document, and all other aspects must otherwise be as tested.

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; i.e. with either face exposed to fire conditions.

2. TEST EVIDENCE


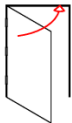
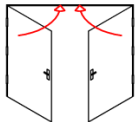
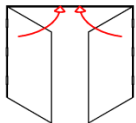
The test evidence used to support this assessment is summarised in Appendix E of this report.

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 Configurations

The following door 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/13211/01A:C01 in Appendix C
 <ul style="list-style-type: none"> • Unlatched • Single Acting • Single Door • Without Overpanel 	Figure PAR/13211/01A:C02 in Appendix C
 <ul style="list-style-type: none"> • Latched • Single Acting • Double Doors <i>Note 1</i> • Without Overpanel 	Figure PAR/13211/01A:C03 in Appendix C
 <ul style="list-style-type: none"> • Unlatched • Single Acting • Double Doors <i>Note 1</i> • Without Overpanel 	Figure PAR/13211/01A:C04 in Appendix C

Note 1 Single acting double leaf door assemblies must have square edged (or slightly rounded) meeting stiles.

3.2 Maximum Assessable Door Leaf Sizes

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

Leaves in double door assemblies may each be of the same width, up to the maximum width indicated in Appendix C. For unequal pairs, the large leaf must still be within the limitations in Appendix C, and the width of the small leaf shall be no less than 45% of the width for the large leaf; e.g. minimum 372mm wide small leaf with 826mm large leaf. The width of the small leaf shall not be less than 300mm, since this will affect its vertical stability relative to that of the larger leaf.

For the sake of clarity, this report only approves doors that are rectilinear; i.e. adjacent door edges shall be straight, and at 90 degrees to each other, when viewed in elevation. In addition, doors shall be "flat"; i.e. not curved, when viewed in plan.

3.3 Door Leaf Specification

A detailed specification of the approved 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 those test reports), but also defines variations and tolerances, where it is considered that these will not adversely affect overall fire resistance. There are two variants, one called Option A and the other Option B for identification purposes within this report. Additional notes and limitations apply to both Options A and B; listed after Option B.

Component			Species	Dimensions	Minimum Density
Leaf Framing	Stiles <i>See note below</i>		Softwood	38mm x 35mm wide	430kg/m ³ <i>Note 3</i>
	Top Rail	First/Outer <i>See note below</i>	Softwood	38mm x 35mmmm wide	430kg/m ³ <i>Note 3</i>
		Second/Inner <i>See note below</i>	Softwood	38mm x 45mm wide	
	Bottom Rail	First/Outer <i>See note below</i>	Softwood	38mm x 35mm wide	430kg/m ³ <i>Note 3</i>
		Second/Inner <i>See note below</i>	Extruded Solid Board <i>Note 2</i>	38mm x 38mm wide	600kg/m ³ <i>Note 3</i>
Core			Sauerland Tubeboard core Types RE430, 38RE, 38RF, RE7 <i>Note 2</i>	38mm thick	320kg/m ³ <i>Note 3</i>
Facings			MDF	Minimum 2.5mm thick	780kg/m ³ <i>Note 3</i>
			OR HDF/Hardboard	Minimum 2.5mm thick	900kg/m ³ <i>Note 3</i>
Lippings (to vertical edges only)			Hardwood	5–10mm thick	650kg/m ³ <i>Note 3</i>
Adhesives	Leaf Framing		Staple fixed	–	–
	Facings		Urea Formaldehyde or PVAc D3	–	–
	Lippings		Urea Formaldehyde	–	–
Optional additional decorative finishes (veneer/laminate/pvc to door faces only)			Timber veneer, decorative plastic based laminate, PVC or paint	Maximum 2mm thick	–

Option A Door Construction

Component			Species	Dimensions	Minimum Density
Leaf Framing	Stiles <i>See note below</i>		Softwood	33mm x 35mm wide	430kg/m ³ <i>Note 3</i>
	Top Rail	First/Outer <i>See note below</i>	Softwood	33mm x 35mm wide	430kg/m ³ <i>Note 3</i>
		Second/Inner <i>See note below</i>	Softwood	33mm x 45mm wide	
	Bottom Rail	First/Outer <i>See note below</i>	Softwood	33mm x 35mm wide	430kg/m ³ <i>Note 3</i>
		Second/Inner <i>See note below</i>	Extruded Solid Board <i>Note 2</i>	33mm x 38mm wide	600kg/m ³ <i>Note 3</i>
Core			Sauerland Tubeboard core Type 33RH <i>Note 2</i>	33mm thick	320kg/m ³ <i>Note 3</i>
Facings			MDF	Minimum 5mm thick	780kg/m ³ <i>Note 3</i>
			OR HDF/Hardboard	Minimum 5mm thick	900kg/m ³ <i>Note 3</i>
Lippings (to vertical edges only)			Hardwood	5–10mm thick	650kg/m ³ <i>Note 3</i>
Adhesives	Leaf Framing		Staple fixed	–	–
	Facings		Urea Formaldehyde or PVAc D3	–	–
	Lippings		Urea Formaldehyde	–	–
Optional additional decorative finishes (veneer/laminate/pvc to door faces only)			Timber veneer, decorative plastic based laminate, PVC or paint	Maximum 2mm thick	–

Option B Door Construction

Note 2 Details held on confidential file by International Fire Consultants Ltd.

Note 3 Density of timber and facings to be minimum stated; or greater. Density of core to be as stated, but with a -5%/+10% variation permissible.

The following additional notes and limitations apply to both Options A and B;

- Where leaf size is <926mm wide or <2040mm high, and if door is latched, inner rails are optional.
- Inner top rails MUST be used if the leaf is unlatched and width is >926mm. The top/bottom of the door must be marked after trimming, to ensure that the door is installed correctly.
- Inner top AND bottom rails MUST be used if door height is >2040mm. The top/bottom of the door must be marked after trimming, to ensure that the door is installed correctly.
- Tubeboard core must NOT include any joints. Tubes within the core must be aligned horizontally. Sauerland advise that the standard core height is 1978mm. If the core height needs to be reduced, to make shorter doors, the cut must be fully aligned within a 'solid' zone; and tubes must not be 'exposed' at the cut edge.
- The machining of the core/framing members, and the assembly process, must ensure that gaps between core and the stiles/rails are kept to a minimum, and gaps shall not exceed 2mm at any junction.
- Where lippings are used, (see Tables above), they shall be applied after bonding of facings. The machining of the framing members, and the bonding process, must ensure that no gaps occur between the lipping and stiles/rails.
- Core thickness and facing options MUST be selected/constructed in such a way that the minimum thickness of the door leaf is 44mm; prior to the addition of optional decorative finishes. (Where a 33mm thick core is used, the overall leaf thickness must be achieved with 5mm thick facings; and not by using multiple layers of 2.5mm thick facings).
- In all cases, both faces of each door, (and both leaves of double doors, as applicable) must have the same combination of core/facings; and facings must be of equal thickness/material on each face.
- The width of stiles/rails, described in the Tables above, refers to the minimum size that must remain after trimming at the factory, to form a specific leaf size. See also text below, regarding adjustment of door sizes.

Adjustment of door sizes –

- The minimum width of stile and rails, stated in the Table above, is the minimum width after trimming DURING fabrication, and the 'original' section size should be wider than stated, to allow for fabrication tolerances. If it is intended to manufacture a batch of doors to suit a range of finished sizes, (i.e. to allow varying amounts to be trimmed from unlipped edges during or after final fabrication), the original width of stiles/rails may be increased by up to 30mm.
- Where door edges are lipped, a maximum of 4mm may be trimmed from each lipped edge; but the minimum lipping width (defined in the Table above) must be maintained. If a greater adjustment is required, after fabrication, new lippings must be applied, complying with details for timber and adhesive in the Table above.

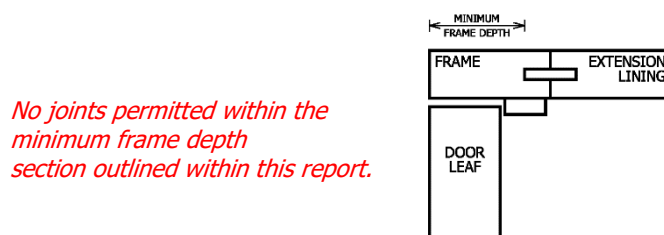
3.4 Frames

Door frames must be constructed from timber with a minimum measured density of 430kg/m³ (measured at 12% moisture content). Timber must be straight grained and of appropriate quality in accordance with BS EN 942: 2007, or national equivalent. Moisture content shall be 11 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).

Minimum dimensions: 30mm face width (excluding stop) x 70mm deep ^{Note 4}. Door stops to be a minimum 12mm thick and to comprise the same material as the door frame and may be either planted or pinned using 40mm steel pins, or integral with the main door frame, providing the minimum frame thickness (excluding stop) remains at 30mm.

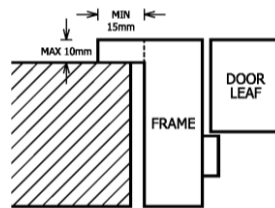
Note 4 These dimensions assume that the rear of the frame is protected by the adjacent wall, and firestopping, and that the frame does not project out from the wall or include a shadow gap detail between the frame and the wall.

The overall frame depth may be increased by the use of extension linings, as shown below.



In scenarios where the face of the frame, and the door, are flush with the face of the wall, architraves may be 'loose' (i.e. pin-fixed), but are optional, subject to adequate fire-stopping; (See Section 3.9 regarding wall/frame gaps).

Where an integral architrave is used, (see sketch below), the face of the door may project beyond the face of the wall, providing the thickness of the architrave is no greater than 10mm and it projects at least 15mm beyond the rear face of the door frame. This assumes that the face of the door leaf is flush with the face of the architrave.



Head/jamb joint: Mortice and tenon, or half-lapped joint, head twice screwed to each jamb.

3.5 Glazed Apertures (ONLY applies to doors fitted with an engaged latch)

The FD30 Tubeboard core door design has been tested with glazed apertures and achieved at least 30 minutes fire resisting performance.

Doors with glazed apertures were tested in a latched configuration, and so the approval for glazed apertures, as defined below, ONLY applies to doors fitted with an engaged latch; and, on double doors, in conjunction with engaged bolts on the passive leaf.

3.5.1 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 3.5.2, although some restrictions on size may be given in subsequent sections.

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

- G30/1 7mm thick Pyroshield 2 (Pilkington)
- G30/2 7mm thick Pyran S (Schott Glass)
- G30/3 7mm thick Pyrobelite (AGC Flat Glass)
- G30/4 7mm thick Pyrodur Plus (Pilkington)

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

3.5.2 Glazing materials and systems

The following glazing materials are approved for use in the doors considered herein, which are compatible with the identified approved glass types listed above, although some restrictions on size may be given in subsequent sections. (See also **Figure PAR/13211/01A:A01** in Appendix A for limitations).

S30/1	Lorient System 36/6 PLUS (use with glass G30/1, G30/2, G30/3 & G30/4)
S30/2	10 x 2mm Intumescent Seals Therm-A-Glaze 45 (use with glass G30/1, G30/2, G30/3 & G30/4)
S30/3	13 x 3mm Sealmaster Fireglaze mastic (use with glass G30/1 & G30/2)
S30/4	10 x 2mm Sealmaster G30 strip (use with glass G30/1, G30/2, G30/3 & G30/4)
S30/5	10 x 3mm Mann McGowan Pyroglaze 30 strip (use with glass G30/1 & G30/2)
S30/6	Lorient Flexible Figure 1 (use with glass G30/1 & G30/2)
S30/7	10 x 5mm Closed cell foam (use with glass G30/3 & G30/4)
S30/8	10 x 4mm Ceramic fibre tape (use with glass G30/3 & G30/4)

3.5.3 Bead profiles and installation

The approved bead size and profile, and relevant fixing details, are shown in **Figure PAR/13211/01A:A01** in Appendix A, which also defines any limitations upon options of interchangeability with glass types and glazing systems.

The bead profile must extend so that it projects over the edge of the aperture. Beads must be secured within the aperture using pins set as shown in **Figure PAR/13211/01A:A01** in Appendix A. Where bead fixings pass through the tubular voids, care must be taken to ensure that bead fixings are sufficiently engaged into 'solid' core material.

The glazing beads shall be formed from straight grained hardwood with 650kg/m³ minimum density (measured at 12% moisture content). Timber must be of appropriate quality in accordance with BS EN 942: 2007. Moisture content shall be 11 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).

Glazed apertures must include a minimum 5mm thick hardwood liner (with 650kg/m³ minimum density measured at 12% moisture content), as shown in **Figure PAR/13211/01A:A01** in Appendix A. The aperture must be cut accurately, to ensure that the liner fits closely and tightly against the aperture, without gaps. The aperture liner shall be bonded in place using the adhesive proven for lippings at door edges.

3.5.4 Assessed aperture sizes

Based upon the size of apertures tested, the following limitations apply to glazed apertures in the door leaves considered herein;

Latched doors, leaf width < 838mm

Maximum area of aperture	-	0.52m ²
Maximum aperture height	-	1130mm
Maximum aperture width	-	690mm
Minimum margin from leaf edge*	-	80mm
Minimum distance between apertures	-	150mm

Latched doors, leaf width > 838mm

Maximum area of aperture	-	0.33m ²
Maximum aperture height	-	1050mm
Maximum aperture width	-	330mm
Minimum margin from leaf edge*	-	125mm
Minimum distance between apertures	-	150mm

More than one aperture may be included in each leaf subject to the individual limitations above.

*The minimum margins, stated above, may need to be increased to accommodate hardware; see also Appendix D.

3.6 Intumescent Seals

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

3.7 Ambient Temperature Smoke Seals

Independent smoke seals, (or combined intumescent/smoke seals, using the Lorient 617 specification approved in Section 3.6), 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 described in Section 3.6, in which case, the latter shall take precedence; but smoke sealing may not be effective.

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, of similar design and materials to those proposed, when fitted in the proposed arrangements.

3.8 Hardware

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

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 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.

The supporting construction shall be either 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 openings for door assemblies. The method of forming the door aperture must be as tested by the door manufacturer.

No part of the rear of the frame section shall be exposed once installed, and the frame must be flush with the face of the wall; except when using integral architraves, see Section 3.4. There shall be no feature rebates or shadow gaps at the junction of the frame and wall.

The gaps between the supporting construction and timber frames shall be sealed following the recommendations of Tables 2-3 in BS8214: 2016. Alternatively, gaps may be sealed using a product proven in such timber applications, and with reference to the correct depth of sealing material to suit the width of gap between wall and frame.

The gap between the door and the frame, and at meeting stiles, shall be 2–4mm. 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 in accordance with BS8214 (see also Section 3.7 regarding suitability of smoke seals).

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

4. CONCLUSION

Based upon an analysis of the available test evidence, it is demonstrated that, if the proposed FD30 Sauerland Tubeboard core door leaves installed in timber 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 30 minutes.

This Field of Application considers the scope of approval for door assemblies that may be installed in either orientation; i.e. with either face exposed to fire conditions.

5. DECLARATION BY THE APPLICANT

Reference: IFC Field of Application Report **PAR/13211/01**

We the undersigned confirm that we have read and complied with the obligations placed on us by 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

We confirm that the component or element of structure, which is the subject of this assessment has not to our knowledge been subjected to a fire test to the standard against which this assessment is being made.

We confirm that the change which is the subject of this assessment has not to our knowledge been tested to the standard against which this assessment has been made.

We agree to withdraw this assessment circulation should the component or element of structure be the subject of a fire test to the standard against which this assessment is being made.

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:

Steffen Donath, PhD

Company:

Sauerland Spanplatte GmbH & Co. KG

Date:

10 July 2019

6. 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 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 assessor 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 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 shall not, therefore, be taken to infer approval of variation in such details from those tested or otherwise approved.

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.

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

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

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 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 resisting doorsets marketed in the EU, during the validity period of this report; in which case, users should contact IFC for further details/advice.

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 shall 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 Report is provided to the sponsor on the basis that it is a professional independent engineering judgement 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 a report 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 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 July 2024 should confirm its ongoing validity.

This Field of Application Report is not valid unless it incorporates the declaration by the applicant given in Section 5 duly signed by the applicant.

Prepared by:



Mark Billingham
Technical Manager
International Fire Consultants Ltd. (IFC)

Checked by:

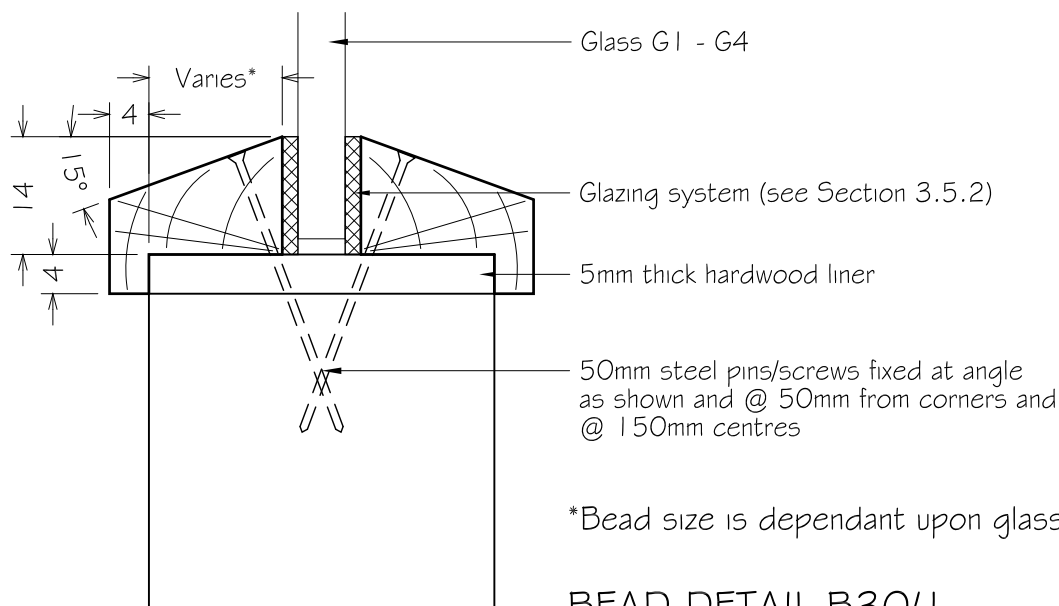


Chris Houchen BSc. AFireE
Associate Director
International Fire Consultants Ltd. (IFC)

APPENDIX A

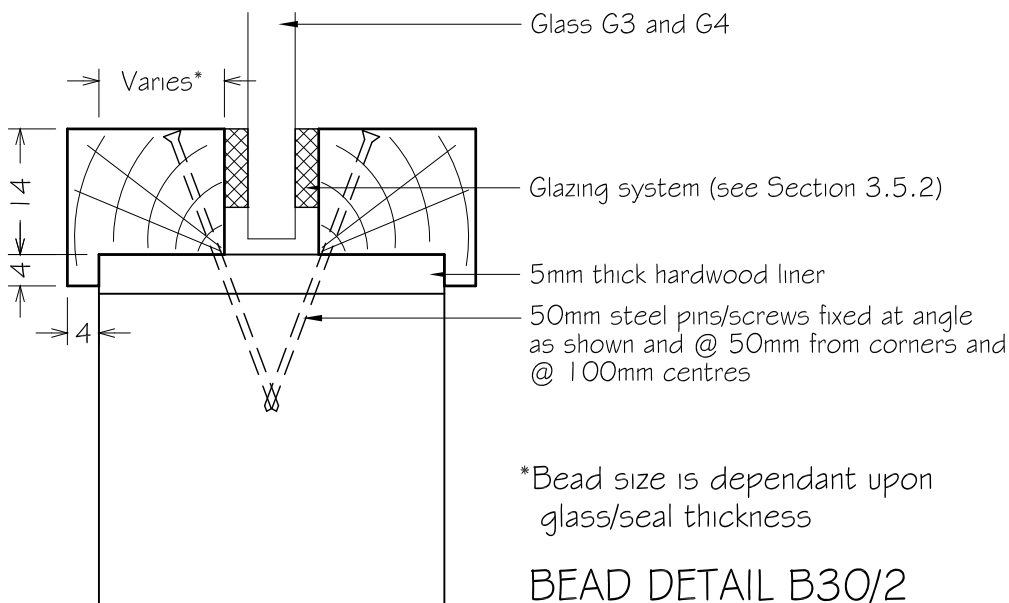
Glazing Details Figure PAR/13211/01A:A01

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



*Bead size is dependant upon glass/seal thickness

BEAD DETAIL B30/1



*Bead size is dependant upon glass/seal thickness

BEAD DETAIL B30/2

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

INTERNATIONAL FIRE CONSULTANTS LTD

20 Park Street
PRINCES RISBOROUGH
Buckinghamshire
HP27 9AH
United Kingdom
Tel: +44 (0) 1844 275500
Fax: +44 (0) 1844 274002
Email: ifc@intfire.com
Website: <http://www.intfire.com>

Field of Application Report
PAR/13211/01 Revision A
Sauerland Spanplatte GmbH + Co. KG
FD30 Tubeboard Core
Installed in Timber Frames

Glazing Bead Details

Job number: 19293

Drawn by: CSP Checked by: MB

Not To Scale Drawn: Jul 2019

PAR/13211/01A:AO1

APPENDIX B

Assessed Intumescent Seal Specifications for FD30 Tubeboard Door Leaves Installed in Timber Frames

Intumescent Seal Specifications for FD30 Tubeboard Door Leaves Installed in Timber Frames

Location	Size and Position	
	Intumescent Specification Number 1 MUST be used for unlatched doors; but may also be used for latched doors	Intumescent Specification Number 2 ONLY approved for latched doors
Stiles/jambes	1no 15 x 4mm Lorient 617 seal fitted centrally in the frame reveal or leaf edge	1no. 10 x 2mm Palusol seal fitted centrally in the frame reveal only
Head	1no 20 x 4mm Lorient 617 seal fitted centrally in the frame reveal or leaf edge	2no 10 x 2mm Palusol seals fitted 10mm apart in the frame reveal only
Meeting stiles	1no 15 x 4mm Lorient 617 seal fitted offset in each leaf to give a staggered configuration (7mm from the opposing face in each leaf)	2no. 10 x 2mm Interdens seals centrally fitted spaced 10mm apart in the active leaf only

Note: All seals should be obtained from members of the Intumescent Fire Seals Association (IFSA). Lorient 617 seals include an outer pvc case, but the Palusol and Interdens seals do not include an outer casing. Where smoke control is required, one of the combined intumescent/smoke seal versions of Lorient 617 seals may be used, maintaining the widths specified above (and subject to the conditions outlined in Section 3.7).

APPENDIX C

Assessed Leaf Size Envelopes Figures PAR/13211/01A:C01 to C04

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

	A
Width	1053
Height	2100

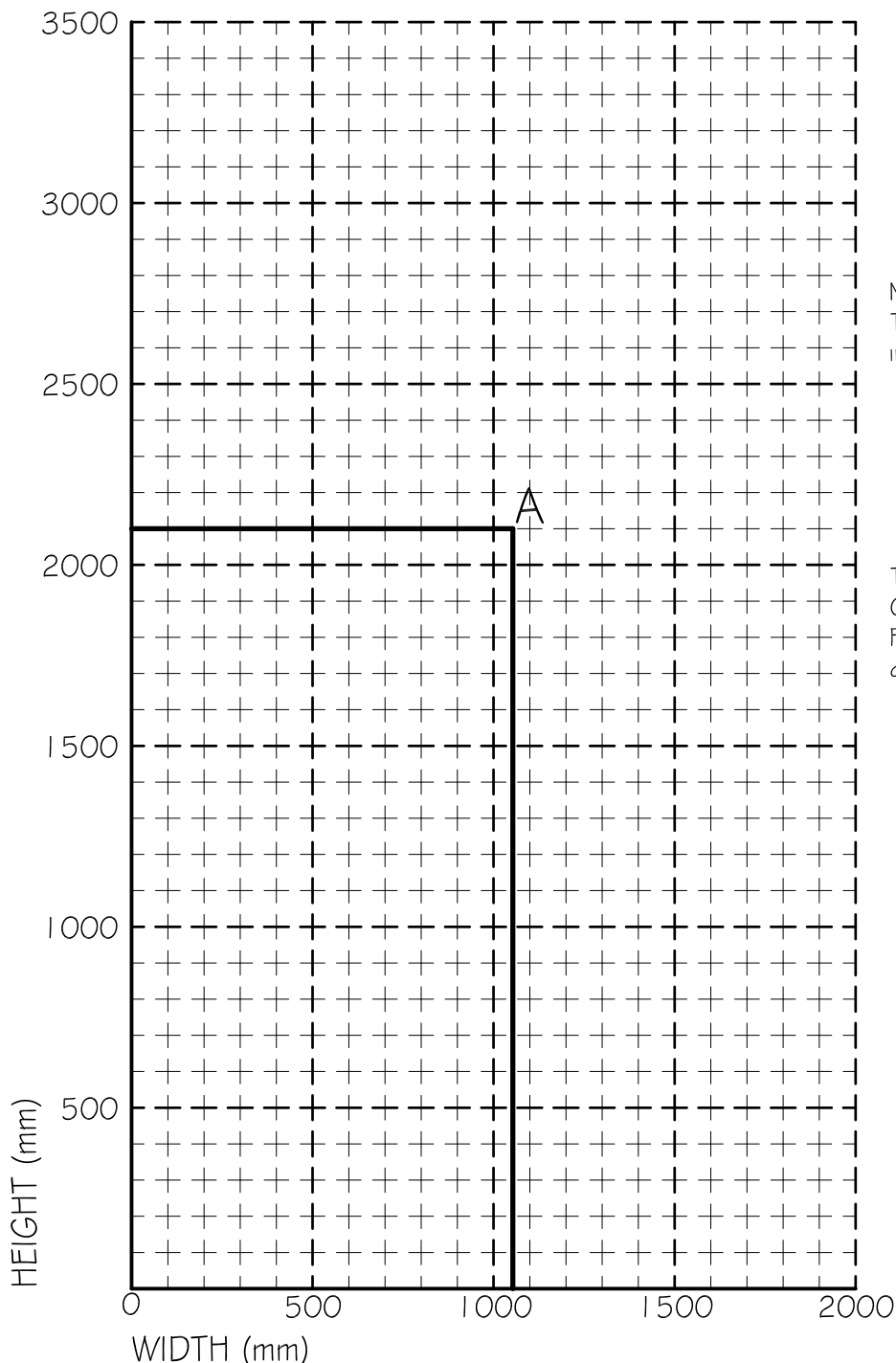
LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

LATCHED
SINGLE ACTING
SINGLE LEAF
WITHOUT
OVERPANEL

REQUIRED INTEGRITY : 30 Minutes



NOTE:

These leaf sizes are approved with either intumescent specification, number 1 or 2

This figure forms part of International Fire Consultants Ltd's Field of Application Report PAR/13211/01 Revision A, which contains full details of the assessed door construction.

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INTERNATIONAL FIRE CONSULTANTS LIMITED

20 Park Street
PRINCES RISBOROUGH
Buckinghamshire
HP27 9AH
United Kingdom
Tel: +44 (0)1844 275500
Fax: +44 (0)1844 274002
Email: info@ifcgroup.com
Web: www.ifcgroup.com

Field of Application Report
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Sauerland Spanplatte GmbH + Co. KG
FD30 Tubeboard Core
Installed in Timber Frames

Envelope of Approved
Door Leaf Sizes
LSASD
In Timber Frames

Job number: 19293

Drawn by: CSP

Checked by: MB

Not To Scale

Drawn: Jul 2019

PAR/13211/01A:CO1

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 maximum width.

	A
Width	1016
Height	2100

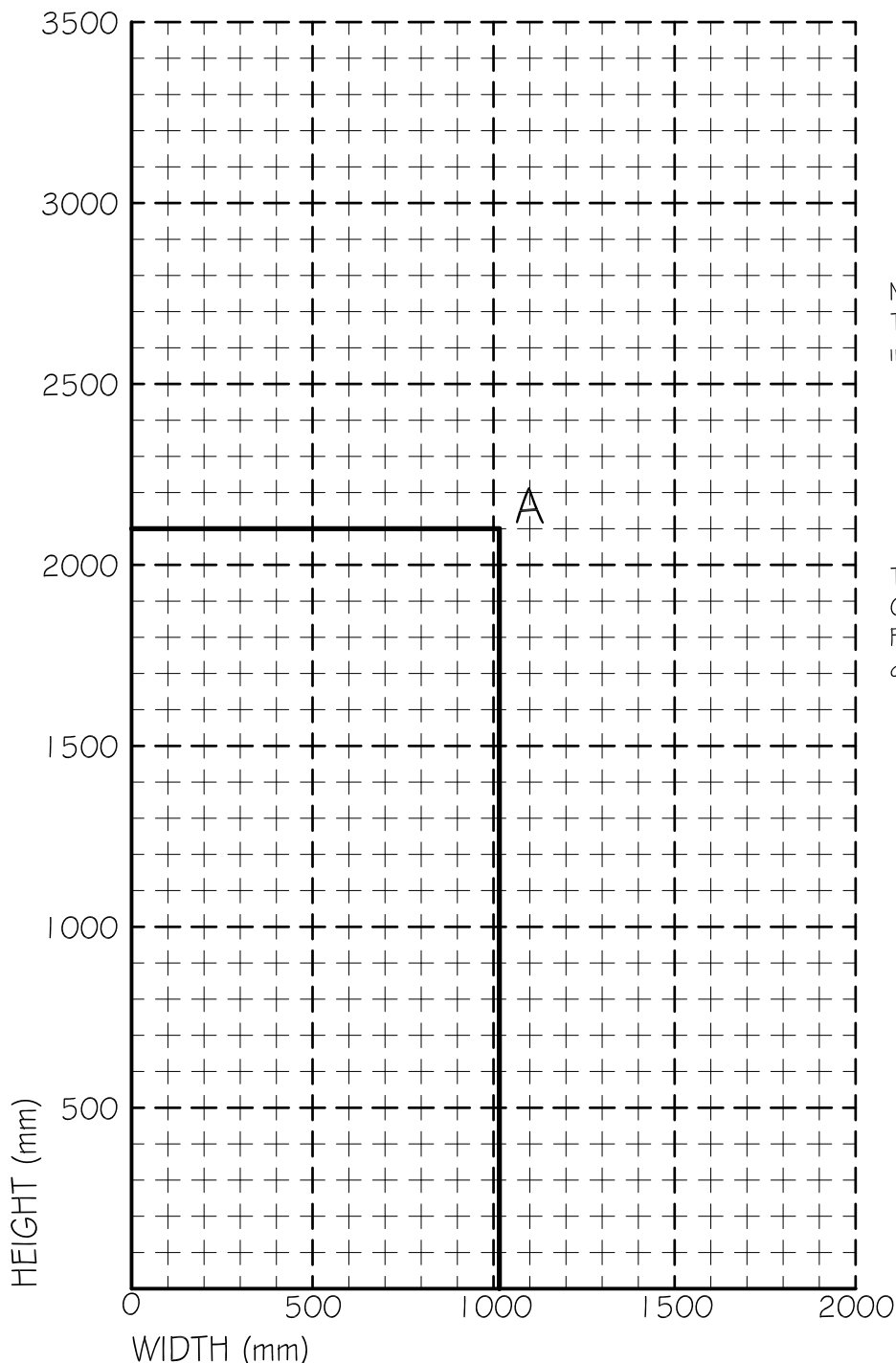
LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

UNLATCHED
SINGLE ACTING
SINGLE LEAF
WITHOUT
OVERPANEL

REQUIRED INTEGRITY : 30 Minutes



NOTE:

These leaf sizes are only approved with intumescent specification number 1

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INTERNATIONAL FIRE CONSULTANTS LIMITED

20 Park Street
PRINCES RISBOROUGH
Buckinghamshire
HP27 9AH
United Kingdom
Tel: +44 (0)1844 275500
Fax: +44 (0)1844 274002
Email: info@ifcgroup.com
Web: www.ifcgroup.com

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Installed in Timber Frames

Envelope of Approved
Door Leaf Sizes
ULSASD
In Timber Frames

Job number: 19293

Drawn by: CSP

Checked by: MB

Not To Scale

Drawn: Jul 2019

PAR/13211/01A:CO2

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 maximum width.

	A	B
Width	976	1013
Height	2100	2027

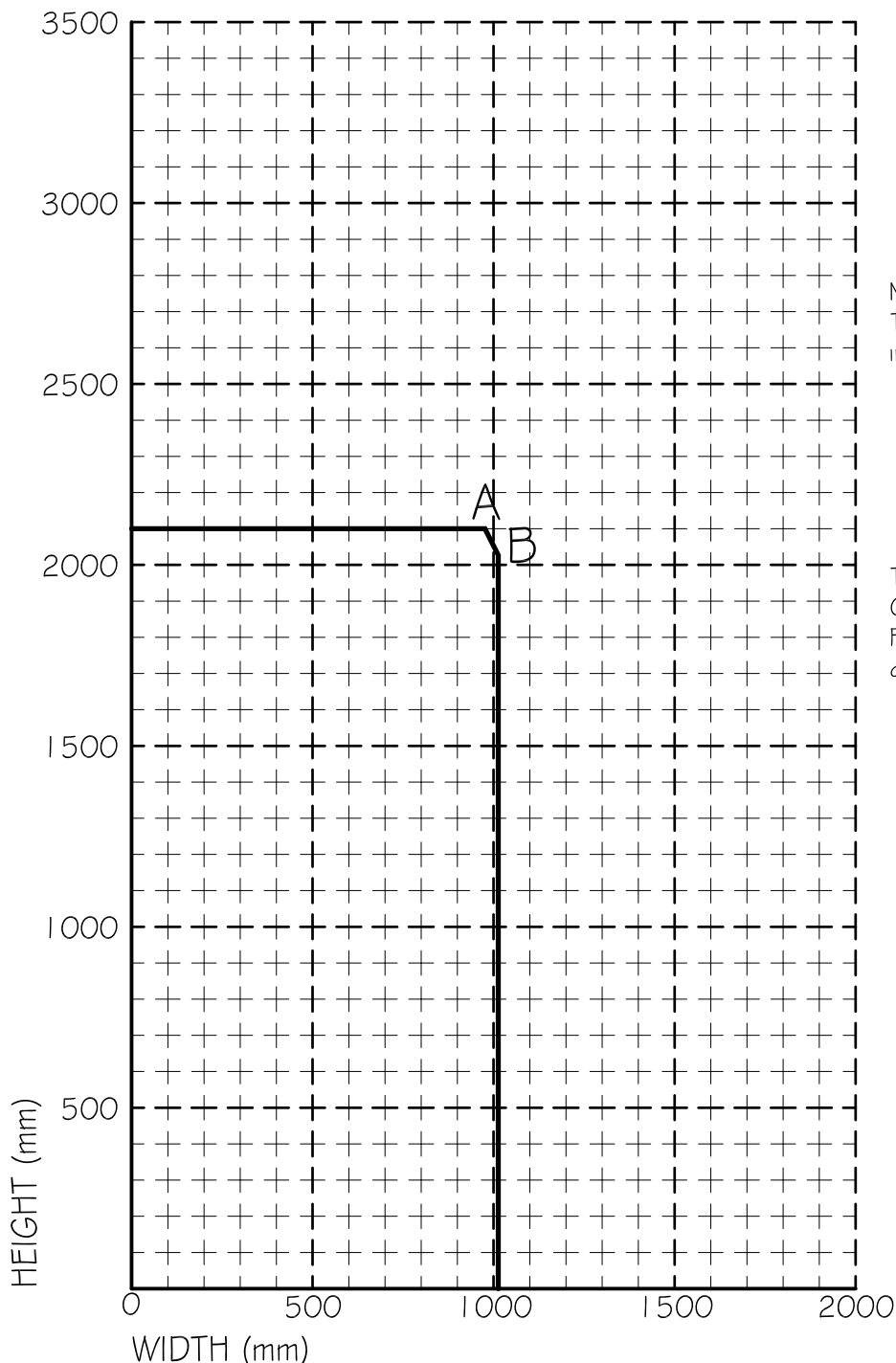
LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

LATCHED
SINGLE ACTING
DOUBLE LEAF
WITHOUT
OVERPANEL

REQUIRED INTEGRITY : 30 Minutes



NOTE:

These leaf sizes are approved with either intumescent specification, number 1 or 2

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INTERNATIONAL FIRE CONSULTANTS LIMITED

20 Park Street
PRINCES RISBOROUGH
Buckinghamshire
HP27 9AH
United Kingdom
Tel: +44 (0)1844 275500
Fax: +44 (0)1844 274002
Email: info@ifcgroup.com
Web: www.ifcgroup.com

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Envelope of Approved
Door Leaf Sizes
LSADD
In Timber Frames

Job number: 19293

Drawn by: CSP

Checked by: MB

Not To Scale

Drawn: Jul 2019

PAR/13211/01A:C03

ENVELOPE OF APPROVED LEAF SIZES

The above graph represents the envelope of approved leaf sizes for the proposed door leaf configuration.

Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved.

POINT A represents the maximum leaf height and its associated width.

POINT B represents the maximum leaf width and its associated height.

	A	B
Width	956	1003
Height	2100	2007

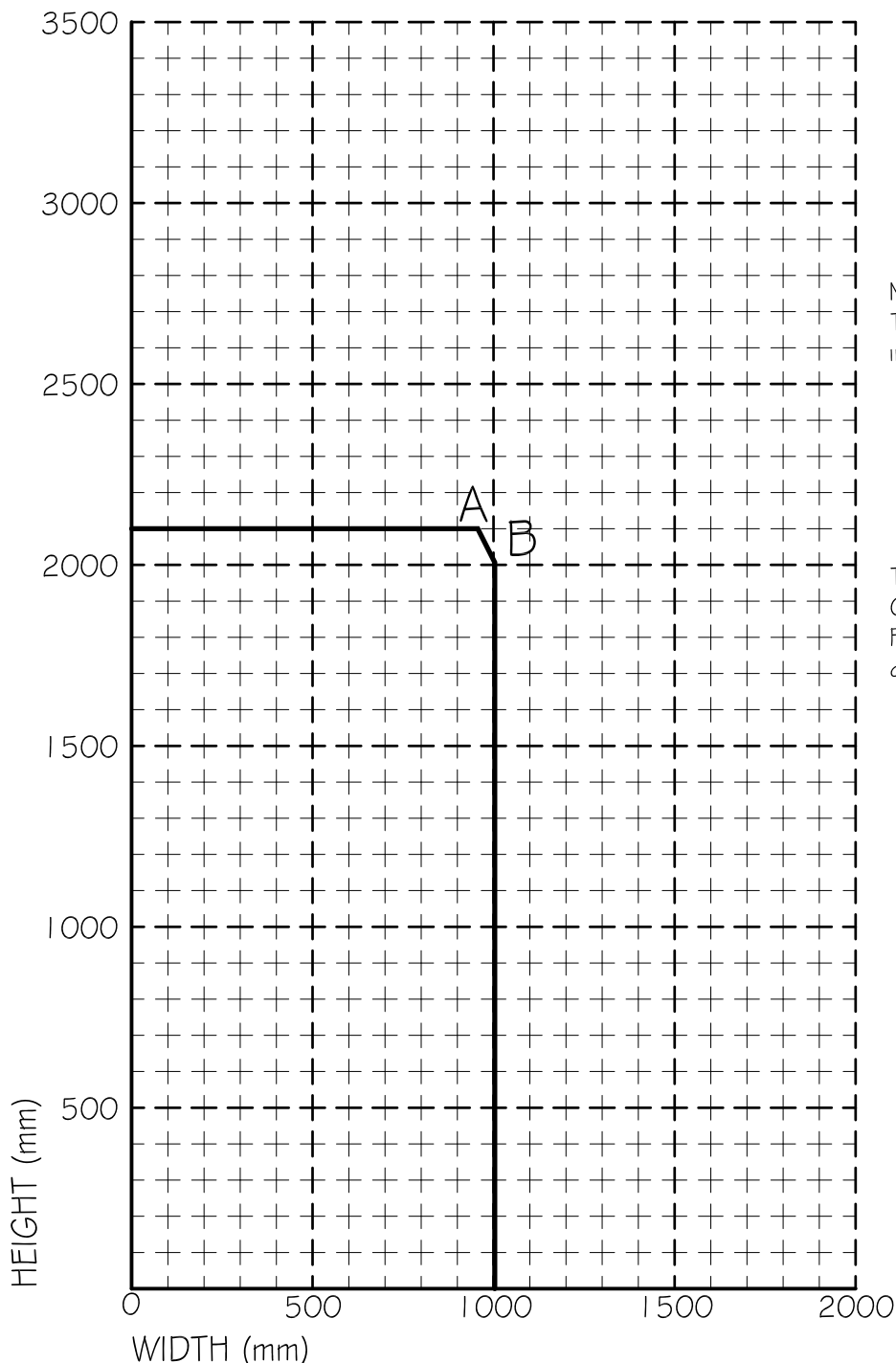
LEAF SIZE ENVELOPE POINTS

Configuration

Timber Frames

UNLATCHED
SINGLE ACTING
DOUBLE LEAF
WITHOUT
OVERPANEL

REQUIRED INTEGRITY : 30 Minutes



NOTE:

These leaf sizes are only approved with intumescent specification number 1

This figure forms part of International Fire Consultants Ltd's Field of Application Report PAR/13211/01 Revision A, which contains full details of the assessed door construction.

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INTERNATIONAL FIRE CONSULTANTS LIMITED

20 Park Street
PRINCES RISBOROUGH
Buckinghamshire
HP27 9AH
United Kingdom
Tel: +44 (0)1844 275500
Fax: +44 (0)1844 274002
Email: info@ifcgroup.com
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Door Leaf Sizes
ULSADD
In Timber Frames

Job number: 19293

Drawn by: CSP

Checked by: MB

Not To Scale

Drawn: Jul 2019

PAR/13211/01A:CO4

ENVELOPE OF APPROVED LEAF SIZES

The above graph represents the envelope of approved leaf sizes for the proposed door leaf configuration.

Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved.

POINT A represents the maximum leaf height and its associated width.

POINT B represents the maximum leaf width and its associated height.

APPENDIX D

General Guidance on Installation of Hardware in Sauerland FD30 Tubeboard Doors

General Guidance on Installation of Hardware

D.1 Hinges

The door design has been tested utilising steel butt hinges, and these are thus proven to make a positive contribution to the required 30 minutes integrity performance. Other types of hinge may be used as alternatives but ALL hinges must comply with the following specification:

- Hinge types : Fixed pin, washered butt, ball bearing butt or journal supported hinges may be used. Hinges must be suitable for the weight and size of leaf.
- Minimum number : Minimum 3no hinges per leaf with leaves up to 2100mm tall.
- 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 225mm up from the foot of the leaf to the bottom of the hinge. The middle hinge may be equi-spaced between the top and bottom hinges, or 200mm below the top hinge. (All positions ± 25 mm).
- 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 blade sizes : 1.5–3.5mm thick x 89–110mm high x 30–35mm wide. (These dimensions refer to the blade size, i.e. the part of the hinges that are recessed into the edge of the leaves/frame).
- Hinge materials : Brass, Phosphor Bronze, Steel or Stainless Steel. (Aluminium, Nylon or 'Mazac' are not permitted.) No combustible or thermally softening materials to be included.
- Additional protection : Hinge blades to be bedded on 1mm thick Interdens intumescent sheet.

Rising butt, cranked butts, concealed hinges 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 door design has been tested with a mortice latch fitted. A latch is not compulsory, but, if a latch is not fitted, this will restrict the approved leaf size. A latch is, however, compulsory if the door includes a glazed aperture.

Where a latch is included, it shall be centred at 1000mm (\pm 200mm), above the bottom of the door leaf, and all latches/locks shall comply with the following specifications:

Latch/lock types : Tubular mortice latches

Maximum dimensions : Forend plate: 60mm long x 25mm wide
Latch body: 18mm thick x 60mm wide
Strikeplate: 60mm 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 shall not contain any flammable materials.

Additional protection : The lock body shall be encased in 1mm thick low-pressure intumescent material, e.g. Interdens. The forend/strike plate when installed in double leaf doors, must be bedded on 1mm thick low-pressure intumescent material.

Over-morticing is to be avoided; mortices shall be as tight as possible to the latch. If gaps occur on either side of the case, (but not exceeding 2mm), then these must be made good with intumescent mastic or sheet; (rounding to the top and bottom of the mortice is permitted). Holes for spindles or cylinders shall be kept as small as is compatible with the operation of the hardware. The latch shall be central in leaf thickness.

Where glazing apertures are also incorporated and are positioned such that locks/latches are included in the margin between the aperture and door edge, care must be taken to ensure that the effective door 'stile' is not weakened by the mortice. It is a condition of this assessment that, except where tubular latches are employed, the margin must be at least 75mm wider than the lock/latch mortice. If the mortice latch/lock is fitted in line with a 'rail' between two apertures, no part of the lock mortice shall be closer than 75mm to the edge of any aperture. Depending upon the size and location of the lock, and the aperture configuration, this may necessitate an increase to the minimum margins for apertures defined in Section 3.5.

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 the BS5499 series of standards.

Face-fixed overhead door closer (and accessories such as soffit brackets) that have been tested, assessed or otherwise approved for use on unlatched FD30 cellulosic door leaves may be used. Any accessory that is located within the door reveal must have appropriate test or assessment evidence. In addition, where areas of uninsulated glazing are adjacent to the closer, the selected closer type must have been tested on the unexposed face of an uninsulated steel door, or a fully glazed door fitted with uninsulating glass, to demonstrate that the closer does not emit flammable fluids onto the glass face that would otherwise cause integrity failure before the required period of fire resistance.

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

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

D.4 Bolts (passive leaf of double leaf assemblies)

Some of the tests referenced in this report include double leaf doors with flush bolts fitted, but were disengaged. Bolts are not, therefore, necessary for the doors to achieve 30 minutes fire resistance (subject to an appropriate self-closing device being fitted). However, the extra restraint provided by flush bolts, in association with latches, does have a beneficial effect on leaf size envelopes; see approval for latched double leaf doors in Appendix C. Mortice latches and bolts must be fitted when glazed apertures are included.

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

- Maximum size of flush bolt is 250mm long x 20mm wide and 19mm deep;
- If the keep plate for the bolt interrupts the intumescent strip in the frame head, the keep plate shall be bedded on low-pressure forming intumescent material at least 1mm thick.
- The body of the flush bolt shall be bedded on low-pressure forming intumescent material at least 1mm thick;
- Edge fixed flush bolts shall be fitted in the passive leaf and positioned centrally in the leaf thickness;

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

D.5 Push plates, kick plates, etc

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

D.6 Door selectors

These are used on double leaf door assemblies, to ensure that the leaves close in sequence. Only face fixed items are approved. Door selectors must not be recessed into the leaf or frame and must not intrude into the door edge interface or interrupt any intumescent strips. When fixing components to the face of doors, care must be taken to ensure that screws do not cause delamination of lippings and/or splitting of timber.

D.7 Lever Handles

Material	Metal/alloy – should not contain any flammable materials
Specific Installation Requirements	<p>Holes through the leaf shall be as close fitting as possible to the spindles and/or fixing screws; which must be steel.</p> <p>When fitting lever handles to glazed doors, screws to fix handles to the door must be at least 35mm away from the visible edge of the glazing bead.</p>
Intumescent protection	None required
Additional Notes	This generic approval only applies to traditional 'mechanical' lever handles and does not apply to electro-mechanical handle-sets (with security access functions); which must be the subject of independent fire testing, and further analysis by IFC

APPENDIX E

Summary of Fire Test Evidence

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.

Summary of Fire Test Evidence

Test Report	Configuration Tested	Leaf Size	Test Standard	Integrity
WF 14606/B	LSASD	2040 x 927 x 44mm	EN 1634-1: 2000	Integrity – 33 minutes Insulation – 33 minutes
WARRES 117066	LSADD with glazed aperture	2400 x 1200 + 1200 x 44mm #	BS476: Part 22: 1987	Integrity – 34 minutes Insulation – 34 minutes
WARRES 69484/A	LSASD with glazed aperture	1981 x 837 x 44mm	BS476: Part 22: 1987	Integrity – 36 minutes
WF 14606/A	LSASD	2040 x 927 x 44mm	EN 1634-1: 2000	Integrity – 36 minutes Insulation – 36 minutes
WF 159842/B	LSASD	2040 x 926 x 44mm	BS476: Part 22: 1987	Integrity – 36 minutes Insulation – 36 minutes
WF 187700	ULSADD	2040 x 926 + 425 x 44mm	BS476: Part 22: 1987	Integrity – 34 minutes Insulation – 34 minutes

LSASD = Latched, Single Acting, Single leaf Doorset
LSADD = Latched, Single Acting, Double leaf Doorset
ULSADD = Unlatched, Single Acting, Double leaf Doorset

Note #: The test report does not state if/how the core included a joint, to form the overall height; and so joints cannot be approved by this assessment report.

Note: The BS EN1634: Part 1: 2000 test is generally accepted as being a more onerous test than BS476: Part 22: 1987, in terms of pressure differentials and thermal exposure. As such, any test results applicable to BS EN testing can be substituted in situations requiring BS476: Part 22 evidence, or when making assessments/judgements against the BS476 criteria, but not vice versa.