INTERNATIONAL FIRE CONSULTANTS LIMITED

PRIVATE & CONFIDENTIAL

IFC FIELD OF APPLICATION REPORT

Field of Application for Howdens Linear and Dordogne Door Leaves Installed in Timber Frames

Fire Resistance Standard: BS476: Part 22: 1987

IFC Report PAR/21384/01

Prepared on behalf of:

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

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ISSUE AND AMENDMENT RECORD

Rev	Date	Author	Review	Section	Amendments
Draft	October 2020	WL	DC	-	-
-	October 2020	WL	DC	-	-

CONTENTS

1. INTRODUCTION

This report has been prepared by International Fire Consultants Ltd (IFC), on the instruction of Forza Doors Ltd, to define the Field of Application for timber based door assemblies, comprising Howdens Linear and Dordogne door assemblies, comprising FCS30 leaves from Forza Doors Ltd 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 B 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.

The appropriate performance of fire resisting door assemblies is defined in Approved Document B of the Building Regulations, the Scottish Building Standards Technical Handbook or the Building Regulations (Northern Ireland).

Approved Document B, which applies to England and Wales, identifies door assemblies by their performance under test to BS EN 1634-1 or BS 476: Part 22: 1987, in terms of integrity for a period of minutes. It should be noted that a suffix (S) is added for doors where restricted smoke leakage at ambient temperatures is needed. The Scottish and Northern Ireland documents also refer to the British and European Standards.

These guidance documents thus give a parity of performance between the two test methods, and although the EN 1634-1 and the BS 476: Part 22: 1987 test procedures are both generally based upon the ISO 834 fire resistance test method, there are differences.

The EN 1634-1 test method is generally accepted as being a more onerous test than BS 476: Part 22: 1987. This is borne out of IFC's experience of fire resistance testing already performed since the introduction of the European test standard.

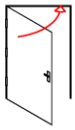
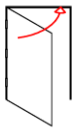
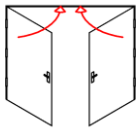
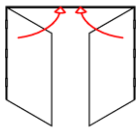
As such, test results on door assemblies tested to EN 1634-1 can be utilised in situations requiring a performance defined against the BS 476: Part 22 test method, or when making assessments and judgements against the BS 476 criteria, but not vice versa.

3. SCOPE OF APPROVAL

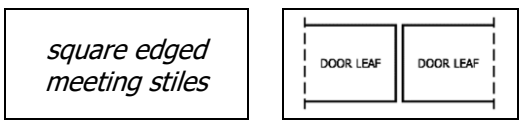
3.1 Door Assembly Configuration and sizes

The approved leaf sizes and configurations of door assemblies comprising FCS30 door leaves are outlined below:

The calculated envelopes of assessed leaf dimensions for each door assembly configuration covered by this Field of Application Report are given in the table below, based upon using the intumescent seal specifications shown in Section 3.8.

Configuration	Howdens Linear and Dordogne Maximum Approved Leaf Size
 • **Latched** • **Single Acting** • **Single Door** • **Without Overpanel**	**2040mm high x 838mm wide**
 • **Unlatched** • **Single Acting** • **Single Door** • **Without Overpanel**	**2040mm high x 838mm wide**
 • **Latched** • **Single Acting** • **Double Doors** *Note 1* • **Without Overpanel**	**2040mm high x 838mm wide**
 • **Unlatched** • **Single Acting** • **Double Doors** *Note 1* • **Without Overpanel**	**2040mm high x 838mm wide**

Note 1 *Single acting double leaf door assemblies must have square edged meeting stiles*



3.2 Door Leaf Specification

The Howdens Linear and Dordogne door range can use the following specification for their door leaves.

Door construction FCS30, from Forza Doors Limited, has a 44mm thick particleboard core (average density 630kg/m³). The construction is one single piece and does not incorporate internal framing. It is lipped and can include veneer facings and horizontal grooves across the face of the leaves.

The leaf construction, below, is based upon the details contained within the test evidence referenced in Appendix B, 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.

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.

Component		Material	Minimum Density	Dimensions
Core		FCS30	630kg/m³ *Note 2*	Minimum 44mm thick
Lippings *Note 3*	Square edges	Hardwood	640kg/m³ *Note 4*	6-28mm thick
Adhesive		Urea formaldehyde, melamine-urea formaldehyde, phenol formaldehyde or resorcinol, PU or PVA	–	–
Minimum leaf thickness		–	–	44mm *Note 7*
Optional additional decorative finishes		Timber veneer or decorative plastic based laminate (to leaf faces only)	–	Maximum 2mm thick
		Paint or varnish	–	Maximum 0.5mm thick

Note 2 *Average density with a ±10% variation permissible*
Unless otherwise tested, and approved by IFC, the core for each leaf shall be formed from one single piece. Gaps between the core and stiles/rails shall be kept to a minimum but shall not exceed 1.5mm at any edge.

Note 3 *Lippings to be fitted to;*

- *Vertical edges of leaves*
  or
- *Vertical edges and top edge of leaves, if preferred*
  or
- *All four edges of leaves, if preferred*

Note 4 *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 machining of the core/lipping, and bonding process must be such to ensure that no gaps occur between core and lipping.

Note 5 *The radius formed on the leading edge of single acting double doors shall not remove more than 2mm thickness of lippings on the door face.*

Adjustment of door sizes –

- Door leaves may be reduced in height by a maximum of 50mm, after fabrication, where material shall be removed from the bottom edge of the leaf only. Any reduction in height is subject to compliance with all other parameters herein (e.g. aperture margins).

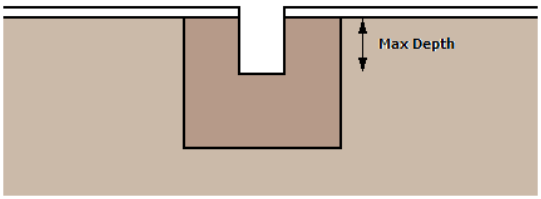
3.3 Feature Grooves in Door Leaves

The FCS30 door leaf is approved to include the following feature grooves in the surface of the leaf.

- Grooves may be rebated into hardwood timber inserts set flush with the face of the leaf. The hardwood insert shall have a density equal to or greater than that of the core into which it is fitted.

- Hardwood inserts shall be fitted into a rebate of maximum dimensions 10mm wide x 10mm deep or 22mm wide x 6mm deep and shall fully fill the rebate. The insert shall be fixed into place using non-thermally softening adhesive.

- These dimensions exclude the thickness of decorative facings of which are permitted to face the hardwood timber infill as shown in the figure below.



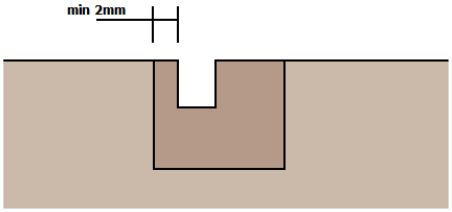
- Optional grooves may be cut into the hardwood insert with maximum permitted dimensions of 6mm wide x 4mm deep.

- Any permitted shape of groove may be incorporated into the hardwood insert subject to compliance with the permitted rebate width and depth.

- Alternative materials are permitted to be fitted within the groove in the hardwood insert. Any additional materials shall be selected and incorporated such that they do not unbalance the door leaf in ambient conditions.

- Groove locations and total area shall comply with the specific requirements of the door types approved with their use.

- Any groove or insert in the hardwood infill shall be positioned within it such that there is a minimum of 2mm hardwood at the rebated face of the door core, as detailed below;



Machined grooves from each face for timber infill

Timber infill fitted and calibrated. Infills can be fitted before or after the facing is applied

Maximum 6mm wide and 4mm depp decorative grooves machined into the timber infill

3.4 Frames

Howdens timber frames are approved for use with the door leaves approved herein shown in Figure 1 and 2.

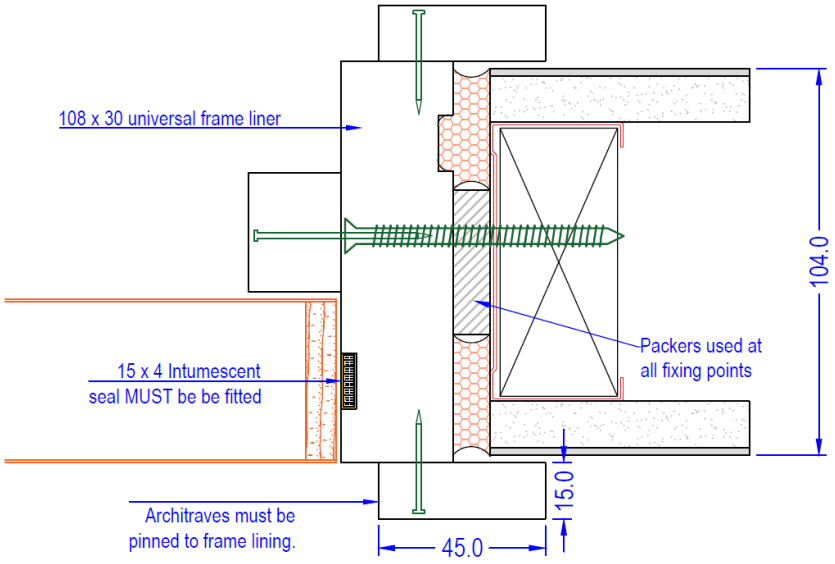


Figure 1 – Howdens Flat Liner Timber Door Frame

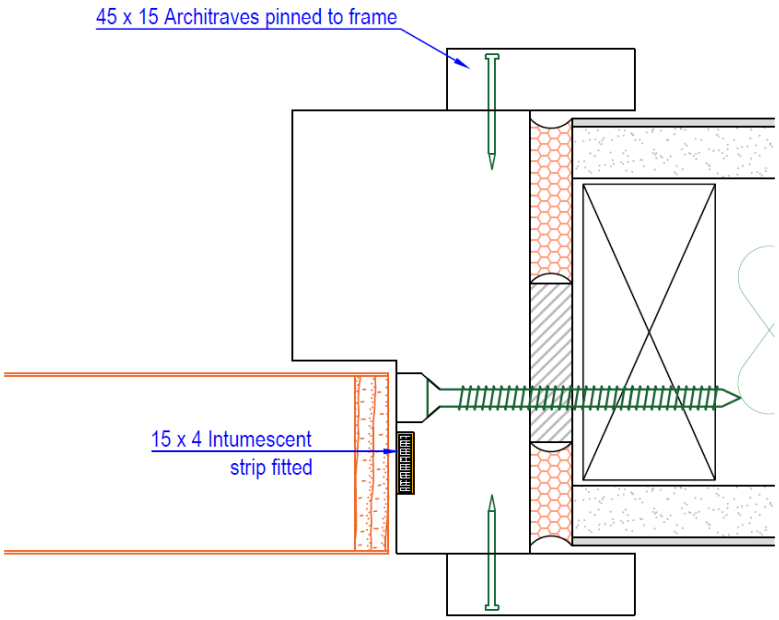


Figure 2 – Howdens Rebated Timber Door Frame

The following specification shall be read in associated with the above figures detailing the Howdens timber frames, to be used across the complete range of approved sizes and configurations outlined in Section 3.1, utilising the intumescent seal specification outlined in Section 3.8.

Frame Reference	Material	Minimum Density	Minimum Face Width	Minimum Frame Depth	Minimum Stop Dimensions
Howdens Flat Liner (Figure 1)	Softwood or hardwood	450kg/m³ *Note 6*	30mm, excluding stop *Note 7*	106mm	32mm deep x 25mm high *Note 8*
Howdens Rebated (Figure 2)	Softwood or hardwood	450kg/m³ *Note 6*	32mm, excluding stop *Note 7*	108mm	61mm deep x 25mm high *Note 8*

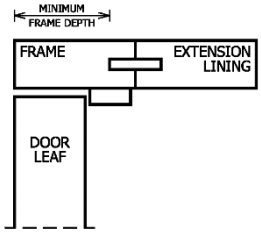
Note 6 *Timber must have a minimum measured density at 12% moisture content. The timber must be straight grained and of appropriate quality in accordance with BS EN 942: 2007. The moisture content shall be 11 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).*

Note 7 *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 8 *The door stop is to comprise the same material as the door frame and may be either planted and pinned using 50mm steel pins at nominally 300mm centres (for the Howdens Flat Liner Frame), or integral with the main door frame, providing the minimum frame thickness remains as stated (as per the Howdens Rebated Frame).*

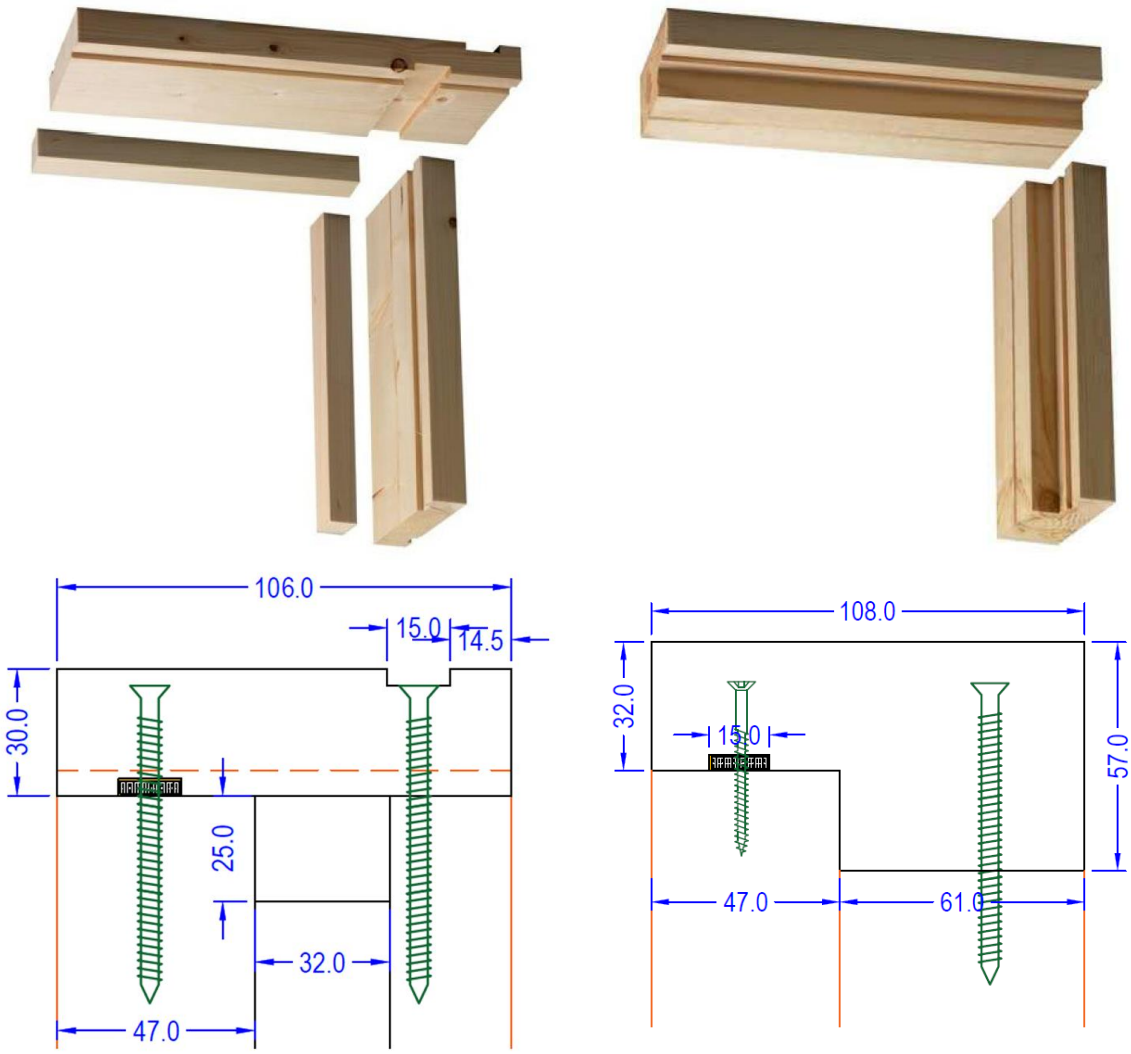
The overall frame depth may be increased by the use of extension linings, but the joint between the main frame and the extension lining must not intrude in the plane of the door thickness.

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



Head/jamb joint : Howdens Flat Liner (Figure 1) Butt Joint which is glued with a non-thermally softening adhesive and the head twice screwed to each jamb.

Howdens Rebated (Figure 2) Haunched or mitred joint which is glued with a non-thermally softening adhesive and the head twice screwed to each jamb



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).

3.5 Glazed Apertures

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

The codes used, below, for the glass types (e.g. GVXXX), are not those used by the respective manufactures, and are attributed solely by IFC for the purpose of identification and cross-referencing within this assessment.

GVH30 - 7mm thick Pyroguard Clear Laminate by Pyroguard UK Ltd

Note 9 *Expansion allowances 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.

SH01 10 x 5mm Closed cell foam tape by various suppliers, complete with 2mm thick x 10mm wide Interdens or Therm-A-Strip installed at the glazing pocket at all edges of the glass

3.5.3 Bead profiles and installation

The following approved bead sizes and profiles, and relevant fixings details may be used in association with the detailed glass ad glazing systems.

BH01 Dordogne Bead
15mm high square bead including 3mm x 3mm quirk, fitted using minimum 38mm long steel pins at 200mm centres and 50mm from corners. The beads are applied onto a bead of PVA between the base of the bead and aperture reveal. For use with GVH30 and SH01 only. See **Figure 3** below.

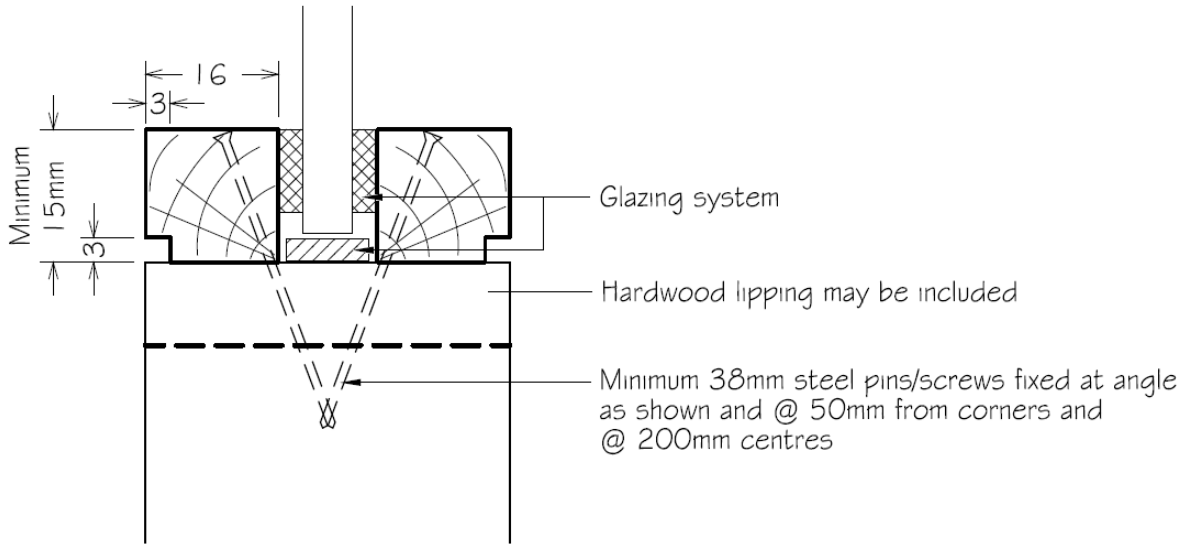


Figure 3 – Dordogne Bead and Associated Glazing System

BH02 Linear Bead

17mm high bevelled square bead with a 5mm x 3mm bolection, fitted using 38mm long steel pins at 200mm centres and 50mm from corners. For use with GVH30 and SH01 only. See **Figure 4** below.

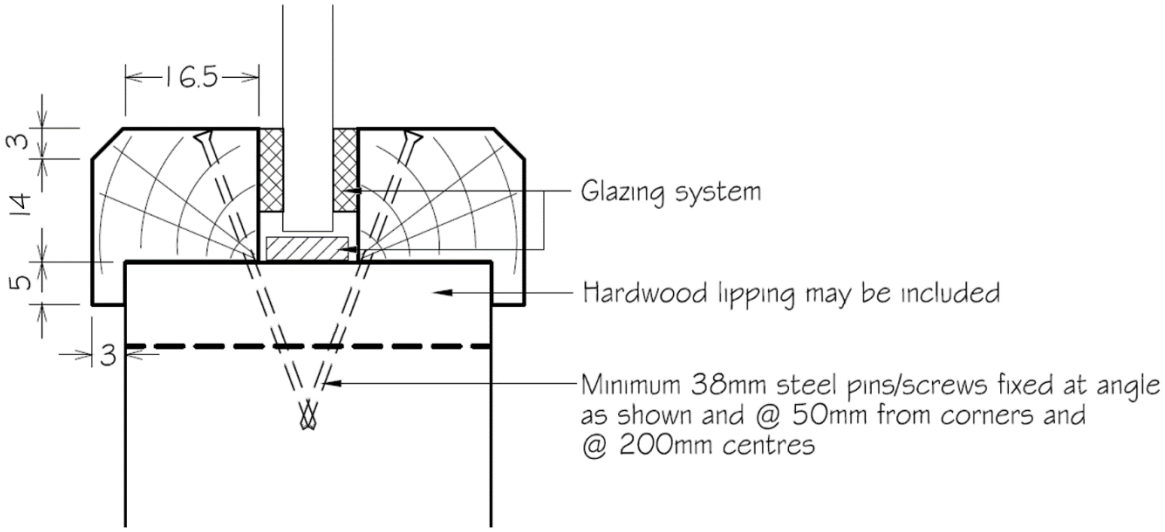


Figure 4 – Linear Bead and Associated Glazing System

Glass shall be installed such that an edge cover of 10mm is achieved at all edges.

Glazing beads formed from timber with 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 10 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).

3.5.4 Assessed aperture sizes

Apertures are created by cutting directly into the door slab, unless otherwise stated. Alternatively, where a quirk bead is employed, an 8–12mm thick hardwood lipping may be applied to the aperture perimeter, using the specification for lippings defined in Section 3.3.

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 apertures	-	1.3m²
Maximum vertical length of aperture	-	1840mm
Maximum horizontal length of aperture	-	915mm
Minimum distance from leaf edge (top)	-	100mm
Minimum distance from leaf edge (sides)	-	100mm
Minimum distance between apertures	-	100mm
Minimum distance from bottom of leaf	-	200mm

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

3.6 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 B, based upon the range of items tested. All hardware beyond the scope of the general guidance must have been subjected to fire resistance testing, and/or assessed by a notified body to support its use in doors of a similar construction to that proposed.

3.7 Installation, Supporting Construction and Door Edge Gaps

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

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

Note 10 *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 of the 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.

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 between the door and the frame or between meeting stiles should be 1.5-4mm. Gaps under the door(s) should not exceed 6mm for fire performance, although, if smoke control is also required, these gaps should only be 3mm, or smoke seals should be included in accordance with BS8214 (See also Section 3.9 regarding suitability of smoke seals).

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

The gap sealing between the supporting construction and timber frames should follow the recommendations given in Section 9.4 of BS8214: 2016, *'Timber-based fire door assemblies – Code of practice'*, using a product proven in such timber applications. Alternatively the following sealing system specifications may be used;

Fire stopping expanding foam products may be used to seal behind the timber frames as detailed herein, whereby they have been proven in such timber applications, and with reference to the width of the gap between the wall and frame.

Alternatively frame gaps, 5-25mm wide, may be sealed using Fire and Acoustic Seals Ltd's Fire Door Foam. Fire and Acoustic Seals Ltd's Fire Door Foam may be used to seal door frame gaps when installed in accordance with the current issue of IFC's Engineering Assessment Report PAR/18385/01 'Engineering Assessment of Door Frame Installation Using the Fire and Acoustic Seals Ltd 'Fire Door Foam' for FD30 and FD60 Timber and Composite Door Assemblies'. The installation of architraves when using Fire and Acoustic Seals Ltd's Fire Door Foam is optional for the installation of door assemblies using softwood or hardwood frames, in accordance with this report. Specifications detailed within the latest revision of PAR/18385/01, that differ from those herein, shall not be taken to provide approval and all specifications detailed herein shall take priority.

3.8 Intumescent Seals

Graphite based, Palusol or Lorient 617, pvc encased, seals manufactured by Mann McGowan Fabrications Ltd, Lorient Polyproducts Ltd, Intumescent Seals Ltd, Pyroplex, Sealed Tight Solutions or Astroflame (Fire Seals) Ltd 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.

If a Palusol specification is chosen, the seal(s) at the head of double door assemblies must be fitted into the frame reveal, or overpanel, as appropriate. Where the specification is a multiple seal arrangement, it is acceptable to use Palusol, subject to maintaining at least one strip in the frame/overpanel to be continuous across the meeting stile joint.

The intumescent seal specifications, widths, and positions are shown in the table below, based upon tested details.

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

Location	Size and Position
Stiles/jambs	1no 15 x 4mm seal centrally fitted in the frame reveal or leaf edge
Head	1no 15 x 4mm seal fitted centrally in the frame reveal or leaf edge
Flush meeting stiles	1no 20 x 4mm seal centrally fitted in one leaf edge only or 2no 10 x 4mm seals fitted 10mm apart centrally in one leaf edge only

3.9 Ambient Temperature Smoke Seals

Smoke seals, or combined intumescent/smoke seals (using the specification approved in Section 3.9), 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 Section 3.9, 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 Howdens Linear and Dordogne door assemblies, comprising FCS30 leaves from Forza Doors Ltd 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 approval, herein, may be installed in either orientation and so be exposed to fire conditions from either face.

5. DECLARATION BY THE APPLICANT

Reference: IFC Field of Application Report **PAR/21384/01**

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 from 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: _____

Position: _____

Company: Forza Doors Ltd

Date: _____

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 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 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.

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.

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 assessment is valid initially 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 October 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.

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APPENDIX A

General Guidance on Installation of Hardware

A.1 Hinges

A.1.1 Knuckle Hinges

The following hinge has been included in fire resistance testing referenced herein, and proven to provide a positive contribution in achieving 30 minutes fire resistance performance;

- Eclipse 4" ball bearing Grade 11 (SSS,PSS Brass) (Ref: Frisco 14877)

A variety of hinges have been successfully tested with the FCS30 door leaves but other hinges may be used, subject to compliance with the specifications below:

All hinges shall comply with the following specifications:

Element		Specification	
Hinge type		Fixed pin, washered butt, ball bearing butt, lift-off type or journal supported.	
Blade height		89 - 110mm	
Blade width		30 - 36mm	
Blade thickness		2.5 - 3.5mm	
Material		Brass, Phosphor Bronze, Steel or Stainless Steel. (Aluminium, Nylon or 'Mazac' are not permitted.) No combustible or thermally softening materials to be included.	
Fixings		Steel screws, as recommended by the hinge manufacturers, but in no case smaller than No 8 (3.8mm diameter) x 32mm long and having thread for a minimum of 2/3^{rds} of their 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.	
Minimum number		3no (1½ pairs) per leaf on leaves up to 2040mm high	
Positions	3no.	Top	120 - 180mm 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	200 - 250mm up from the bottom of the leaf to the bottom of the hinge blade

Intumescent protection	Howden Ref ITS0030 Intumescent sheet 0.8mm (pack of six) (by Firestop Manufacturing Ltd) or None required
Interruption of intumescent seals	Hinges fully interrupt the intumescent seals.

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.

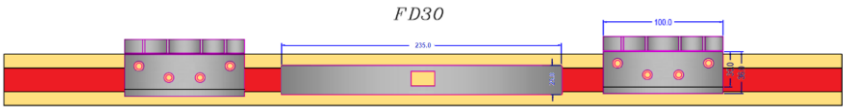
A.2 Mortice Latches/Locks

The following mortice latches/locks has been included in fire resistance testing referenced herein, and proven to provide a positive contribution in achieving 30 minutes fire resistance performance;

- Howdens Ref LAL0075 (Heavy duty tabular latch (by Hoppe (UK) Ltd))
- Howdens Ref LAL0890 (Frisco 63mm tubular latch) (by Frisco (UK Sales) Ltd)

Alternative mortice latches/locks are permitted to be used with the door assemblies approved herein but should comply with the following specifications:

Element	**Specification**
Latch/lock type	Mortice latches, tubular mortice latches, sashlocks and deadlocks
Maximum forend height	235mm x 24mm wide or 202mm x 27mm wide
Maximum strike plate height	235mm x 24mm wide or 152mm x 29mm wide
Maximum latch/lock body dimensions	165mm high x 100mm wide x 20mm 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
Positions	Centred at 1000mm (± 200mm) above the bottom of the door leaf
Intumescent protection	Any forends/keeps longer than 130mm or where they are fitted at the meeting stiles of double door assemblies shall be bedded on 1mm thick low-pressure forming intumescent material or Howdens 0.8mm thick graphite based kit (reference ITS0050)(by Firestop Manufacturing Ltd), unless at least 5mm of perimeter intumescent strip runs continuously past the keep

Interruption of intumescent seals	The intumescent seals are fully interrupted by the hardware as shown below. 

Over-morticing is to be avoided; mortices shall be as tight as possible to the latch. If gaps occur around the case (not exceeding 2mm), then these must be made good with intumescent mastic or sheet material. Holes for spindles or cylinders should be kept as small as is compatible with the operation of the hardware.

Where glazing apertures and/or recessed areas 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 58mm 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.

The following Howdens mortise latches/locks are supplied within the permitted hardware parameters;

- Howdens Ref: FRP0300 63mm 5 lever sashlock (Frisco (UK Sales) Ltd)
- Howdens Ref: FRP0305 76mm euro profile sashlock (Frisco (UK Sales) Ltd)
- Howdens Ref: LAL0076 3" tubular mortice latch (Hoppe UK Ltd)
- Howdens Ref: LAL0891 76mm tubular latch (Frisco (UK Sales) Ltd)

A.3 Door Closers

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 as such with an appropriate sign which complies with the BS 5499 series of standards.

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

The following door closers have demonstrated their contribution to achieving 30 minutes fire resistance performance, in the evidence detailed in Appendix B;

- Eclipse 83 series by Frisco (UK) Sales Ltd

A variety of other closers may be used, subject to compliance with the specifications below.

Face-fixed overhead door closers (and accessories such as soffit brackets) that have been tested, assessed or otherwise approved for use on unlatched FD30 cellulosic door leaves in timber frames 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 a non-insulating 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.

The following Howdens closers are supplied within the permitted hardware parameters;

- Howdens Ref: DCL0019, Eclipse 73 face fixed closer
- Howdens Ref: DCL0036, Eclipse 93 face fixed closer

A.4 Bolts

Some of the tests referenced in this report include double leaf doors with flush bolts fitted, but disengaged; bolts are not, therefore, necessary for the doors to achieve 30 minutes fire resistance (subject to an appropriate self-closing device being fitted). The extra restraint provided by flush bolts, in association with latches, does, however, have a beneficial effect on leaf size envelopes.

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

- Maximum size of flush bolt is 457mm long x 20mm wide and 19mm deep;
- The head of the leaf and/or frame should contain a minimum 5mm width of intumescent material local to the bolt/keep plate;
- The body of the bolt should be bedded on non-pressure forming intumescent material at least 1mm thick;
- Edge fixed bolts shall be positioned centrally in the leaf thickness (the intumescent seals defined in Section 3.8 shall be fitted in the active leaf);
- There should be a minimum of 5mm width of intumescent strip in the door edge, past the body of the bolt;
- Flush bolts are not approved on doors with rebated overpanels, since this will clash with the rebate alignment. Surface mounted bolts may be used; see below;
- Face fixed flush bolts shall be fixed so that there is a minimum of 50mm between the bolt and the door edge;
- Surface mounted barrel bolts shall not exceed 400mm in length, but there is no limitation on their width. Screws for fixing bolts must be at least 25mm long and have thread for the full screw length.

A.5 Non-Essential Hardware Items

A.5.1 Letter plates

Letter plates are permitted only for use on flush leaves (those without vision panels) and must comply with the following;

These must be tested, assessed or otherwise approved for use in 44mm thick (or less) cellulosic FD30 doors. They must be fitted in accordance with the manufacturer's instructions, including all intumescent liners and flaps. Plates must not be less than 100mm away from the leaf edge, or any other aperture. Positioning above floor level will depend upon the test evidence for the letter plate.

Note A1 *The installation of such items in a door leaf may compromise its performance as a smoke control door assembly.*

A.5.2 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.

A.5.3 Pull handles

These may be fixed to the face of door assemblies, provided that the fixing points are no greater than 800mm apart. Pull handles that are fixed through the leaf should use clearance holes as close fitting as possible to the bolt; and fixings passing through the leaf shall be steel. Handles/fixings shall be at least 40mm away from the door edge, and from any aperture.

A.5.4 Security viewers

These may be fixed into the proposed doors, subject to the following limitations, unless specific fire test evidence exists to the contrary;

- Permitted only for use on flush leaves (those without vision panels)
- Viewers must not exceed 15mm outer diameter, and be made from brass or steel;
- Holes bored through the door must be no greater than 1mm larger than the bore of the viewer and must be lined with a non-pressure forming intumescent mastic/sheet;
- The viewer must include an effective shutter/cover plate.
- Viewers shall be at least 40mm away from the door edge, and from any aperture.

A.5.5 Dropseals

The following drop seal can be fitted into this design of fire resisting door leaf but must be positioned centrally within the door thickness without additional intumescent protection.

- IS8001 seal (from Lorient Polyproducts Ltd)
- NOR810S seal (from Norseal)
- ST422 seal (from Sealed Tight Solutions Ltd)

Care must be taken to ensure that these items do not interrupt the intumescent strips in door edges.

A.5.6 Lever Handles

Element	**Specification**
Material	Metal/alloy – should not contain any flammable materials
Specific Installation Requirements	Holes through the leaf shall be as close fitting as possible to the spindles and/or fixing screws; which must be steel. When fitting lever handles to glazed doors, the screws to fix handles to the effective stile/rail of the door must be at least 35mm away from the visible edge of the glazing 'bead', (whether integral or loose); to avoid causing damage to the concealed interface at the panel perimeter
Intumescent protection	None required
Additional Notes	This generic approval only applies to traditional 'mechanical' lever handles and does not apply to electro-mechanical handlesets (with security functions)

APPENDIX B

Summary of Primary Fire Test Evidence

Test/Assessment Report	Configuration Tested	Leaf Size Tested	Integrity
Current version of IFC Field of Application Report PAR/10321/01	Various		30 minutes
Current version of IFC Field of Application Report IFCA/08037	Various		30 minutes

Summary of Secondary Fire Test Evidence

Summary of Fire Test Evidence for Forza Doors Ltd

Test/Assessment Report	Configuration Tested	Leaf Size Tested	Integrity
CFR1901301	ULSASD	2100 x 930 x 54mm	54 minutes
CFR1901311_1	LSASD	2400 x 930 x 54mm	59 minutes
CFR1901311_2 Revision 1	LSASD	2400 x 930 x 54mm	61 minutes
CFR2009171 Door A	LSASD	2040 x 923 x 44mm	29 minutes

Summary of Fire Test Evidence for Door Frame Installation from Fire and Acoustic Seals Ltd

Test/Assessment Report	Configuration Tested	Leaf Size Tested	Integrity
Current version of IFC Field of Application Report PAR/1885/01	Various		30 minutes

Summary of Fire Test Evidence for 7mm Pyroguard Glass from Pyroguard UK Ltd

Test/Assessment Report	Configuration Tested	Leaf Size Tested	Integrity
WFRC No. 138252/B	ULSASD	2040mm x 826mm x 44mm	33 minutes
RF10120	ULSASD	2040mm x 915mm x 44mm	32 minutes
WR305700	Indicative panel	1490mm x 920mm x 44mm	33 minutes

Summary of Fire Test Evidence for Hardware

Test/Assessment Report	Configuration Tested	Leaf Size Tested	Integrity
WF164687 Door A *(Howdens Ref LAL0075)*	LSASD	2037mm high x 1007mm wide x 44mm thick	35 minutes
WF353453 Door A *(Eclipse 83 Closer)*	ULSASD	2038mm high x 932mm wide x 44mm thick	37 minutes
WF167471 Door A *(Howdens FRP0301 and Eclipse 4"Ball bearing hinge)*	LSASD	2045mm high x 940m wide x 44mm thick	35 minutes

Summary of Fire Test Evidence for Astroflame (Fire Seals) Ltd Seals

Test/Assessment Report	Configuration Tested	Leaf Size Tested	Integrity
WF 345074/A Issue 2 – Door A	ULSASD	2040mm high x 932mm wide x 44mm thick	34 minutes
Chilt/RF11033B	ULSADD	2040mm high x 826mm + 300mm x 44mm thick	38 minutes

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

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.

Some of the test evidence is not owned by Forza Doors Ltd; but IFC have written permission from the test sponsor, to use the evidence in support of this assessment.

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