

# Field of Application Report

IFC Report PAR/17082/01 Revision A

Fire Resistance Standard: BS476: Part 22: 1987



Prepared for:

Falcon Timber Ltd

Assessed Product/System:

FD60 and FD90 Ramkor 90 Plus Timber Door Leaves Installed in Timber Frames

Assessed Performance:

Up to 90 Minutes Fire Resistance

Issue Date

December 2022

Expiry Date

December 2027

Confidence in Fire Safety  
[www.kiwa.co.uk](http://www.kiwa.co.uk)

**International Fire Consultants Ltd**

Ground Floor, Suite A, Building 2  
Bear Brook Office Park  
Walton Street  
Aylesbury, Buckinghamshire  
HP21 7GQ

+44 (0)1844 275500  
[uk.firesafety@kiwa.com](mailto:uk.firesafety@kiwa.com)

Partner  
for  
Progress

## International Fire Consultants Ltd

International Fire Consultants is part of the **Kiwa UK Group**. The company is a specialist engineering consultancy delivering independent, honest and practical fire safety solutions to professionals across the built environment. The sought after fire safety advice protects life, preserves property and safeguards business continuity.

International Fire Consultants was established in 1985 to provide high quality and impartial technical expertise concerning fire safety. Since then the team of highly qualified Fire Engineers and Fire Safety Professionals have continued to deliver robust, innovative and cost-effective fire safety solutions, including Assessments, Designs and Inspections.

International Fire Consultants are able to lend their insight and practical expertise for: Fire Safety Engineering, Fire Risk Management, Product Evaluation, Fire Life Safety Systems, Expert Witness Testimony and Fire Protection Training, to developments of all sizes and complexities; from residential, education and healthcare structures to sporting venues, airports and iconic heritage buildings, such as historical royal palaces and stately homes.

Recognised internationally as the go-to professionals in all aspects of fire safety, International Fire Consultants is one of the world's leading fire engineering and solution providers, trusted by many of the most prestigious construction firms, architects and estate owners.

**HEAD OFFICE/CORRESPONDENCE ADDRESS:**

Ground Floor, Suite A, Building 2  
Bear Brook Office Park  
Walton Street  
Aylesbury, Buckinghamshire  
HP21 7GQ

**REGISTERED ADDRESS:**

International Fire Consultants Limited  
UK Group  
Kiwa House  
Malvern View Business Park  
Stella Way, Bishops Cleeve  
Cheltenham  
GL52 7DQ

+44 (0)1844 275500  
[uk.firesafety@kiwa.com](mailto:uk.firesafety@kiwa.com)

Registered No: 2194010

### Private and Confidential

This report should not be manipulated, abridged or otherwise presented without the written consent of International Fire Consultants.

<b>Report Reference Number:</b>	IFC Report PAR/17082/01 Revision A
<b>Prepared on behalf of:</b>	Falcon Timber Ltd
<b>Project:</b>	The Enterprise Building, Ferry Road, Port of Tilbury, RM18 7HL
<b>Issue Date:</b>	December 2022
<b>Expiry Date:</b>	December 2027
<b>Ref ID:</b>	23836

## Issue and Amendment Record

REV	DATE	AUTHOR	REVIEW	SECTION	AMENDMENTS
-	July 2017	CS/WL	DC	-	-
A	December 2022	WL	DC	-	Review, revalidation and updating into current report format.

## Contents

1. Introduction	5
2. Test Evidence	6
3. Scope of Approval	7
3.1 Door Assembly Configuration	7
3.2 Maximum Assessable Door Leaf Sizes	7
3.3 Door Leaf Specification	7
3.4 Frames	10
3.5 Glazed Apertures	12
3.6 Hardware	13
3.7 Installation, Supporting Construction and Door Edge Gaps	14
3.8 Intumescent Seals	15
3.9 Ambient Temperature Smoke Seals	15
4. Conclusion	16
5. Declaration by the Applicant	17
6. Limitations	18
7. Validity	20
Appendix A	21
Figures PAR/17082/01A:A01 to A02	21
Appendix B	24
B.1 Hinges	24
B.2 Mortice Latches/Locks	25
B.3 Door Closers	25
B.4 Non-Essential Hardware Items	26
B.4.1 Push Plates, Kick Plates etc	26
B.4.2 Pull Handles	26
B.4.3 Lever Handles	26
Appendix C	27
Summary of Fire Test Evidence	27

## 1. Introduction

This report has been prepared by International Fire Consultants Ltd (IFC), on the instruction of Falcon Timber Ltd, to define the Field of Application for timber based Ramkor 90 Plus door assemblies, installed in timber frames, that are required to provide up to 90 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 Fire Performance of Construction Products Based on Fire Test Evidence, 2021, 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 up to a 90 minute integrity rating, if tested in accordance with the method and criteria of BS476: Part 22: 1987. The omission of information on any components or manufacturing methods does not imply a lack of approval of those details but these would need to be the subject of a separate analysis. Only variations specifically mentioned are supported by this assessment document, and all other aspects must otherwise be as proven in tests summarised herein.

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

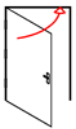
The test evidence used to support this Field of Application Report is summarised in Appendix C of this report.

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

### 3. Scope of Approval

#### 3.1 Door Assembly Configuration

The approved leaf sizes and configurations of door assemblies comprising Ramkor 90 Plus door leaves are outlined below:

CONFIGURATION		ENVELOPE OF APPROVED LEAF SIZES	
		EXPOSED INTUEMSCENT SPECIFICATION	CONCEALED INTUMESCNT SPECIFICATION
	<ul style="list-style-type: none"> <li>• Latched</li> <li>• Single Acting</li> <li>• Single Door</li> <li>• Without Overpanel</li> </ul>	Figure PAR/17082/01A:A01 in Appendix A	Figure PAR/17082/01A:A02 in Appendix A

#### 3.2 Maximum Assessable Door Leaf Sizes

The calculated envelopes of assessed leaf dimensions for each door assembly configuration covered by this field of application report are given in Appendix A based upon use of the appropriate intumescent seal specifications.

#### 3.3 Door Leaf Specification

The Ramkor 90 Plus door leaf construction comprises of the constructional specifications given below.

The leaf construction is based upon the test evidence detailed in Appendix C and defines variations and tolerances where it is considered that these will not adversely affect overall fire resistance. 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		Ramkor Particleboard	490kg/m <sup>3</sup> Note 1	Minimum 64mm thick
LIPPINGS Note 2	SQUARE EDGES – Exposed Intumescent Specification	Hardwood	640kg/m <sup>3</sup> Note 3	8–10mm thick
	SQUARE EDGES – Concealed Intumescent Specification			5mm thick Note 4
ADHESIVE	CORE	Polyurethane	-	-
MINIMUM LEAF THICKNESS		-	-	64mm
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 1 Average density with a ±10% variation permissible.

Note 2 Lippings to be fitted to all four edges of leaf.

Note 3 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 4 Lippings of 5mm must be fitted with the intumescent concealed in the rear of the lippings. See Appendix A for concealed intumescent specification.

Note 5 To achieve wider leaf sizes the Ramkor 90 plus core may incorporate a full height extension fixed via a joint in the core, as shown in Figure 1. The joint is to be no more than 160mm from the hanging edge of the leaf, and to be fixed using a non-thermally softening adhesive. Overall leaf sizes must still remain within those defined in this report.

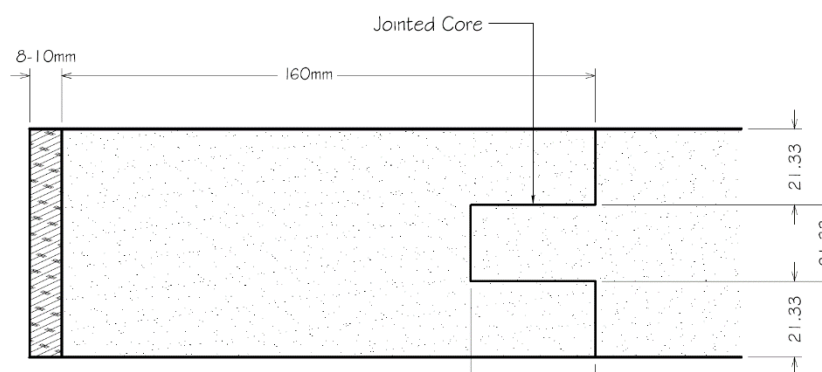


Figure 1 - Vertical Core Joint Detail



Note 6 To achieve a greater height in leaf size the Ramkor 90 plus core may incorporate a full width extension fixed via a joint in the core, at the base of the leaf, as shown in Figure 2. The joint is to be no more than 160mm from the bottom edge of the leaf, and to be fixed using a non-thermally softening adhesive. Overall leaf sizes must still remain within those defined in this report.

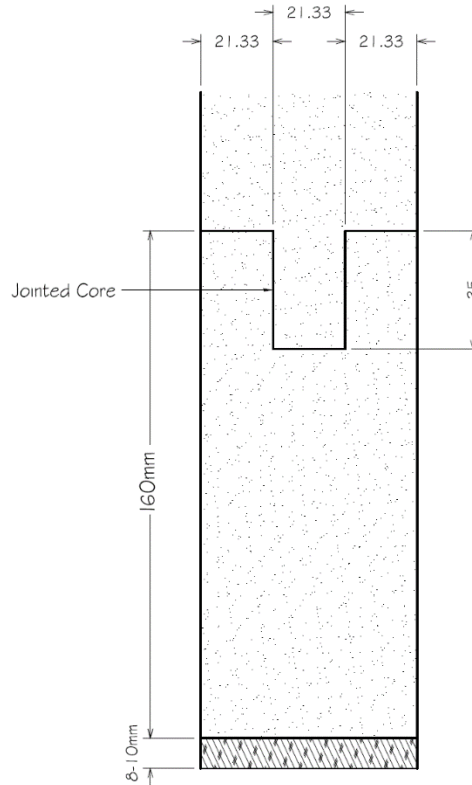


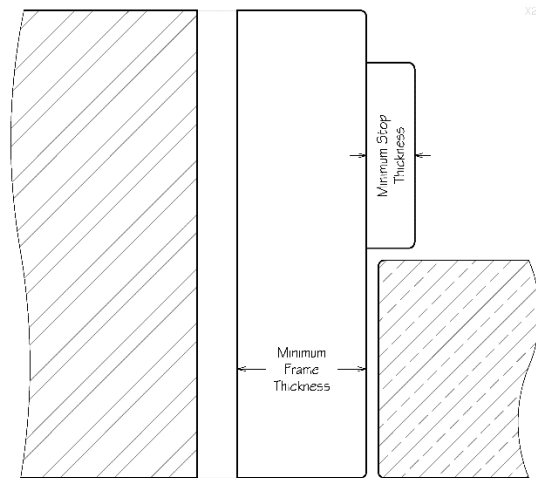
Figure 2 - Horizontal Core Joint Detail

### Adjustment of door sizes

- Where door edges are not lipped, there is no limit on reduction in door height, after fabrication; subject to compliance with all other parameters herein (e.g. aperture margins).
- Where assemblies include the exposed intumescent specification, and are lipped with square edges, the leaf may be trimmed from each 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 in the Table above.

### 3.4 Frames

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



MATERIAL	MINIMUM DENSITY	MINIMUM FRAME THICKNESS		MINIMUM FRAME DEPTH	MINIMUM STOP THICKNESS
		Single Acting			
Hardwood (Excluding beech)	640g/m <sup>3</sup> Note 7	45mm, excluding stop <sup>Note 8</sup>		100mm	12mm <sup>Note 9</sup>

**Note 7** Timber must have a minimum measured density at 12% moisture content. The timber must be straight grained and of appropriate quality in accordance with BS EN 942: 2007. The moisture content shall be 10 ± 2% for UK market, (or to suit internal joinery moisture content specification of export countries).

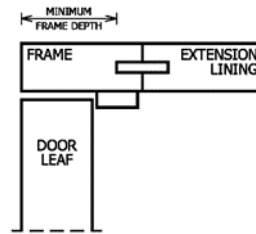
**Note 8** These dimensions assume that the rear of the frame is protected by the adjacent wall, (and firestopping), and that the frame does not project out from the wall. See Section 3.7 regarding projecting frames and shadow gaps.

**Note 8** In assemblies where Pyroplex expanding foam is used to fill the cavity between the rear of the frame and the supporting construction the frame depth must be a minimum of 140mm. See Section 3.7 for full gap sealing details.

**Note 9** The door stop is to comprise the same material as the door frame and may be either planted and pinned using 40mm steel pins, or integral with the main door frame, providing the minimum frame thickness remains as stated.

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

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



<p><b>HEAD/JAMB JOINT</b></p>	<p>Mortice and tenon, or half-lapped joint, head twice screwed to each jamb <u>or</u> mitred joint which is glued with a non-thermally softening adhesive and the head twice screwed to each jamb.</p>		
	<p><b>MORTICE AND TENON JOINT</b></p>	<p><b>HALF-LAPPED JOINT</b></p>	<p><b>MITRED JOINT</b></p>
<p><b>ARCHITRAVES</b></p>	<p><b>For up to 60 minutes fire resistance performance:</b>                  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 3.7 regarding wall/frame gaps).</p> <p><b>For up to 90 minutes fire resistance performance:</b>                  Hardwood (excluding beech) architraves are required to be installed at both faces of the door assembly. Architraves should be mechanically fixed in place and have minimum dimensions of;</p> <ul style="list-style-type: none"> <li>• 50 x 10mm thick for use with door frames that are a minimum of 140mm deep.</li> <li>• 50 x 15mm thick for use of door frames less than 140mm thick.</li> </ul> <p>Adequate fire stopping is required with the use of the above architraves. (See Section 3.7 regarding wall/frame gaps).</p>		

### 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 3.5.2, 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 manufactures, and are attributed solely by IFC for the purpose of identification and cross-referencing within this assessment.

REF	GLASS	MANUFACTURER
G1	9mm thick Firelite	Southern Ceramics

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

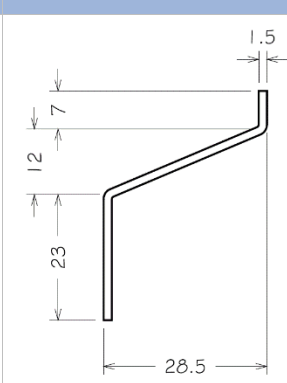
#### 3.5.2 Glazing Materials and Systems

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.

REF	SYSTEM	APPROVED GLASS
S1	5mm thick Sealmaster FG liner glazing tape and ISL 60 Plus 65 x 2mm aperture liner	G1

#### 3.5.3 Bead Profiles and Installation

The approved bead sizes and profiles, and relevant fixing details, which also define any limitations upon options of interchangeability with glass types, glazing systems and bead profiles.

REF	SYSTEM	APPROVED GLAZING SYSTEM	FIGURE
B1	Ramglaze 90TM, 1.5mm thick galvanised steel glazing bead profile	S1	

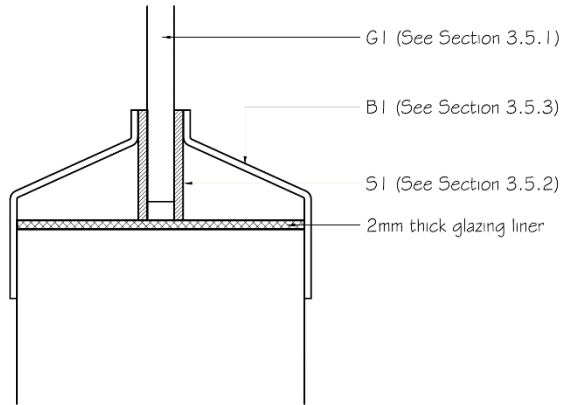


Figure 3 - Glazing System G1, S1 and B1

### 3.5.4 Assessed Aperture Sizes

Apertures are created by cutting directly into the door slab, with beads fitted directly to the particleboard ‘core’.

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

		UP TO 90 MINUTES
Maximum area of apertures	-	0.23m <sup>2</sup>
Maximum vertical length of aperture	-	745mm
Maximum horizontal length of aperture	-	400mm
Minimum distance from leaf edge (top)	-	230mm
Minimum distance from leaf edge (sides)	-	230mm
Minimum distance from bottom of leaf	-	250mm

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

## 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 door assemblies where the leaf construction and thickness, and all details at the frame interface, are similar to those proposed herein.

### 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.

The supporting construction may be blockwork, brickwork or concrete walls, but shall be of a type that has been tested or assessed to provide in excess of the required 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.

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 (such features could, however, be assessed on an individual basis).

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

When the fire resistance of the door assemblies is required to be up to 60 minutes, 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.

For door assemblies with a required fire resistance of 90 minutes two sealing systems have been tested and demonstrated their positive contribution to the fire resistance of the door assemblies. Both of these sealing systems require architraves to be installed, as detailed in Section 3.4, and shall be one of the following options.

- Option 1: For minimum frame depths of 140mm, Pyroplex expanding foam may be used to fully fill the cavity providing that the gap is not larger than the tested 10mm. The foam must be capped with Pyroplex intumescent mastic at both faces.
- Option 2: The gap sealing between the supporting construction and timber frame should be filled with tightly packed mineral rock fibre for the full depth of the frame and capped with intumescent mastic. The mineral rock fibre and intumescent mastic shall be of types proven in such timber applications. The maximum gap width shall be 10mm.

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

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

### 3.8 Intumescent Seals

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

It is recommended that the intumescent seals are manufactured or supplied by members of the Intumescent 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.

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

### 3.9 Ambient Temperature Smoke Seals

Smoke seals, or combined intumescent/smoke seals (using the specification approved in Section 3.8), 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  $3\text{m}^3/\text{m}/\text{hr}$  at 25Pa may be used in conjunction with the proposed door assemblies to provide smoke control.

The orientation of the seals, door edge gaps, degree of hardware interruption, and leaf configuration, will need to be as tested in accordance with BS EN 1634-3: 2004 (ambient temperature) or BS476: Part 31: Section 31.1: 1983 to achieve the desired level of smoke control, unless these conflict with the intumescent seal widths and positions as described in Appendix A, 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 Ramkor 90 Plus door leaves installed in timber frames were manufactured and installed in accordance with 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 up to 90 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

Kiwa IFC Engineering Assessment Report	PAR/17082/01 Revision A
Client	Falcon Timber Ltd
Project Address	The Enterprise Building, Ferry Road, Port of Tilbury, RM18 7HL
<p>We the undersigned confirm that we have read and complied with the obligations placed on us by the</p>	
<p><b>Passive Fire Protection Forum (PFPF) - Industry Standard Procedure 2021</b>  <b>‘Guide to Undertaking Technical Assessments of Fire Performance of Construction Products Based on Fire Test Evidence’</b></p>	
<ul style="list-style-type: none"> <li>We confirm that any changes which are subject of this assessment have not to our knowledge been tested to the standard against which this assessment has been made.</li> <li>We agree to withdraw this assessment from circulation should the component or element of structure, or any of its component parts be the subject of a failed fire resistance test to the standard against which this assessment is being made.</li> <li>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.</li> <li>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 the assessing authority to withdraw the assessment.</li> </ul>	
Signature	
Name	
Position	
Company Name	
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.

It is the responsibility of others to establish whether the proposed product meets any other relevant requirements, including any other requirements for fire performance and life safety, as defined in documents such as the Building Regulations, and the Fire Strategy/Risk Assessment for the project.

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 Fire Performance of Construction Products Based on Fire Test Evidence, 2021, 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 Fire Performance of Construction Products Based on Fire Test Evidence, 2021, 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 is not intended to be a complete specification for the proposed assemblies and it is the responsibility of others to ensure that the assemblies are suitable for the intended purpose; whilst incorporating the requirements of this report. Further, the assemblies must be manufactured/installed by experienced/trained personnel using appropriate and established working practices/techniques.

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

Where the assessed constructions have not been subject to an on-site audit by International Fire Consultants Ltd, it is the responsibility of anyone using this report to confirm that all aspects of the assemblies fully comply with the descriptions and limitations, herein.

Any materials specified in this report have been selected and judged primarily on their fire performance. IFC do not claim expertise in areas other than fire safety. Whilst observing all possible care in the specification of solutions, we would draw the reader's attention to the fact that during the construction and procurement process, the materials used should be subjected to more general examination regarding the wider Health and Safety, and CoSHH Regulations. Designers, manufacturers and installers are reminded of their responsibilities under the CDM Regulations; but particularly with regard to installation and maintenance of heavy or inaccessible items.

This assessment considers the fire resistance performance of the door assemblies when tested with the leaves in the closed position, within the frame reveal; either retained by the latch, or self-closing device, or locked shut, as applicable. The door assemblies will only provide the assessed fire performance when in a similar configuration; and it is the responsibility of the building occupants/owner to ensure that this is the case.

This Report is provided to the sponsor on the basis that it is a professional independent engineering 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. For this reason, anyone using this document after November 2027 should confirm its ongoing validity.

This Field of Application Report is not valid unless it incorporates the declaration by the applicant given in Section 6 duly signed by the applicant.

Prepared by:

A handwritten signature in black ink, appearing to read "Will Lightfoot".

**Will Lightfoot**

BEng (Hons) MSc AIFireE

**Senior Fire Safety Engineer**

International Fire Consultants Ltd.

*(part of the Kiwa UK Group)*

Reviewed by:

A handwritten signature in black ink, appearing to read "David Cooper".

**David Cooper**

BEng (Hons) AIMMM AIFireE ACABE

**Director of Product Evaluation**

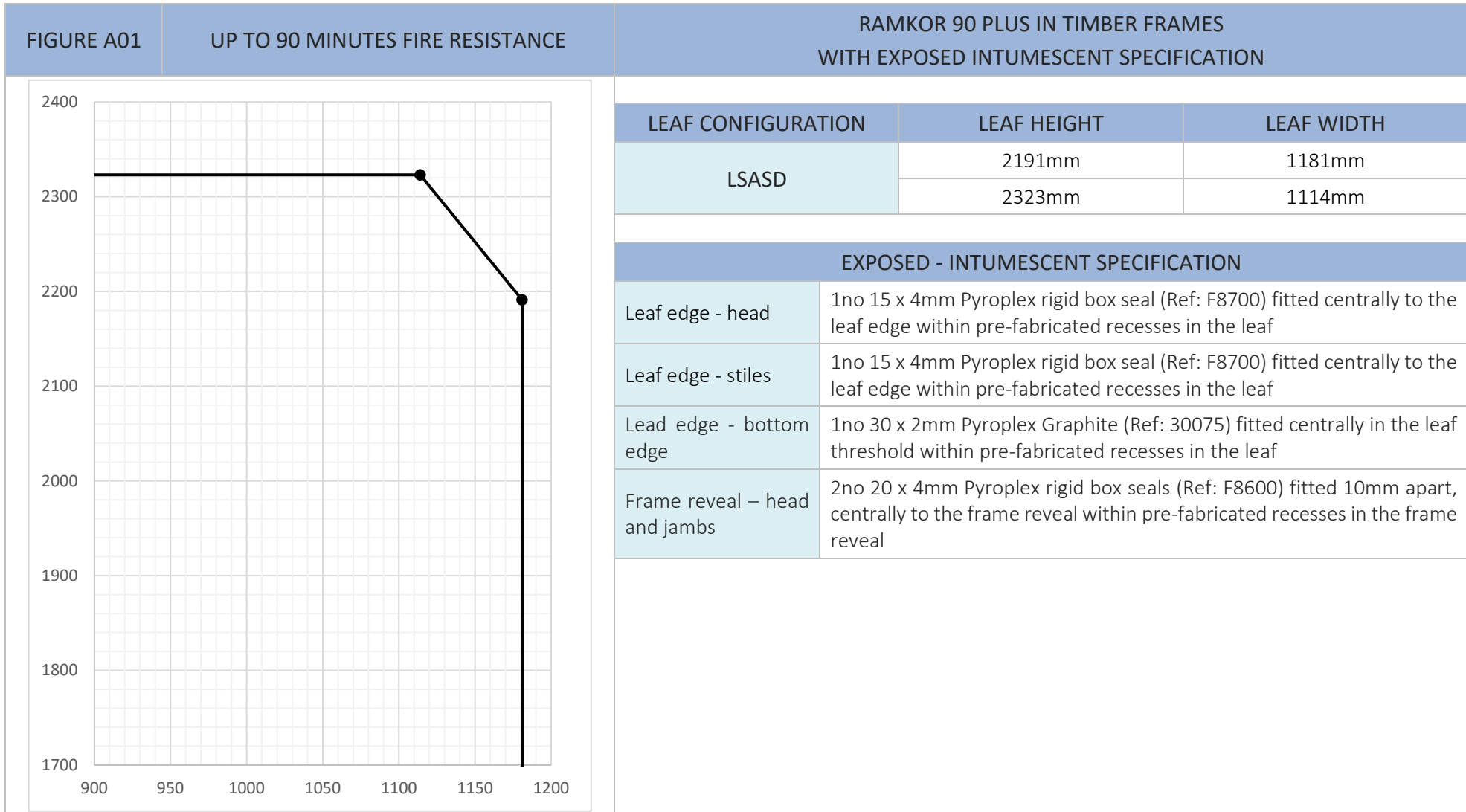
International Fire Consultants Ltd.

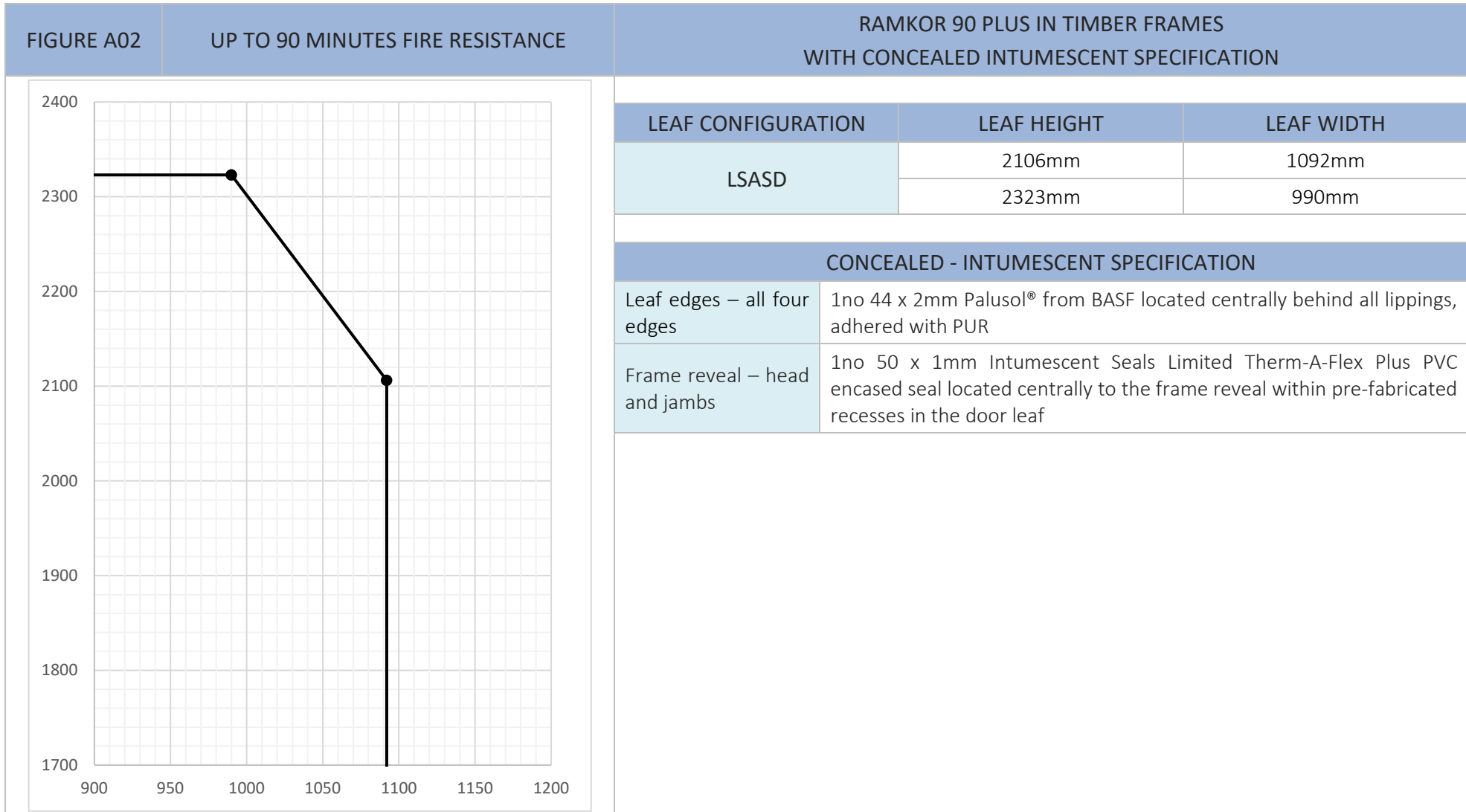
*(part of the Kiwa UK Group)*

## Appendix A

Figures PAR/17082/01A:A01 to A02

Assessed Leaf Size Envelopes for Ramkor 90 Plus Door Leaves Installed  
in Timber Frames





## Appendix B

### General Guidance on Installation of Hardware

#### B.1 Hinges

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 hinges may be used.
NUMBER OF HINGES	3no (1½ pairs) per leaf. (4no per leaf should be used on leaves greater than 2300mm high).
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 200mm up from the foot of the leaf to the bottom of the hinge. The middle hinge must be either equispaced between the top and bottom hinge, or 200–250mm below the top hinge. (All positions $\pm 25$ mm).
FIXINGS	Steel screws, as recommended by the hinge manufacturers, but in no case smaller than No 8 (3.8mm diameter) by 32mm long, and having thread for the full length. Position of screws (in relation to the door face) in blades of alternative hinge types shall be similar to hinges tested with the proposed door type.
HINGE BLADE SIZES	2.5–3.5mm thick x 100–110mm high x 30–36mm width. (These dimensions refer to the blade size, i.e. the part of the hinges that are recessed into the edge of the leaves/frame).
HINGE MATERIALS	Phosphor Bronze, Steel or Stainless Steel. (Aluminium, Nylon or ‘Mazac’ are not permitted). No combustible or thermally softening materials to be included.
ADDITIONAL PROTECTION	The hinge blades must be bedded on non-pressure forming intumescent material at least 1mm thick.

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.



## B.2 Mortice Latches/Locks

Where mortice latches or locks are fitted, they shall be centred at 1000mm ( $\pm$  200mm), above the bottom of the door leaf, and should comply with the following specifications:

ELEMENT	SPECIFICATION	
LATCH/LOCK TYPE	Mortice latches, tubular mortice latches, sashlocks and deadlocks	
MAXIMUM DIMENSIONS	FOREND PLATE	235mm long x 20mm wide, or, 200mm long x 25mm wide
	FOREND PLATE	20mm thick x 165mm high x 100mm wide
	STRIKEPLATE	235mm long x 20mm wide, or, 200mm long x 25mm wide
MATERIALS	Latches must have no essential part of their structure made from polymeric or other low melting point (<800°C) materials, and should not contain any flammable materials.	
ADDITIONAL PROTECTION	The latch body must be encased in and the strikeplate and forend must be bedded on 1mm thick non-pressure forming intumescent material.	

Over-morticing is to be avoided; mortices shall be as tight as possible to the latch. If gaps around the case exceed 2mm, then these must be made good with intumescent mastic or sheet material. Holes for spindles or cylinders should be kept as small as is compatible with the operation of the hardware.

Where glazing apertures are also incorporated, and are positioned such that locks/latches are included in the margin between the aperture and door edge, care must be taken to ensure that the effective door 'stile' is not weakened by the mortice. It is a condition of this assessment that, except where tubular latches are employed, the margin must be at least 75mm wider than the lock/latch mortice. If the mortice latch/lock is fitted in line with a 'rail' between two apertures, no part of the lock mortice shall be closer than 50mm to the edge of any aperture.

## B.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 they are normally kept locked shut and labelled as such with an appropriate sign which complies with the BS 5499 series of standards.

Overhead surface mounted closers are recommended. Concealed overhead and concealed jamb mounted closers are not approved by this Report.

Surface mounted overhead door closers (and accessories such as soffit brackets) may be used if they have been tested, assessed or otherwise approved for use on unlatched FD90 cellulosic door leaves in timber frames. 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.

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 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.

A variety of closers have been successfully tested with the door assemblies detailed herein but 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 FD90 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 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.

## B.4 Non-Essential Hardware Items

### B.4.1 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.

### B.4.2 Pull Handles

These may be fixed to the face of doors, 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.

### B.4.3 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.
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); which must be the subject of independent fire testing, and further analysis by IFC

## Appendix C

### Summary of Fire Test Evidence

#### Summary of Primary Fire Test Evidence

TEST LABORATORY AND REPORT REFERENCE	TEST DATE	CONFIGURATION TESTED	LEAF SIZE TEST	TEST STANDARD	INTEGRITY
Thomas Bell-Wright International Consultants QH150 REV 1 – Door B	01.10.2016	LSASD	2132mm X 1084mm X 64mm	BS 476: Part 22: 1987	96 minutes
Thomas Bell-Wright International Consultants QC097-2 – Door B	31.03.2016	LSASD	2020mm X 950mm X 64mm	BS 476: Part 22: 1987	109 minutes
Thomas Bell-Wright International Consultants RA148-2 REV 1 – Door B	02.03.2017	LSASD	2108mm X 908mm X 64mm	BS 476: Part 22: 1987	98 minutes
Thomas Bell-Wright International Consultants RA148-1 REV 1 – Door B	08.02.2017	LSASD	2097mm X 899mm X 64mm	BS 476: Part 22: 1987	102 minutes
Thomas Bell-Wright International Consultants PF059-1 – Door A	16.07.2015	LSASD	2100mm X 874mm X 64mm	BS 476: Part 22: 1987	107 minutes

LSASD = Latched, Single Acting Single leaf Door assembly

All 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.

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