

Title

Field of Application for:
The Ramkor 90 Range of Doorsets
Using Particleboard Door Blanks in
Timber Based Door Frames

For 90 minutes Fire Resistance

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The version/revision stated on the front of this Field of Application supersedes all previous versions/revisions and must be used to manufacture doorsets from the stated validity date on this front cover. Previous revisions of the Field of Application cannot be used once an updated Field of Application has been issued under a new revision.

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1 Foreword

This Field of Application report has been commissioned by Falcon Panel Products Ltd and relates to the fire resistance of 90 minute fire resisting doorset designs.

The report is for National Application and has been written in accordance with the general principles outlined in BS EN 15725: 2010; *Extended application reports on the fire performance of construction products and building elements*.

This Field of Application (scope) uses established empirical methods of extrapolation and experience of fire testing similar doorsets, in order to extend the scope of application by determining the limits for the designs based on the tested constructions and performances obtained. The scope is an evaluation of the potential fire resistance performance, if the variations specified herein were to be tested in accordance with BS 476-22: 1987.

This Field of Application has been written using appropriate test evidence generated at UKAS accredited laboratories¹, to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturers stated door design and is summarised in section 3.

The scope presented in this report relates to the behaviour of the proposed door design variations under the particular conditions of the test; they are not intended to be the sole criterion for considering the potential fire hazard of the door assembly in use.

This Field of Application has been prepared and checked by product assessors with the necessary competence, who subscribe to 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'. The aim of the PFPF guidelines is to give confidence to end-users that assessments that exist in the UK are of a satisfactory standard to be used for building control and other purposes.

¹ Test evidence from overseas laboratories has also been considered as supporting evidence for the designs in this assessment report. The test evidence is from a laboratory that has been accredited by a national accreditation body that is a signatory of the International Laboratories Accreditation Co-operation (ILAC).

The drawings provided in this report are for guidance and illustrative purposes only. Please note that the written scope of application takes precedence.

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2 Proposal

It is proposed to consider the fire resistance performance of the specified proprietary Ramkor 90 doorset designs, for 90 minutes fire resistance integrity performance (and where appropriate insulation performance), if the doorset designs were to be tested to the requirements of BS 476-22: 1987, *Methods for determination of the fire resistance of non-loadbearing elements of construction*.

The field of application defined in this report is based on the fire resistance test evidence for the doorset design, which is summarised in section 3. Analysis of specific construction details that require assessment are given within this report against the relevant element of construction, as appropriate.

Whilst specific items are included within this Field of Application report that may be used to provide additional performance characteristics (such as acoustic or smoke control for example), it is beyond the remit of this Field of Application report to provide scope for performance characteristics other than fire resistance integrity and (where applicable) insulation performance. Any other performance requirement for the door designs contained herein is to be subject to a separate analysis.

2.1 Assumptions

- All densities referred to in this document are based upon an assumed moisture content of 10-12%.
- It is assumed that unless otherwise documented in the field of application sections of this report, the doorset subject to this report will be constructed in accordance with the test evidence referred to herein.
- For components created using solid timber sections referred to in this assessment, it is assumed that, for all timbers, they will be of a quality deemed to meet or exceed class J30 as specified in BS EN 942: 2007, subject to adequate repairs, other than glazing beads which must meet a minimum class J10. Note that areas under intumescent seals/gaskets are not considered to be concealed faces and defects must be repaired.
- Where timber is referred to within this document it is assumed that the timber element is made from a continuous solid piece, unless specifically detailed otherwise.
- All dimensions detailed herein may be varied by $\pm 2\%$ except where minimum, maximum or a range of dimensions are given.

3 Test Data

The test evidence summarised below has been generated to support the fire resistance performance of the door designs that are the subject of this field of application. The summary details are considered to be the key aspects of the design tested.

Note:

- Dimensions are in mm unless otherwise stated.
- Abbreviations: (h) = height; (w) = width; (t) = thickness; (d) = deep; (l) = long.
- Latches fitted but disengaged for the test, are reported as 'unlatched'.

The test evidence has been generated across a number of tests, including single leaf, latched doorsets.

All of the test evidence used in the evaluation is over 5 years old. In accordance with industry guidance, the evidence has been reviewed to consider its suitability. Warringtonfire are satisfied that there have been no significant revisions to the relevant test standards which would render the evidence irrelevant.

3.1 Primary Test Evidence

3.1.1 Test Report PF059-1

Date of Test:	16 th July 2015
Identification of Test Body:	Thomas Bell-Wright International Consultants. UKAS No 4439.
Sponsor:	Laing O'Rourke Joinery (LLC) & Ramkor International Ltd
Tested Product:	2No. Latched, Single-leaf, single-acting doorsets. (LSASD)
Tested Orientation:	Doorset A – Towards the heating conditions of the test. Doorset B – Towards the heating conditions of the test.
Sampling information:	Prototype test – No sampling information available.
Summary of Test Specimen:	<p>Doorset A:</p> <p>Overall Doorset Size: 970 mm wide by 2155 mm high</p> <p>Leaf Size: 874 mm wide by 2100 mm high by 64mm thick</p> <p>Core: 64mm thick Ramkor International, Ramkor FD90, FR Poplar Particle Board, 590kg/m³</p> <p>Lipping: 3mm thick Solid White Oak. 770kg/m³, applied on all edges.</p> <p>Frame: Solid White Oak door frame nominal density 770kg/m³ (100 mm x 45mm including 12mm x 25mm planted stop)</p> <p>Frame Fixing: 3No. Steel masonry fixings (6mm x 75mm), positioned local to each vertical jamb.</p> <p>Fire Stopping Detail: Ceramic fibre packed to the full depth capped with Mada Gypsum, Fire Guard Intumescent mastic to each face.</p> <p>Intumescent and smoke control seals:</p> <p>Frame:</p> <p>1No. Intumescent Seals Ltd, Graphite based, Therm-A-Flex, 50 (w) x 2 (t) applied within the frame reveal.</p>

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Leaf:

1No. BASF, Silicate based Palusol, 42mm (w) x 2mm (t) applied under lippings on all edges

Hardware:

Hinge: 3No. ALLGOOD butt hinges reference ZQ0015124

Closer: ALLGOOD overhead surface mounted closer reference SS9251/6DC fitted to opening face of the leaf

Lock/Latch: ALLGOOD mortice lock referenced SS7679F60

Cylinder: ALLGOOD referenced SN7819B

Handle: ALLGOOD Stainless Steel lever handles referenced SS3510

Hardware Protection:

Hinge: Intumescent Seals Ltd, Therm-A-Strip, 1mm (t)

Lock/Latch: Intumescent Seals Ltd, Therm-A-Strip, 1mm (t)

Latching arrangement: Latched

Doorset B:

Overall Doorset Size: 970 mm wide by 2155 mm high

Leaf Size: 874 mm wide by 2100 mm high by 64mm thick

Core: 64mm thick Ramkor International, Ramkor FD90, FR Poplar Particle Board, 590kg/m³

Lipping: 3mm thick Solid White Oak. 770kg/m³, applied on all edges.

Frame: Solid White Oak door frame nominal density 770kg/m³ (100 mm x 45mm including 12mm x 25mm planted stop)

Frame Fixing: 3No. Steel masonry fixings (6mm x 75mm), positioned local to each vertical jamb.

Fire Stopping Detail: Ceramic fibre packed to the full depth capped with Mada Gypsum, Fire Guard Intumescent mastic to each face.

Intumescent and smoke control seals:

Frame:

1No. Intumescent Seals Ltd, Graphite based, Therm-A-Flex, 50 (w) x 2 (t) applied within the frame reveal.

Leaf:

2No. Intumescent Seals Ltd, Graphite based, Therm-A-Seal, 15mm (w) x 4mm (t) applied to all edges of the leaf.

Hardware:

Hinge: 3No. ALLGOOD butt hinges reference ZQ0015124

Closer: ALLGOOD overhead surface mounted closer reference SS9251/6DC fitted to opening face of the leaf

Lock/Latch: ALLGOOD mortice lock referenced SS7679F60

Cylinder: ALLGOOD referenced SN7819B

Handle: ALLGOOD Stainless Steel lever handles referenced SS3510

Hardware Protection:

Hinge: Intumescent Seals Ltd, Therm-A-Strip, 1mm (t)

Lock/Latch: Intumescent Seals Ltd, Therm-A-Strip, 1mm (t)

Latching arrangement: Latched

Glazing:

Glass: Firelite Ceramic, Southern Ceramics (UK), 9mm thick

	<p>Glass Size: 800mm (h) x 250 (w)</p> <p>Glazing Bead: Galvanised Steel, Ramglaze 90™ Beading, 42mm (h) x 30 (d) overall</p> <p>Glazing Bead Fixing: Stainless Steel, through bolts, M4. 4No. to vertical edges 2No. to horizontal edges.</p> <p>Glazing Tape: Sealmaster, FG Liner, 5mm (t) compressed to 3mm (t)</p> <p>Aperture Liner: Intumescent Seals Ltd, ISL 60 Plus, 65mm (w) x 2mm (t).</p>	
Test Standard:	BS 476-22: 1987	
Performance:	Doorset A	<p>Integrity: 107 minutes</p> <p>Insulation: 107 minutes</p>
	Doorset B	<p>Integrity: 103 minutes</p> <p>Insulation: 103 minutes</p>

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3.1.2 Test Report QC097-2

Date of Test:	31 st March 2016	
Identification of Test Body:	Thomas Bell-Wright International Consultants. UKAS No 4439.	
Sponsor:	Ramkor International Limited & Al Habtoor Leighton Interiors	
Tested Product:	1No. Latched, Single-leaf, single-acting doorset. (LSASD)	
Tested Orientation:	Doorset B – Towards the heating conditions of the test.	
Sampling information:	Prototype test – No sampling information available.	
Summary of Test Specimen:	<p>Doorset B: Overall Doorset Size: 1045 mm wide by 2075 mm high Leaf Size: 950 mm wide by 2020 mm high by 65mm thick Core: 64mm thick Ramkor International, Ramkor 64, 3No. Layers FR Poplar Particle Board, 490kg/m³ Facings: Koto Hardwood Veneer, 0.6 mm (t) Lipping: 5mm thick American White Oak. 770kg/m³, applied on all edges. Frame: American White Oak door frame nominal density 770kg/m³ (150 mm x 45mm including 20mm x 40mm planted stop) Frame Fixing: 5No. Steel masonry fixings (4mm x 102mm), positioned local to each vertical jamb. Fire Stopping Detail: Ceramic fibre packed to the full depth capped with Firewise, Firewise Acoustic Intumescent Mastic to each face. 18 mm (t) x 60 mm (w) American White Oak architraves applied on the exposed face. Intumescent and smoke control seals: Frame: 1No. Intumescent Seals Ltd, Graphite based, Therm-A-Flex Plus, 50 (w) x 1 (t) applied within the frame reveal. Leaf: 1No. Intumescent Seals Ltd, Silicate based, Therm-A-Sol, 44mm (w) x 2mm (t) applied to all edges of the leaf rebated within the lipping (centrally fitted). Hardware: Hinge: 3No. Euroart butt hinges reference ZQ0015124 Closer: Euroart overhead surface mounted closer reference 6025BC fitted to opening face of the leaf Lock/Latch: Euroart mortice lock referenced DLA7255 Cylinder: Euroart referenced CYD145 Handle: Euroart Stainless Steel lever handles referenced LRS202 Hardware Protection: Hinge: Intumescent Seals Ltd, Therm-A-Strip, 1mm (t) Lock/Latch: Intumescent Seals Ltd, Therm-A-Strip, 1mm (t) Latching arrangement: Latched</p>	
Test Standard:	BS 476-22: 1987	
Performance:	Doorset B	Integrity: 109 minutes Insulation: 109 minutes

3.1.3 Test Report QH150 (Rev.02)

Date of Test:	01 st October 2016
Identification of Test Body:	Thomas Bell-Wright International Consultants. UKAS No 4439.
Sponsor:	Laing O'Rourke Joinery LLC
Tested Product:	1No. Latched, Single-leaf, single-acting doorsets. (LSASD)
Tested Orientation:	Doorset B – Towards the heating conditions of the test.
Sampling information:	Prototype test – No sampling information available.
Summary of Test Specimen:	<p>Doorset B: Overall Doorset Size: 1180 mm wide by 2190 mm high Leaf Size: 1084 mm wide by 2132 mm high by 65mm thick Core: 64mm thick Ramkor International, Ramkor FD90, FR Poplar Particle Board, 590kg/m³, the core included a tongue and groove joint which measured 150mm from the leaf edge the tongue measured 35mm long x 21.33 thick. Facings: Chabros, Oak Veneer, 0.6 mm (t) Lipping: 10mm thick Sapele. 648kg/m³, applied on all edges. Frame: Sapele door frame nominal density 648kg/m³ (150 mm x 60mm including 15mm x 66mm rebate) Frame Fixing: 3No. Steel masonry fixings (10mm x 100mm), positioned local to the left vertical jamb & 4No. Steel masonry fixings (10mm x 100mm), positioned local to the right vertical jamb Fire Stopping Detail: Pyroplex, Polyurethane Expanding Foam, Aerosol liquid foam to the full depth capped with Pyroplex Intumescent Acrylic Sealant to each face. 10 mm (t) x 50 mm (w) Sapele architraves applied on the exposed face. Intumescent and smoke control seals: Frame: 2No. Pyroplex Ltd, Graphite based, Rigid Box (8600), 20 (w) x 4 (t) applied within the frame reveal. Leaf: 1No. Pyroplex Ltd, Graphite based, Rigid Box (8700), 15 (w) x 4 (t) applied to vertical and top edges of the leaf. 1No. Pyroplex Ltd, Graphite based, 30075, 30 (w) x 2 (t), applied to the bottom edge of the leaf. Hardware: Hinge: 3No. Laidlaw, concealed hinges reference LG.LADC.102.01.153 Closer: Simplex overhead surface mounted closer reference SDC25915 fitted to opening face of the leaf Lock/Latch: Laidlaw budget lock referenced LG.LADC.000.04.154 Hardware Protection: Hinge: Lorient, Intumescent Protection Kits, 1mm (t) Lock/Latch: Lorient, Intumescent Protection Kits, 1mm (t) Latching arrangement: Latched</p>

Test Standard:	BS 476-22: 1987	
Performance:	Doorset B	Integrity: 96 minutes Insulation: 96 minutes

3.1.4 Report RA148-1 (Rev.01)

Date of Test:	08 th February 2017
Identification of Test Body:	Thomas Bell-Wright International Consultants. UKAS No 4439.
Sponsor:	Ramkor International Ltd. & Rameshwar Dass Furniture Factory
Tested Product:	1No. Latched, Single-leaf, single-acting doorsets. (LSASD)
Tested Orientation:	Doorset B – Towards the heating conditions of the test.
Sampling information:	Prototype test – No sampling information available.
Summary of Test Specimen:	<p>Doorset B: Overall Doorset Size: 993 mm wide by 2150 mm high Leaf Size: 899 mm wide by 2079 mm high by 65mm thick Core: 64mm thick Ramkor International Ltd., Ramkor FD90 Plus, FR Poplar Particle Board, 484kg/m³ Facings: Chabros, Oak Veneer, 0.6 mm (t) Lipping: 5mm thick, American White Oak. 766kg/m³, applied on all edges. Frame: American White Oak door frame nominal density 766kg/m³ (140 mm x 44mm including 15mm x 24mm stop) Frame Fixing: 4No. Steel masonry fixings (5mm x 102mm), positioned local to each vertical jamb. Fire Stopping Detail: Ceramic fibre packed to the full depth capped with Pyroplex Intumescent Acrylic Sealant to each face. 20 mm (t) x 80 mm (w) American White Oak architraves applied on the exposed face. Intumescent and smoke control seals: Frame: 1No. Intumescent Seals Ltd, Graphite based, Therm-A-Flex Plus, 50 (w) x 1 (t) applied within the frame reveal. Leaf: 1No. BASF, Sodium Silicate based, Palusol 100, 48mm (w) x 2mm (t) applied to all edges of the leaf rebated within the lipping (centrally fitted). Hardware: Hinge: 3No. Euroart butt hinges reference HINBB443 Closer: Euroart overhead surface mounted closer reference DC6025BC fitted to opening face of the leaf Lock/Latch: Euroart mortice lock referenced DLA7260EP Cylinder: Euroart referenced CYD145 Handle: Euroart Stainless Steel lever handles referenced LRS202</p>

	Hardware Protection: Hinge: BASF, Phosphate based, Interdens, 1mm (t) Lock/Latch: BASF, Phosphate based, Interdens, 1mm (t) Latching arrangement: Latched	
Test Standard:	BS 476-22: 1987	
Performance:	Doorset B	Integrity: 96 minutes Insulation: 96 minutes

3.1.5 Report RA148-2 (Rev.01)

Date of Test:	02 nd March 2017
Identification of Test Body:	Thomas Bell-Wright International Consultants. UKAS No 4439.
Sponsor:	Ramkor International Ltd. & Decolab LLC
Tested Product:	1No. Latched, Single-leaf, single-acting doorsets. (LSASD)
Tested Orientation:	Doorset B – Towards the heating conditions of the test.
Sampling information:	Prototype test – No sampling information available.
Summary of Test Specimen:	<p>Doorset B: Overall Doorset Size: 1004 mm wide by 2159 mm high Leaf Size: 908 mm wide by 2108 mm high by 63mm thick Core: 64mm thick Ramkor International Ltd., Ramkor FD90 Plus, FR Poplar Particle Board, 484kg/m³ Facings: Chabros, Oak Veneer, 0.6 mm (t) Lipping: 10mm thick, American White Oak. 766kg/m³, applied on all edges. Frame: American White Oak door frame nominal density 766kg/m³ (140 mm x 45mm with a 18mm x 50mm stop) Frame Fixing: 5No. Steel masonry fixings (5mm x 102mm), positioned local to each vertical jamb. Fire Stopping Detail: Pyroplex, Polyurethane Expanding Foam, Aerosol liquid foam to the full depth capped with Pyroplex Intumescent Acrylic Sealant to each face. 18 mm (t) x 50 mm (w) American White Oak architraves applied on the exposed face. Intumescent and smoke control seals: Frame: 2No. Pyroplex Ltd, Graphite based, Rigid Box (8600), 20 (w) x 4 (t) applied within the frame reveal. Leaf: 1No. Pyroplex Ltd, Graphite based, Rigid Box (8700), 15 (w) x 4 (t) applied to vertical and top edges of the leaf. 1No. Pyroplex Ltd, Graphite based, 30075, 30 (w) x 2 (t), applied to the bottom edge of the leaf.</p>

	<p>Hardware: Hinge: 3No. Euroart butt hinges reference HINBB443 Closer: Hafele overhead surface mounted closer reference DCL15 fitted to opening face of the leaf Lock/Latch: Euroart mortice lock referenced DLA7260EP Cylinder: Euroart referenced CYD145 Handle: Euroart Stainless Steel lever handles referenced LRS202 Hardware Protection: Hinge: BASF, Phosphate based, Interdens, 1mm (t) Lock/Latch: BASF, Phosphate based, Interdens, 1mm (t) Latching arrangement: Latched</p>	
Test Standard:	BS 476-22: 1987	
Performance:	Doorset B	<p>Integrity: 98 minutes Insulation: 98 minutes</p>



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4 Technical Specification

4.1 General

The technical specification for the proposed door assembly is given in the following sections and is based on the test evidence for the door designs, summarised in section 3.

4.2 Intended Use

The intended use of the proposed door assembly is summarised below:

A pedestrian doorset including any frame, door leaf or leaves which is provided to give a fire resisting capability when used for the closing of permanent openings in fire resisting separating elements, which together with the building hardware and any seals (whether provided for the purpose of fire resistance or smoke control or for other purposes such as draught or acoustics) form the assembly.

4.3 Door Leaf

Doorsets constructed using the different leaf options can include various design features as summarised below.

Specific sections within this assessment must be referred to for design limitations and construction requirements.

Section 5 gives the description of each leaf type in terms of composition and density etc.

4.3.1 Leaf 1 – Ramkor FD90 Plus – 64mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings

4.3.2 Leaf 2 – Ramkor FD90 – 64mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings

4.4 Door Frames

The construction of the door frames is hardwood (specific species) with minimum frame dimensions. For further information on the specification and construction of the door frames see section 7.

Specific sections within this assessment must be referred to for design limitations and construction requirements, where applicable.

4.5 Doorset Configurations & Maximum Leaf Sizes

4.5.1 General

The evaluation of the leaf size for each door leaf option and frame option and doorset configuration is based on the tests listed in Section 3 and takes into account:

1. The margin of over performance above 90 minutes integrity for the design,
2. The characteristics exhibited during test and,
3. The doorset configuration tested.

The evaluation of the permitted configuration included in this field of application is based on the configuration tested. The principle is that the more components included in testing, the harder it becomes to pass a test. This approach leads to the following statements:

1. A test on an unlatched doorset is more onerous than a test on a latched doorset as the leading edge is unrestrained and will deflect more in fire test conditions


The leaf size for each door leaf option and configuration is linked to the perimeter intumescent specification and frame option. The following section details the maximum leaf size for each door leaf option and configuration based on the intumescent specification and frame details tested.

Doorsets with reduced height and width dimensions from those tested are deemed to be less onerous. Therefore, doors with dimensions less than those given in the leaf size envelopes (for the relevant intumescent specification) in the following sections are covered and may be manufactured.

4.5.2 Configuration

The table below shows the permitted configurations for the Ramkor doorset design, with the abbreviation and full description of each configuration.

The following sections details the assessed maximum leaf size envelopes for each permitted configuration based on the intumescent specification and door frame tested.

Doorset Configurations		
Depiction	Abbreviation	Description
	LSASD	Latched Single Acting Single Doorset

4.5.3 Orientation

All of the primary fire resistance tests for these designs were conducted with the doorset hung such that the door leaf opened towards the fire, which is considered the most onerous orientation in terms of fire resistance performance. Based on this testing, assessment is made that the doorsets to this design may be hung either away from or towards the fire risk side of the doorset. The rationale behind the direction of fire testing timber based doorsets opening towards the fire test conditions is further explained in Annex C of BS EN 1634-1:2014 +A1:2018.

4.5.4 Envelopes for each Configurations

The following sections detail the door leaf envelopes which indicate the permitted leaf sizes for the listed configurations based on the perimeter intumescent, door leaf option and door frame.

A table of essential hardware is given in section 9.3 for each doorset configuration, as a minimum requirement for the doorset described. Changes to hardware can affect the intumescent specification and frame details which are subsequently considered for each specific hardware component, where required.

4.5.4.1 General Note on Intumescent Seals

- Intumescent seals must run the full length of the leaf edge, with tightly formed abutting corner joints where the leaf edges meet, unless stated otherwise.

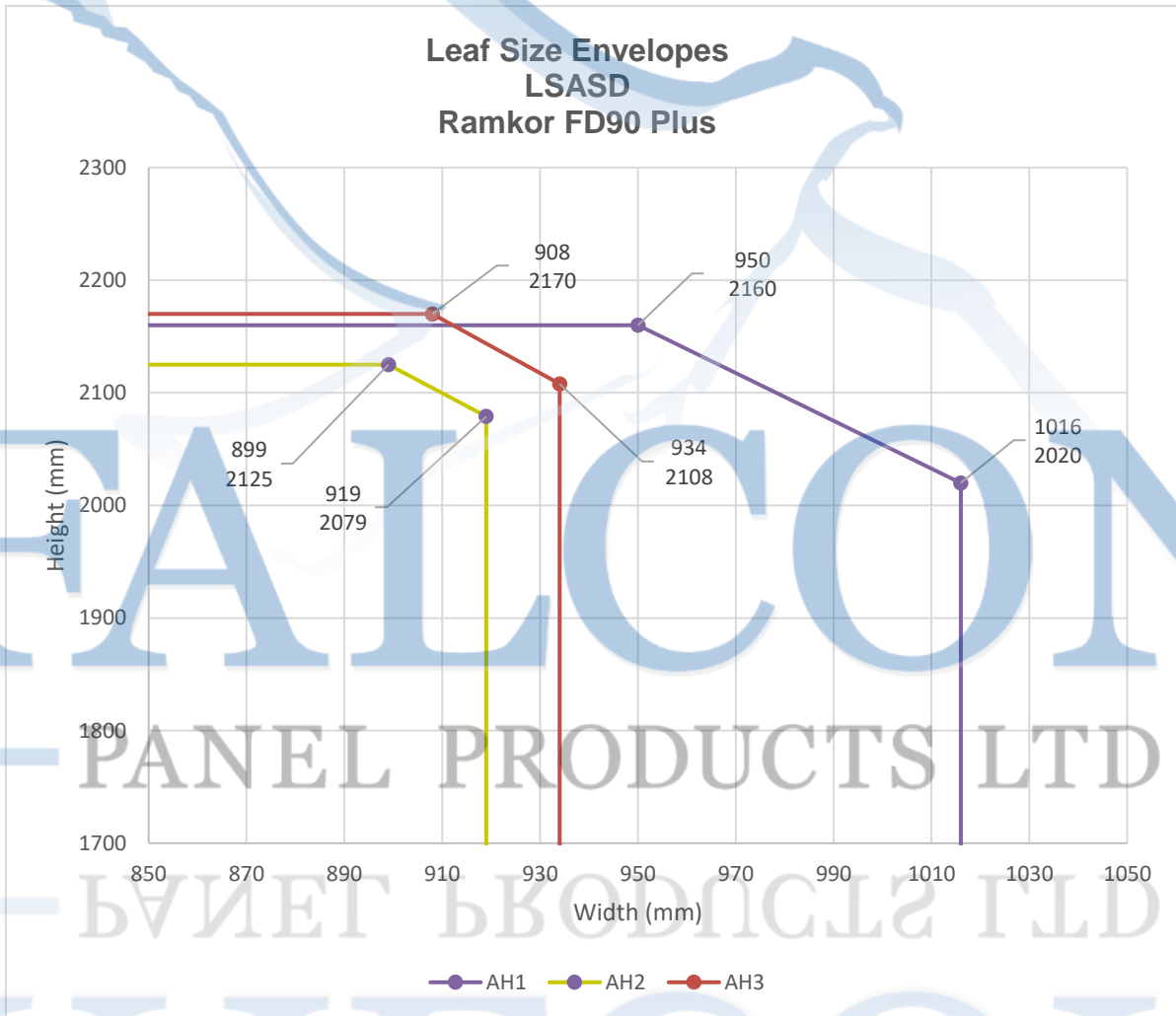
4.5.4.2 Explanation for following sections

The performance of a doorset in terms of configuration and size is dependent on the leaf type, perimeter intumescent used and frame type. These elements are not automatically interchangeable. The following sections present the envelopes for the 2No. leaf types and frame type. Each envelope is linked to a specific perimeter intumescent which is given a unique reference and is based directly on test evidence.

The envelopes are presented as follows:-

- for each configuration, each leaf type is considered separately
- for each configuration, leaf type, frame type and intumescent specification is considered separately, and a unique envelope of permitted leaf sizes is presented based on the configuration, leaf type, frame type and intumescent and the envelope is directly linked to a unique test.

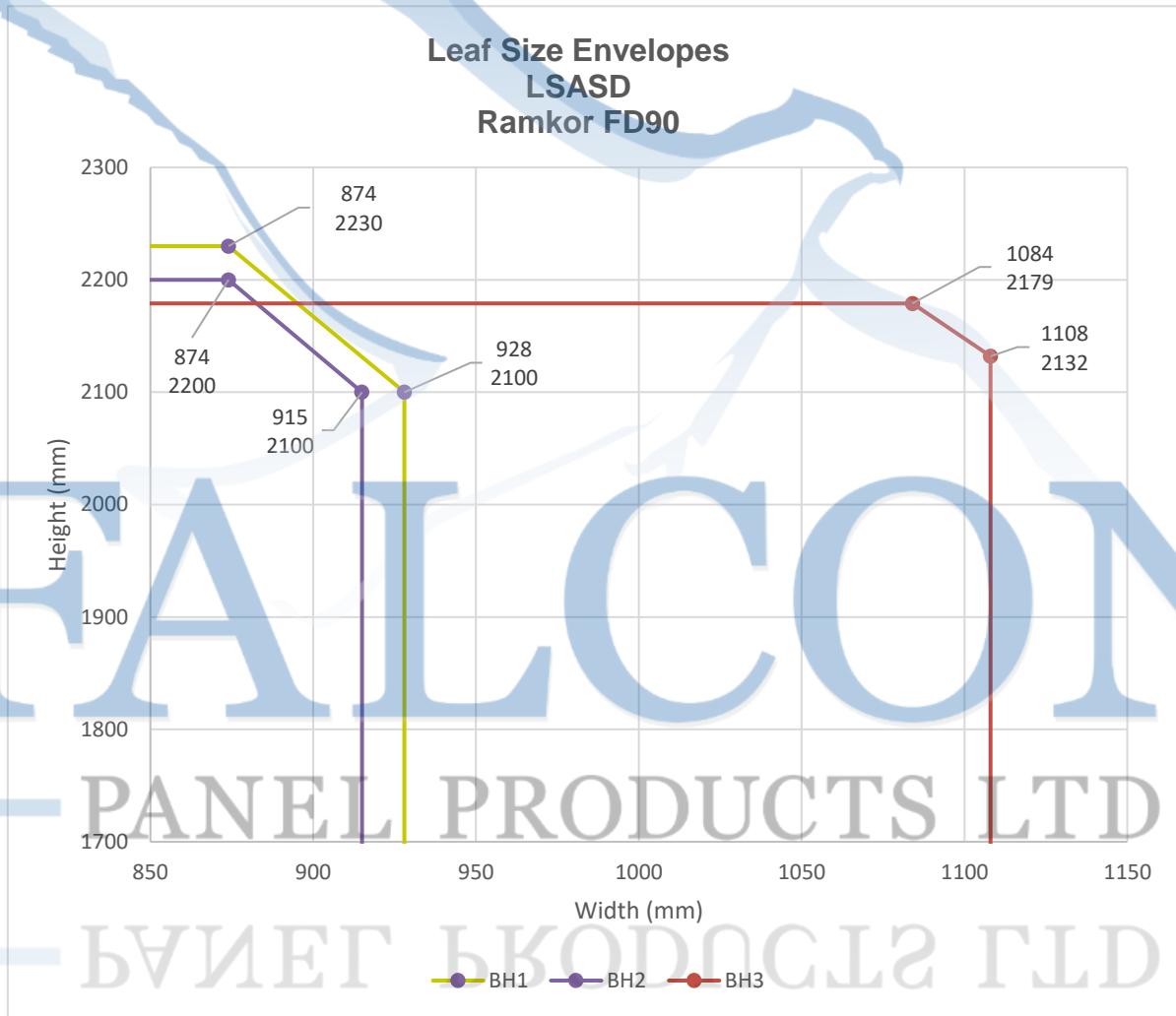
4.5.5 LSASD Configuration: Leaf Sizes & Intumescent Specification Doorset created from Leaf option 1



Intumescent Specification for LSASD			
Leaf 1 (Ramkor FD90 Plus) with Frame (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH1 (QC097-2)	Therm-A-Flex Plus, 50 (w) x 1 (t) & Therm-A-Sol, 44mm (w) x 2mm (t)	Intumescent Seals Ltd	Frame Reveal Head & Jambs: 1No. Intumescent Seals Ltd, Therm-A-Flex Plus applied within the frame reveal 5mm from the opening face. Leaf Edge (All edges): 1No. Therm-A-Sol applied to all edges of the leaf rebated within the lipping between lipping and the core material (centrally fitted).

Intumescent Specification for LSASD Leaf 1 (Ramkor FD90 Plus) with Frame (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH2 (RA148-1 (Rev.01))	Therm-A-Flex Plus, 50 (w) x 1 (t)	Intumescent Seals Ltd	<p>Frame Reveal Head & Jamb: 1No. Therm-A-Flex Plus applied within the frame reveal 6mm from the opening face.</p> <p>Leaf Edge (All edges): 1No. BASF, Palusol 100 applied to all edges of the leaf rebated within the lipping between lipping and the core material (centrally fitted).</p>
	Palusol 100, 48mm (w) x 2mm (t)	BASF	
AH3 (RA148-2 (Rev.02))	Rigid Box (8600), 20 (w) x 4 (t) & 30075, 30 (w) x 2 (t) & Rigid Box (8700), 15 (w) x 4 (t)	Pyroplex Ltd	<p>Frame Reveal Head & Jamb: 2No Rigid Box (8600) applied within the frame reveal, fitted 10mm apart 6mm from the opening face.</p> <p>Leaf Edge (Vertical and Top Edge): 1No. Rigid Box (8700), applied to vertical and top edges of the leaf centrally within the leaf thickness.</p> <p>Leaf Edge (Bottom Edge): 1No. Pyroplex Ltd 30075 applied to the bottom edge of the leaf centrally within the thickness of the leaf.</p>

Doorset created from Leaf option 2



Intumescent Specification for LSASD Leaf 2 (Ramkor FD90) with Frame (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BH1 (PF059-1 – Doorset A)	Therm-A-Flex, 50 (w) x 2 (t)	Intumescent Seals Ltd	Frame Reveal Head & Jamb: 1No. Intumescent Seals Ltd, Graphite based, Therm-A-Flex applied within the frame reveal 5mm from the opening face.
	Silicate based Palusol, 42mm (w) x 2mm (t)	BASF	Leaf Edge (All edges): 1No. BASF, applied to all edges of the leaf rebated within the lipping between lipping and the core material (centrally fitted).

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Intumescent Specification for LSASD Leaf 2 (Ramkor FD90) with Frame (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BH2 (PF059-1 – Doorset B)	Therm-A-Flex, 50 (w) x 2 (t) & Therm-A-Seal, 15mm (w) x 4mm (t)	Intumescent Seals Ltd	<p>Frame Reveal Head & Jamb: 1No., Therm-A-Flex, 50 (w) x 2 (t) applied within the frame reveal.</p> <p>Leaf Edge (All edges): 2No. Therm-A-Seal, 15mm (w) x 4mm (t) applied to all edges of the leaf fitted 10mm apart centrally within the leaf.</p>
BH3 (QH150 (Rev.02))	Rigid Box (8600), 20 (w) x 4 (t) & Rigid Box (8700), 15 (w) x 4 (t) & 30075, 30 (w) x 2 (t)	Pyroplex Ltd	<p>Frame Reveal Head & Jamb: 2No. Pyroplex Ltd, Rigid Box (8600), 20 (w) x 4 (t) applied within the frame reveal fitted 10mm apart centrally within the frame reveal.</p> <p>Leaf Edge (Vertical and Top Edge): 1No. Pyroplex Ltd, Rigid Box (8700), 15 (w) x 4 (t) applied to vertical and top edges of the leaf centrally to the leaf thickness.</p> <p>Leaf Edge (Bottom Edge): 1No. Pyroplex Ltd, 30075, 30 (w) x 2 (t), applied to the bottom edge of the leaf centrally to the leaf thickness.</p>

5 General Description of Leaf Construction

5.1 Leaf Core Construction

The two door leaf options detailed below are approved by this assessment.

5.1.1 Leaf Type 1 – (Ramkor FD90 Plus) – 64mm thick

The basic tested construction of this door leaf design comprises the following:

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	FR Poplar Chipboard - Particleboard	64	484 ¹

Notes:

1. Stated by manufacturer not verified by laboratory
2. The leaf must be lipped as specified in section 5.3.
3. The minimum leaf thickness after calibration is 63mm (i.e. a maximum of 0.5mm from both sides).
4. The minimum leaf thickness after finishes applied is 64mm.

5.1.2 Leaf Type 2 – (Ramkor FD90) – 64mm thick

The basic tested construction of this door leaf design comprises the following:

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	FR Poplar Chipboard – 3No. Layer Particleboard – constructed from 1No. central layer (48mm thick) and 2No. outer layers (7.5mm thick)	64 overall	590 ¹

Notes:

1. Stated by manufacturer not verified by laboratory
2. The leaf must be lipped as specified in section 5.3.
3. The minimum leaf thickness after calibration is 63mm (i.e. a maximum of 0.5mm from both sides).
4. The minimum leaf thickness after finishes applied is 64mm.

5.2 Leaf Size Adjustment During Manufacturing

5.2.1 Reduction in size

Door leaves may be altered as follows prior to the machining for hardware.

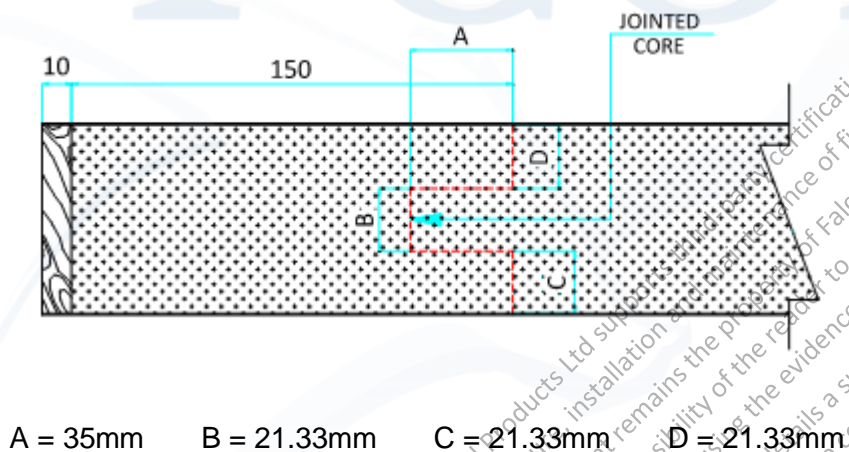
Pre-Machining Leaf Size Adjustment Specification	
Element	Reduction
Leaf	The size of the leaf may be reduced in height or width without restriction for manufacturing purposes, providing the finished leaf is lipped in accordance with section 5.3
Timber Lipping	The timber lipping thickness can be reduced after it has been glued in place, providing it is not reduced below the minimum stated in section 5.3

5.2.2 Jointing core materials

Based on the testing conducted on this design in QH150, it is permitted to include either a vertical or horizontal joint in the leaf core subject to the following parameters:

1. Leaf core materials to be jointed must both be to the same construction (section 5.1) for example:
 - a. Ramkor FD90 Plus core jointed to Ramkor FD90 Plus core.
 - b. Ramkor FD90 core jointed to Ramkor FD90 core.
2. Joints must be made to the dimensions tested and detailed in the diagram below.
3. Joints must be bonded utilising the tested adhesive Fevicol 1K PUR FR.
4. No more than one joint (horizontal or vertical) is permitted in any leaf.
5. Vertical joints must not be less than 150mm or more than 200mm from the closing edge of the leaf.
6. Horizontal joints must be not less than 100mm or more than 300mm above the bottom edge of the leaf.
7. There must be a minimum of 80mm of core material between a joint and any aperture within the leaf.

Diagram showing core joint details:



5.3 Timber Lipping

5.3.1 General

The doorset design must be lipped on all edges as detailed within the test evidence summarised within section 3. The following sections relate specifically to the perimeter intumescent sealing applied at the leaf edge, due to the complexity of concealed intumescent.

5.3.2 Flat Lipping – Exposed Intumescent

The testing documented in section 3 has generally been undertaken using 3 - 5mm thick lippings applied to all edges using White Oak at a density between 766-770kg/m³. A number of different PU type adhesives have also been used to seal the lippings.

On the above basis, Ramkor door blanks (leaf type 1 & 2) must be lipped with the following specification, for all leaf types.

Timber Lipping Specification	
Size (mm)	
Flat with exposed intumescent, intumescent channelled into the lipping material – 3-10 thick	
Material	Min Density (kg/m ³)
Sapele <i>Entandrophragma cylindricum</i>	720
Rock Maple <i>Acer saccharum</i> ¹ <i>Acer nigrum</i>	700
Utile <i>Entandrophragma utile</i>	700
American White Oak <i>Quercus alba</i>	766
African Padauk <i>Pterocarpus soyauxii</i>	800
Tatjuba <i>Bagassa guianensis</i> <i>Bagassa tiliaefolia</i>	800
Moabi <i>Baillonella toxisperma</i>	800

Notes:

1. *Acer saccharinum*, Soft Maple, is not assessed for this application.
2. All lippings are to be the same thickness as the door leaf.

3. Lippings must be bonded with Fevicol 1K PUR FR or Kleiberit PUR 501. These shall be hand applied. It must be ensured that sufficient glue is applied to across the entire surface area between the 2No substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed.
4. Leaf edge profiling is permitted only on the closing corner of the leaf edge lipping to a maximum of 1mm, as shown in section 5.3.4. The opening edge must not be profiled.
5. Permitted intumescent specifications as detailed within section 4.5.5:
 - o BH2
 - o BH3
 - o AH3

5.3.3 Flat Lipping – Concealed intumescent

The testing documented in section 3 has generally been undertaken using 3 - 5mm thick lippings applied to all edges using White Oak at a density between 766-770kg/m³. A number of different PU type adhesives have also been used to seal the lippings.

On the above basis, Ramkor door blanks (leaf type 1 & 2) must be lipped with the following specification, for all leaf types.

Timber Lipping Specification	
Size (mm)	
Flat with concealed intumescent, intumescent channelled into the core material – 3 thick	
Flat with concealed intumescent, intumescent channelled into the lipping material – 5 thick	
Material	Min Density (kg/m³)
American White Oak <i>Quercus alba</i>	766
African Padauk <i>Pterocarpus soyauxii</i>	800
Tatjuba <i>Bagassa guianensis</i> <i>Bagassa tiliaefolia</i>	800
Moabi <i>Baillonella toxisperma</i>	800

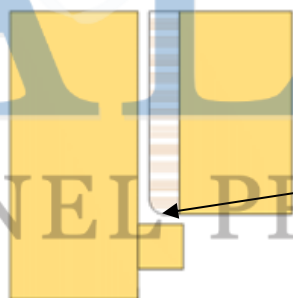
Notes:

1. *Acer saccharinum*, Soft Maple, is not assessed for this application.
2. All lippings are to be the same thickness as the door leaf.

3. Lippings must be bonded with Fevicol 1K PUR FR or Kleiberit PUR 501. These shall be hand applied. It must be ensured that sufficient glue is applied to across the entire surface area between the 2No substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed.
4. Leaf edge profiling is permitted only on the closing corner of the leaf edge lipping to a maximum of 1mm, as shown in section 5.3.4. The opening edge must not be profiled.
5. Permitted intumescent specifications as detailed within section 4.5.5:
 - BH1
 - AH1
 - AH2

5.3.4 Permitted Lipping Profiling

Based on the testing summarised within section 3, it has been considered by Warringtonfire to include a profile to the closing edge of the door leaf only. The following figure details the permitted leaf edge profile.



Leaf edge profiling is permitted only on the closing corner of the leaf edge lipping, to a maximum of 1mm. All other edges must not be profiled.

5.4 Decorative & Protective Facings – all Leaf Options

Relatively thin leaf facing materials are deemed to be decorative and their application is not considered to be of detriment to the overall stability or performance of the doorset design. In fact, when applied as an additional component on top of the minimum facing material required by the door blank, they are likely to provide a small enhancement in performance as an additional barrier to fire spread, although, this is likely to be negligible.

The following additional facing materials are therefore permitted for this door design since they would have limited influence under fire resistance test conditions.

Decorative & Protective Facing Specification	
Facing Material	Maximum Permitted Thickness (mm)
Paint	0.2
Timber veneers	2
Plastic laminates	2
PVC	2
Cellulosic and non-metallic foils	0.4

Notes:

1. Metallic facings are not permitted except for push plates and kick plates.
2. The door leaf thickness may be reduced on both sides by a maximum of 0.5mm for calibration purposes in order to accommodate the chosen finish. The minimum overall leaf thickness must remain at 64mm after finishing has been applied.
3. Materials may over sail lippings but must not return around leaf edges.
4. Materials must not conceal intumescent strips where intumescent strips are exposed.

Decorative finishes listed above may be painted within the limits for paint finish, above.

6 Glazing within the Leaf

6.1 General

The testing conducted on the Ramkor door designs has demonstrated that they are capable of tolerating glazed apertures, whilst providing a margin of over performance. For example, test reference PF059-1 included a glazed aperture 800mm high x 250mm wide fitted nominally 260mm from the vertical edges of the leaf and from the head of the leaf.

Glazing is therefore acceptable within the following parameters.

The maximum assessed glazed area for all configurations is 0.2m². A maximum single dimension of 800mm shall also not be exceeded.

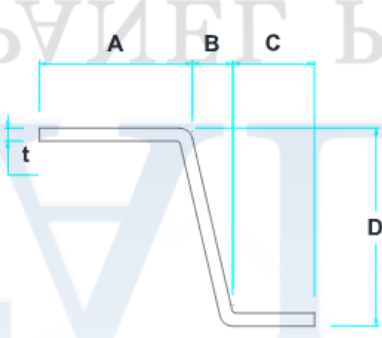
Glazed openings must not be less than 260mm from top and side edges and 260mm from the bottom edge.

Multiple apertures are acceptable within the permitted glazed area, with a minimum dimension of 260mm of core between apertures.

The aperture must be rectilinear and utilise the permitted glass and glazing system detailed within section 6.1.1.

6.1.1 Permitted Glass, Glazing System & Glass Retention Technique – Leaf Type 1 & 2

The total area of all glazed apertures must not exceed that state in Section 6.1 above.

Glass Type	Firelite
Glass Thickness	9mm thick
Beading (Depicted below)	Ramglaze 90™ Galvanised Steel Profile
 <p>The diagram shows a cross-section of the Ramglaze 90 Galvanised Steel Profile. It is an L-shaped profile with a flange of width 'A', a vertical leg of height 'D', and a bottom flange of width 'C'. The thickness of the profile is 't'. A dimension 'B' is shown between the top edge of the vertical leg and the top edge of the bottom flange.</p>	<p>A: 23mm B: 7mm C: 12mm D: 30mm t: 1.5mm</p> <p>Glazing beads to be welded at corners (continuous weld)</p>
Bead Fixings	M4 Stainless steel bolts applied through the flange labelled A above such that the bead is located on both leaf faces.
Bead Fixing Frequency	No greater than 50mm from corners and no greater than 250mm centres.
Glazing System:	5mm thick Sealmaster (UK) FG dry glazing liner compressed to 3mm, to be fitted as a 'U' channel around the edge of the glass and self-adhered to the glass on both faces.
Glazing Liner:	65mm x 2mm Intumescent Seals Ltd, 60 Plus liner, self-adhered to the entire aperture perimeter.

7 Door Frame Construction

7.1 Details for Frame

The door frame details listed below are the minimum size and density which have been successfully tested and assessed by this report. The frame must be constructed to meet the following specification for single acting frames.

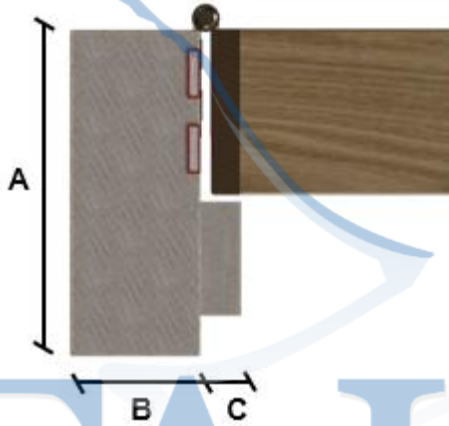
Frame specification		
Material	Minimum section size (mm)	Minimum density (kg/m ³)
Sapele <i>Entandrophragma cylindricum</i>	Frame: 140 (d) x 59 (w) (Including stop) Stop: 15 (w) (integral)	720
American White Oak <i>Quercus alba</i>		766
Rock Maple <i>Acer saccharum</i> ¹ <i>Acer nigrum</i>		700
Utile <i>Entandrophragma utile</i>		700
African Padauk <i>Pterocarpus soyauxii</i>		800
Tatjuba <i>Bagassa guianensis</i> <i>Bagassa tiliaefolia</i>		800
Moabi <i>Baillonella toxisperma</i>		800

Note:

1. *Acer saccharinum*, Soft Maple, is not assessed for this application.

7.1.1 Standard frame detail

The diagram below shows detail of the standard frame construction. Minimum section is permitted in two sizes subject to hardware size and the use of transom overpanel.



- A: Frame depth = 140mm minimum
- B: Frame width = 44mm minimum
- C: Stop width = 15mm minimum

7.2 Door Frame Joints

Below are depictions of the door framing joints that are deemed acceptable. Please note that the drawings are provided as general illustrations of each type of door frame joint; actual construction in terms of intumescent seal location and material, etc. must be as the text within this document specifies. The door frame joints are required to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws. Frame joints must additionally be reinforced with any of the adhesives approved for the application of lippings, on the basis that the approved lipping adhesive has been proven to contribute to the positive fire resistance performance of the timber-to-timber junction at the door leaf edge.



Mortice & Tenon Joint



Mitre Joint

Approved door frame jointing options

8 Adhesives

The following adhesives must be used in the construction of the doorsets. It must be ensured that sufficient glue is applied across the entire surface area between the 2No substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed.

Element	Product/Material Type
Core Jointing	Fevicol 1K PUR FR
Veneer Facing & Decorative & Protective Facings	Fevicol V4.1 or other Polyurethane
	Kleiberit D3 303 PVAc
Lippings & Door Frame Joints	Fevicol 1K PUR FR
	Kleiberit PUR 501

9 Hardware

9.1 General

The following section details the permitted scope and constraints for fitting hardware to this door design. The following items of hardware must also bear the UKCA or CE Mark in addition to the requirements outlined in the following sections. The UKCA or CE mark must indicate that the hardware is suitable for fire doors in the classification code and declaration of performance issued by the hardware manufacturer:

- Latches & locks: Test Standard EN 12209
- Single axis hinges: Test Standard EN 1935
- Controlled door closing devices: Test Standard EN 1154
- Electrically powered hold-open devices: Test Standard EN 1155
- Emergency exit hardware: Test Standard EN 179
- Panic exit hardware: Test Standard EN 1125.

The following sections consider what tested and assessed alternative items of essential and non-essential hardware can be used on the doorset range.

Items of hardware have been considered and approved via the following means:

- The component has been successfully tested to BS 476: Part 22: 1987 or BS EN 1634-1 in a suitably similar type of doorset e.g. timber leaf in timber frame
- As a result of an assessment of the appropriateness of the item of hardware, based on test evidence not commissioned by Falcon Panel Products Ltd.
- As a result of the Certifire approval of the item of hardware.

Each section will consider the named item of hardware and detail if there are any limitations associated with:

- Leaf size
- Configuration
- Intumescent seals
- Intumescent protection
- Frame configuration requirements

No item of hardware should be within 200mm of another item of hardware unless there is test evidence to demonstrated they can be in closer proximity.

Hardware items should generally be fitted in accordance with the manufacturer's instructions. **However, the parameters and requirements of this assessment always take precedence, including specified protection such as hardware gaskets.** Referenced Certifire approved hardware may be incorporated subject to the design, material and dimensional limitations identified within this assessment report and identified on the relevant Certifire certificate.

9.2 Intumescent to Hardware

The intumescent materials used to protect hardware that have been tested and assessed for this doorset design are detailed below. Note that any one of the product / manufacturer options listed in the table may be used in the specific application noted. However, only 1 No manufacturer should be considered per doorset application.

The door gap perimeter intumescent seal specifications are documented in conjunction with the leaf envelope size limitations in section 4.

Hardware Intumescent Specification		
Item	Location	Product/Manufacturer
Butt Hinges	Under the blade of the hinge on the frame and leaf.	<ol style="list-style-type: none"> 1mm thick Interdens - Lorient Polyproducts Ltd 1mm thick Therm-A-Strip – Intumescent Seals Ltd.
Concealed Hinges	As per the manufacturers tested detail. (Test reference QH150 (Rev.02))	The manufacturer of the permitted hinge detailed herein supplied intumescent material as tested in QH150 (Rev.02), only the supplied products are permitted for use.
Lock/latches	Under forend, keep & encasing the lock body within the leaf	<ol style="list-style-type: none"> 1mm thick Interdens - Lorient Polyproducts Ltd 1mm thick Therm-A-Strip – Intumescent Seals Ltd.



Example of hinge protection detail



Example of lock & latch protection detail

Gaskets must be fitted where required by supporting evidence, for example, test evidence or Certifire certificates. If gaskets are not required by the supporting evidence but are within this Field of Application, the requirements of this Field of Application take precedence.

9.3 Essential Hardware

The following table details the essential hardware for the various doorset configurations that are referenced in this assessment.

Configuration	Hardware
LSASD	<ul style="list-style-type: none"> • Latch • Handle • Hinges • Self-closing device (closer)

9.4 Latches & Locks

9.4.1 Single Point Engagement

The following tested latches and locks are permitted for use with the Ramkor doorset design:

Leaf options: 1 and 2

The table below details the tested latches and locks that are approved.

Element	Manufacturer & Product Reference
Locks & latches	<ol style="list-style-type: none"> 1. ALLGOOD mortice lock referenced SS7679F60 – PF059-1 2. Euroart mortice lock referenced DLA7255 – QC097-2 3. Laidlaw budget lock referenced LG.LADC.000.04.154 – QH150 (Rev.02) 4. Euroart mortice lock referenced DLA7260EP – RA148-1 (Rev.01) & RA148-2 (Rev.02)

Notes:

1. In all instances the location of the handle must be between 900 – 1200mm from the threshold.

9.4.2 Cylinders

The following tested cylinders are permitted for use with the Ramkor doorset design:

Leaf options: 1 and 2

The table below details the tested cylinders that are approved.

Element	Manufacturer & Product Reference
Cylinder	<ol style="list-style-type: none">1. ALLGOOD referenced SN7819B – PF059-12. Euroart referenced CYD145 – QC097-2

Alternatively, components with the following specification are also deemed acceptable.

- Where required for use with single point latches, the cylinder must be constructed of either brass or steel with a melting point in excess of 1000°C.
- The cylinder must be compatible with the lock/latch.
- Cylinder dimensions may be up to 33mm high x 17mm wide at the maximum dimension and may be of euro profile or oval.
- Single and double cylinders, along with cylinder & turn are permitted.
- Door preparation for single cylinders shall penetrate only half the door thickness.
- Intumescent protection and tightness of fitting:
 - The maximum clearance between leaf and cylinder is 1mm to each edge.
 - 1mm thick intumescent material permitted to be applied encasing the lock body is permitted around the cylinder.

9.5 Handles

The following tested handles are permitted for use with the Ramkor doorset design:

Leaf options: 1 and 2

The table below details the tested handles that are approved.

Element	Manufacturer & Product Reference
Handles	<ol style="list-style-type: none">1. ALLGOOD Stainless Steel lever handles referenced SS3510 – PF059-12. Euroart Stainless Steel lever handles referenced LRS202 – QC097-2

Notes:

1. The handle must be compatible with the lock / latch and cylinder, such that the closing action of the doorset is not impeded.

9.6 Butt Hinges

The following tested butt hinges are permitted for use with the Ramkor doorset design:

Leaf options: 1 and 2

The table below details the tested butt hinges that are approved.

Element	Manufacturer & Product Reference
Hinges	<ol style="list-style-type: none"> 1. ALLGOOD butt hinges reference ZQ0015124 – PF059-1 2. Euroart butt hinges reference ZQ0015124 – QC097-2 3. Euroart butt hinges reference HINBB443 – RA148-1 (Rev.01) & RA148-2 (Rev.01)

In all instances, the hinges must have the following specification.

Element	Specification
Hinge positions: If 3 hinges are required:	Top 100 –180mm from the head to top of hinge
	2 nd Centrally fitted between top and bottom hinge
	Bottom 150 - 250mm from the foot of leaf to bottom of hinge
Intumescent protection:	See section 9.2

9.7 Concealed Hinges

The following tested concealed hinges are permitted for use with the Ramkor doorset design:

Leaf options: 1 and 2

The concealed hinges detailed below are only permitted with sealing specifications: BH3 & AH1 detailed in section 4.5.5.

The table below details the tested butt hinges that are approved.

Element	Manufacturer & Product Reference
Hinges	<ol style="list-style-type: none"> 1. Laidlaw, concealed hinges reference LG.LADC.102.01.153 – QH150 (Rev.02)

In all instances, the hinges must have the following specification.

Element	Specification
Hinge positions: If 3 hinges are required:	Top 175 –180mm from the head to top of hinge
	2 nd Centrally fitted between top and bottom hinge
	Bottom 150 - 190mm from the foot of leaf to bottom of hinge
Intumescent protection:	See section 9.2

9.8 Doorset Self Closing

Doorset automatic self-closing shall be provided by overhead face fixed closers as demonstrated within the test evidence contained within section 3.

9.8.1 Overhead Face Fixed Closer

The following tested face fixed closers are permitted for use with the Ramkor doorset design:

Leaf options: 1 and 2

The table below details the tested overhead face-fixed closers that are approved.

Element	Manufacturer & Product Reference
Overhead face-fixed closers	<ol style="list-style-type: none">1. ALLGOOD overhead surface mounted closer reference SS9251/6DC – PF059-12. Euroart overhead surface mounted closer reference 6025BC – QC097-23. Simplex overhead surface mounted closer reference SDC25915 – QH150 (Rev.02)4. Euroart overhead surface mounted closer reference DC6025BC – RA148-1 (Rev.01)5. Hafele overhead surface mounted closer reference DCL15 – RA148-2 (Rev.01)

Alternatively, components with the following specification are also deemed acceptable.

- CERTIFIRE approved overhead face-fixed closers for 90-minute fire resistance applications on 64mm thick timber door and timber frames

Note:

It must be ensured that the closer is of sufficient strength and power to ensure the door leaf/leaves fully engage into the frame reveal

9.9 Non-Essential Hardware

Only the following items of non-essential hardware are permitted in addition to the prescribed essential hardware as detailed within section 9.3.

9.9.1 Pull Handles

These items are suitable in the following applications only:

Leaf options: 1 and 2

Steel, stainless steel or bronze handles may be surface-fixed or bolted through the door leaf, providing the length is limited to 1000mm between the fixing points. If through fixed, there must be no more than 1mm clearance between the hole and stud.

The above scope of application is provided as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted away from the edge of the door leaf, therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and therefore cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

9.9.2 Push Plates & Kick Plates

Leaf options: 1 and 2

Components with the following specification are also deemed acceptable as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted away from the edge of the door leaf, therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and therefore cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

Approved specification:

- Polymeric or metal (excluding aluminium) face-fixed hardware such as push plates and kick plates up to 2mm thick may be surface fitted to the doorset. These items of hardware are permitted up to a maximum of 20% of the door leaf area if mechanically fixed and a maximum of 30% if bonded with a contact or other thermally softening adhesive. Plates must not return around the door edges or 'notch out'/interrupt the door stop.

10 Installation


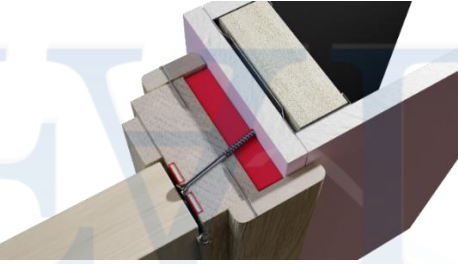

10.1 General

This section considers the installation of direct types of frames and doorset. This section considers:

- the door frame and architrave installation position relative to the wall
- the fire stopping between the frame and the wall
- the fixing requirement including packers
- the requirements for door edge gaps
- the trimming of door edges

10.2 Door Frame Installation

The following figures indicate the acceptable door frame installations. Please note that the firestopping element is provided in the below 3D models as a generic-coloured seal. For further clarification of the approved firestopping systems see section 10.3.

Permitted Installations	
	<p>Instances where the door frame and the wall of the same depth such that architraves are fitted flush to both faces. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see door frame section.</p> <p>Architraves requirements are documented in the firestopping section of this report.</p>
	<p>Instances where the wall thickness is greater than the door frame depth.</p> <p>Architraves requirements are documented in the firestopping section of this report.</p>
	<p>Split frames are permitted providing that both frame sections are secured to the wall in accordance with section 10.5. Furthermore, the main frame section (from which the door is hung) must be constructed to at least the minimum door frame section size (width and depth) as per the requirements noted in this report – see door frame section. The extension piece must be constructed using the same timber species as the main frame section.</p>

Note:

The drawings are provided as a generalised illustration of the door frame installation only; actual installation must be as per the text within this document specifies.

10.3 Firestopping

The firestopping requirements between the back of frame and wall are dependent on the gap size between the substrates. The table below provides the requirements based upon the gaps size and the tested solution as summarised within section 3.

Please note that in the 3D depictions noted below show the application where a door frame is of the same depth as the overall wall thickness.

Gap (mm)	Requirement	3D model depiction
Up to 10	<p>The void must be fully filled with Unifrax, Fiberfrax ceramic fibre allowing for a 20mm deep bead of one of the following intumescent mastics on both faces:</p> <ol style="list-style-type: none"> 1. Mada Gypsum – Fire Guard Intumescent Mastic 2. Firewise – Firewise Acoustic Intumescent Mastic 3. Pyroplex – Pyroplex Intumescent Acrylic Sealant <p>In this situation the application of architraves remains optional as PF059-1 was tested with no architraves present.</p>	
	<p>The void must be fully filled with Pyroplex, Polyurethane Expanding Foam, Aerosol Liquid allowing for a 20mm deep bead of the following intumescent mastic on both faces:</p> <ol style="list-style-type: none"> 1. Pyroplex – Pyroplex Intumescent Acrylic Sealant <p>In this situation the application cellulosic architraves of a minimum thickness of 10mm shall be applied to both faces. (QF150 (Rev.02)).</p>	

Alternative fire stopping solutions may be applied providing:

- The sealing medium has been tested at the required thickness and depth and has demonstrated 90 minutes integrity, as appropriate, to BS 476-22:1987 or BS EN 1634-1 (between masonry and timber or mineral composite frames).

For this alternative sealing solution, it is permitted to install the door without architraves (or architraves that do not meet the 15mm overlap requirement) providing the alternative solution was:

- Tested without architraves or any other capping material.

10.4 Packers

Packers can be timber of equal density to the frame, or plywood or plastic packers if fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1.

10.5 Wall Types, Structural Opening & Fixity

10.5.1 Wall Types

The following wall types are approved for this doorset design:

- a) Plasterboard clad timber stud partitions
- b) Plasterboard clad steel stud partitions including timber lining
- c) Masonry constructions

Wall types a & b above must have supporting fire resistance test evidence which demonstrates that it is capable of staying in place and intact for a minimum of 90 minutes supporting a doorset design.

Wall type c above must be determined to be able to provide at least the same level of fire resistance of the doorset design.

All wall types detailed above shall provide a suitable medium to permit adequate fixity, it is anticipated that for:

- Plasterboard clad timber stud partitions, the timber stud will be of sufficient dimensions such that the fixing for the door frame penetrates into solid timber.
- Plasterboard clad steel stud partitions will include a timber lining of sufficient dimensions such that the fixing for the door frame penetrates into solid timber.
- Masonry constructions are anticipated to be constructed of a solid block or brickwork to receive the fixings.

Note: Other tested solutions to achieve adequate fixity may be detailed within the above noted supporting fire resistance test evidence.

10.5.2 Structural Opening

For all wall types the structural opening shall be square, plumb and provide a flat surface for installation of the doorset

For flexible wall types such as steel and timber stud partitions the structural opening must be prepared in line with the test evidence provided by the wall manufacturer.

10.5.3 Fixity

In all instances the fixing position must be such that it provides adequate restraint to the element of construction throughout the exposure to fire. This may therefore sometimes necessitate a twin line of fixings.

The frame jambs only are to be fixed to the supporting construction using steel fixings at 500mm maximum centres and maximum of 150mm from corner. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 60mm. It is not necessary to fix the frame head, although packers must be inserted.

10.6 Post Production (Onsite) Leaf Size Adjustment

The Ramkor range of doorsets may be altered as follows:

Leaf Size Adjustment Specification	
Element	Reduction
Lipping	Where the door leaf lipping is 6mm or greater the post-production lipping thickness may be reduced by 1mm for fitting purposes, providing that the door gaps and intumescent conditions remain as required by this assessment and the minimum limitation in terms of lipping thickness is still maintained.
	Lipping measuring 5mm thickness or below may not be altered.

10.7 Door Gaps

Door gaps and alignment tolerances must fall within the following range:

Door Gap & Alignment Tolerance Specification	
Location	Dimension
Door edge gaps	A minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud of the door frame by more than 1mm.
Threshold	7mm between bottom of leaf and top of floor covering. This is the maximum tolerance for fire resistance only.

11 Insulation Performance

Insulation performance may be claimed for a doorset to this design meeting the following:

Insulation Performance Criteria	
Type	Details
Partially insulating	Doorsets incorporating up to 20% of non-insulating glazing
Fully insulating	Unglazed doorsets

12 Conclusion

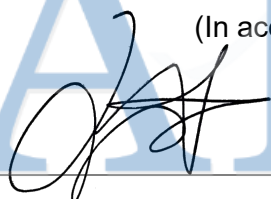
If the Ramkor doorsets constructed in accordance with the specification documented in this field of application were to be tested in accordance with BS 476: Part 22: 1987, it is our opinion that they would provide a minimum of 90 minutes integrity and insulation (subject to section 11).

13 Declaration by the Applicant

- 1) We the undersigned confirm that we have read and comply with obligations placed on us by the Passive Fire Protection Forum (PFPF) Guide to undertaking technical assessments and engineering evaluations based on fire test evidence 2021 Industry Standard Procedure
- 2) We confirm that any changes to a component or element of structure which are the subject of this assessment have not to our knowledge been tested to the standard against which this assessment has been made.
- 3) 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.
- 4) 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.
- 5) 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.

(In accordance with the principles of FTSG Resolution No. 82: 2001)

Signed: _____



Name: Joshua Clare _____

Position: Technical Manager _____

Date: 19th October 2022 _____

For and on behalf of: Falcon Panel Products Ltd



14 Limitations

The following limitations apply to this assessment:

- 1) This field of application addresses itself solely to the elements and subjects discussed and do not cover any other criteria or modifications. All other details not specifically referred to should remain as tested or assessed.
- 2) This field of application report is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available to Warringtonfire, 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.
- 3) This field of application has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.
- 4) Opinions and interpretation expressed herein are outside the scope of UKAS accreditation.
- 5) This field of application relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions, against the ISO 834 time/temperature curve that is stipulated in the standard this assessment concludes to. It does not purport to be a complete specification ensuring fitness for purpose and long-term serviceability. It is the responsibility of the client to ensure that the element conforms to recognised good practice in all other respects and that, with the incorporation of the guidance given in this field of application, the element is suitable for its intended purpose.
- 6) This field of application report represents our opinion as to the performance likely to be demonstrated on a test in accordance with BS 476: Part 22: 1987, on the basis of the test evidence referred to in this report. We express no opinion as to whether that evidence, and/or this field of application would be regarded by any Building Control authorities or any other third parties as sufficient for that or any other purpose.
- 7) This report may only be reproduced in full. Extracts or abridgements of reports shall not be published without permission of Warringtonfire. All work and services carried out by Warringtonfire Testing and Certification Limited are subject to, and conducted in accordance with, the Standard Terms and Conditions of Warringtonfire Testing and Certification Limited, which are available at <https://www.element.com/terms/terms-and-conditions> or upon request.
- 8) The version/revision stated on the front of this Field of Application supersedes all previous versions/revisions and must be used to manufacture doorsets from the stated validity date on this front cover. Previous revisions of the Field of Application cannot be used once an updated Field of Application has been issued under a new revision.

15 Validity

- 1) The assessment is initially valid for five years after which time it is recommended to be submitted to Warringtonfire for re-appraisal.
- 2) This assessment report is not valid unless it incorporates the declaration given in Section 13 duly signed by the applicant.

Position:	Assessor	Reviewer
Signature:		
Name:	N Whitelock*	A Winning*
Title:	Product Assessor	Senior Product Assessor

* For and on behalf of Warringtonfire

Appendix A: Revisions

Rev.	WF Ref.	Date	Description
A	WF521693	04/10/22	The report was revised and revalidated in line with the requirements of EN 15725: 2010 and those of the PFPF guidance to undertaking technical assessment's. A full review of the scope contained within the document was undertaken against the test evidence contained within.
B	WF521693	20/10/22	Correction to leaf thickness in the following sections: <ul style="list-style-type: none"> ○ 4.3.1 ○ 4.3.2 ○ 5.1.1 ○ 5.1.1