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Title

Field of Application for:

Lignum International Paneled and Glazed Timber Based Fire Resisting Doorsets

For 30 minutes Fire Resistance

Report No.:

WF396769 Revision C

Issue Date:

23rd October 2024

Valid Until:

23rd October 2029

Job Reference:

WF540048

Prepared for:

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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 Lignum International Ltd and relates to the fire resistance of 30 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.

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 laboratories, 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.

Certifire and documentation has been used to enhance the scope of application within this evaluation. At the time of issue of this document, the relevant documentation has remaining validity. The referenced supporting documentation must retain validity, with the same conclusions maintained for the aspects considered herein, in order that the relevant scope generated within this field of application report remains valid. This may necessitate a review of more recent iterations of supporting documentation, against those referenced in this assessment report. If the scope of the relevant supporting documentation changes, then Warringtonfire must be consulted to review the changes, and to consider their effect on the outcomes of this assessment report.

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

2 Proposal

It is proposed to consider the fire resistance performance of the specified proprietary Lignum International Limited Panelled and Glazed Timber Based Fire Resisting doorset designs, for 30 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 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 ±2% except where minimum, maximum or a range of dimensions are given.
- All door leaves with overpanels and both leaves of double doorsets must be manufactured using the same leaf option. It is not permitted to utilise a mixture of Leaf Options 1 to 6 in section 4.3 on an individual doorset.
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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. These test summaries are not intended to be a definitive guide to constructing a doorset. The details for the construction of a doorset must be taken from other sections within this Field of Application.

Note:

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

The test evidence has been generated across a number of different doorset configurations, including single leaf, double leaf, latched and unlatched 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.

It is therefore the opinion of Warringtonfire that the evidence citied in the following section, tested to both named standards referenced above can be utilised in this assessment which will conclude in terms of the fire resistance performance of the Lignum International Limited Panelled and Glazed Timber Based Fire Resisting doorset designs if tested in accordance with BS 476: Part 22: 1987.

3.1 Primary Test Evidence

The following summaries are provided to give the key details relevant to the tested specimen. Throughout this assessment report, relevant sections will reference the tests where they have been used to provide the scope of application.

3.1.1 Test Report WF387293

The referenced test report, the essential details of which are summarised below, is the primary data for Door Types 1 (Doorset B) & 4 (Doorset A). Two unlatched, single acting, single doorsets with particleboard core with mock stile and rails and decorative groove designs, being considered for assessment in this report.

Date of test	24th August 2017	
Identification of test body:	Exova Warringtonfire now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.	
Sponsor:	Lignum International Ltd.	
Tested Product:	Fully insulated single leaf, single acting timber, solid core doorsets. For the purpose of the test the doorsets were referenced 'A and B'	
Summary of test specimen:	Dimensions leaf A: 1983 (h) x 840 (w) x 44 (t) Dimensions leaf B: 1983 (h) x 840 (w) x 44 (t) **Doorset A:** Luli China Oak veneered particleboard 25 (t), Luli China Oak veneered Particleboard Mock Stile and Rails 9 (t), White Oak lipping 44 (w) x 6 (t) fitted on all edges, the door leaf was hung in a European Redwood frame 32 (w) on 3No. Royde & Tucker H101 lift off hinges. **Doorset B:** Luli China Oak veneered particleboard 44 (t), fitted with White Oak Decorative grooved inlays 14 (w) x 7 (d) incorporating a 5 (d) tapered groove, White Oak lipping 44 (w) x 6 (t) fitted on vertical edges only, the door leaf was hung in a European Redwood frame 32 (w) on 3No. Royde & Tucker H101 lift off hinges. **Frame Reveal Intumescents – both doorsets:** Lorient Polyproducts LP1504 Type 617 – fitted 15mm from the exposed face of the frame. Both doorsets were oriented to open towards heat conditions. Doorsets including a mortise latch, positioned at approximately mid-height of the doorset. The door leaves where unlatched for the duration of the test.	
Test Standard:	BS 476: Part 22: 1987	
Performance	**Doorset A**	Integrity: 32 minutes Insulation: 32 minutes
	Doorset B	Integrity: 45 minutes Insulation: 45 minutes

3.1.2 Test Report WF387294

The referenced test report, the essential details of which are summarised below, is the primary data for Door Type 1. Two unlatched, single acting, single doorsets with particleboard core with glazing designs, being considered for assessment in this report.

Date of test	25th August 2017
Identification of test body:	Exova Warringtonfire now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.
Sponsor:	Lignum International Ltd.
Tested Product:	Single leaf, single acting timber, solid core doorsets. For the purpose of the test the doorsets were referenced 'A and B'
Summary of test specimen:	Dimensions leaf A: 1981 (h) x 838 (w) x 44 (t) Dimensions leaf B: 1981 (h) x 838 (w) x 44 (t) Doorset A: Luli China Oak veneered particleboard 44 (t), White Oak lipping 6 (t) fitted on all edges, with 4 glazed apertures incorporating LEBEX CFG Toughened glass 6 (t), top aperture size of 384 (h) x 656 (w) fitted with White Oak beading 24 (h) x 19 (d) including an 11 (h) x 2 (w) rebate to incorporate the intumescent protection, 2nd aperture down size 352 (h) x 625 (w) fitted with White Oak beading 15 (h) x 19 (d) including a 11 (h) x 2 (w) rebate to incorporate the intumescent protection, 3rd aperture down size 254 (h) x 625 (w) fitted with White Oak square beading 15 (h) x 19 (d) including an 11 (h) x 2 (w) rebate to incorporate the intumescent protection, bottom aperture size 323 (h) x 595 (w) fitted with White Oak beading 20 (h) x 22 (d) including a 3 (h) x 5 (w) bolection return and a 11 (h) x 2 (w) rebate to incorporate the intumescent protection, all glazed apertures included a strip of Foshan Nanhai Pingzhi Graphite Based Intumescent 10 (w) x 2 (t) fitted between the glass and bead on both faces, the door leaf was hung in a European Redwood frame 32 (w) on 3No. Royde & Tucker H101 lift off hinges. Doorset B: Luli China Oak veneered particleboard 44 (t), White Oak lipping 6 (t) fitted on vertical edges only, with a glazed aperture incorporating LEBEX CFG Toughened glass 6 (t) aperture size 1735 (h) x 626 (w) fitted with 5Deg chamfered White Oak beading 17 (h) x 22 (d) including a 5 (h) x 5 (w) bolection return, glazed aperture included a strip of Foshan Nanhai Pingzhi Graphite Based Intumescent 10 (w) x 2 (t) fitted between the glass and bead on both faces, the door leaf was hung in a European Redwood frame 32 (w) on 3No. Royde & Tucker H101 lift off hinges.

Summary of test specimen:	**Frame Reveal Intumescents – both doorsets:** Lorient Polyproducts LP1504 Type 617 – fitted 15mm from the exposed face of the frame. Both doorsets were oriented to open towards heat conditions. Doorsets including a mortise latch, positioned at approximately mid-height of the doorset. The door leaves where unlatched for the duration of the test.	
Test Standard:	BS 476: Part 22: 1987	
Performance	**Doorset A**	Integrity: 29 minutes[1] Insulation: 0 minutes[2]
	Doorset B	Integrity: 37 minutes Insulation: 0 minutes[2]

[1] There was continuous flaming on doorset A at 29:07 minutes to the 3rd aperture down. There were no more failures until a cotton pad test at the latch position at 32:49 minutes which resulted in ignition of the cotton pad.

[2] In accordance with Section 8.6.1 of BS 476: Part 22: 1987, the specimen has not been evaluated for insulation.

3.1.3 Test Report RF10048

The referenced test report, the essential details of which are summarised below, is the primary data for Door Types 5 (Doorset A) & 3 Doorset B). Two unlatched, single acting, leaf and a half doorsets with particleboard core with mock stile and rails and decorative groove designs, being considered for assessment in this report.

Date of test	10th May 2010	
Identification of test body:	Chiltern International Fire now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.	
Sponsor:	Lignum International Ltd.	
Tested Product:	Fully insulated leaf and a half, single acting timber, solid core doorsets. For the purpose of the test the doorsets were referenced 'A and B'	
Summary of test specimen:	Dimensions leaf A: 2096 (h) x 926 (w) x 44 (t) Dimensions leaf B: 2096 (h) x 926 (w) x 44 (t) **Doorset A:** Dare wood-based panel group Particleboard 28 (t), Dare wood-based panel group particleboard mock stile and rails 8 (t), African Mahogany lipping 5 (t) fitted to all edges, the door leaf was hung in a European Redwood frame 22 (w) on 3No. Royde & Tucker H105 lift off hinges. **Doorset B:** 2no Dare wood-based panel group particleboard 22 (t) each, with 10 () x 3.4 (d) decorative grooves, African Mahogany lipping 5 (t) fitted to all edges, the door leaf was hung in a European Redwood frame 22 (w) on 3No. Royde & Tucker H105 lift off hinges. **Intumescents – both doorsets:** Frame Reveal: 1 No 15x4mm Pyroplex Rigid Box Seal FO8700 fitted centrally in frame reveal. Meeting Edge Intumescents: 1 No. 15x4mm Pyroplex Rigid Box Seal FO8700 to one leaf only. Both doorsets were oriented to open towards heat conditions. Doorsets including a mortise latch, positioned at approximately mid-height of the doorset. The door leaves where unlatched for the duration of the test.	
Test Standard:	BS 476: Part 22: 1987	
Performance	**Doorset A**	Integrity: 37 minutes Insulation: 37 minutes
	Doorset B	Integrity: 38 minutes Insulation: 38 minutes

3.1.4 Test Report RF10072

The referenced test report, the essential details of which are summarised below, is the primary data for Door Types 2 (Doorset A) & 6 (Doorset B). Two unlatched, single acting, leaf and a half doorsets with particleboard core with mock stile and rails and decorative groove designs, being considered for assessment in this report.

Date of test	30th June 2010	
Identification of test body:	Chiltern International Fire now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.	
Sponsor:	Lignum International Ltd.	
Tested Product:	Fully insulated leaf and a half, single acting timber, solid core doorsets. For the purpose of the test the doorsets were referenced 'A and B'	
Summary of test specimen:	Dimensions leaf A: 2200 (h) x 926 (w) x 44 (t) Dimensions leaf B: 2200 (h) x 926 (w) x 44 (t) **Doorset A:** Linex Particleboard 44 (t), including 10 (w) x 3.5 (d) grooves, Douglas fir lipping 5 (t) fitted to all edges, the door leaf was hung in a European Redwood frame 22 (w) on 3No. Royde & Tucker H105 lift off hinges. **Doorset B:** Linex particleboard 28 (t), incorporating Wan Hua Chinese straw board mock stile and rails 8 (t), Douglas fir lipping 5 (t) fitted to all edges, the door leaf was hung in a European Redwood frame 22 (w) on 3No. Royde & Tucker H105 lift off hinges. **Intumescents – both doorsets:** Frame Reveal: 1 No 15x4mm Pyroplex Rigid Box Seal FO8700 fitted centrally in frame reveal. Meeting Edge Intumescents: 1 No. 15x4mm Pyroplex Rigid Box Seal FO8700 to one leaf only. Both doorsets were oriented to open towards heat conditions. Doorsets including a mortise latch, positioned at approximately mid-height of the doorset. The door leaves where unlatched for the duration of the test.	
Test Standard:	BS 476: Part 22: 1987	
Performance	**Doorset A**	Integrity: 34 minutes Insulation: 34 minutes
	Doorset B	Integrity: 37 minutes Insulation: 37 minutes

3.1.5 Test report WF412734

The referenced test report, the essential details of which are summarised below, is the supplementary data for Door Type 1, with LEBEX CFG Toughened glass incorporating square beading, considered for assessment in this report.

Date of test	11th July 2019	
Identification of test body:	Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.	
Sponsor:	Lignum International Ltd.	
Tested Product:	Unframed glazed door leaf section. For the purpose of the test the leaf was referenced 'A'	
Summary of test specimen:	Dimensions leaf A: 1127 (h) x 870 (w) x 43 (t) Doorset A: Luli China Oak veneered particleboard 43 (t), Douglas Fir lipping 6 (t) fitted to all edges, with a glazed aperture incorporating LEBEX CFG Toughened glass 6 (t) aperture size 916 (h) x 696 (w) fitted with Douglas Fir beading 15 (h) x 17 (d) glued using PVAc adhesive Akzo, glazed aperture included a strip of Foshan Nanhai Pingzhi Graphite Based Intumescent 10 (w) x 2 (t) fitted between the glass and bead on both faces and centrally into the core and glazing edge, which had been rebated into the core, the door leaf was fixed directly into the supporting construction.	
Test Standard:	Indicative fire resistance test utilizing the temperature and pressure conditions of BS 476: Part 20: 1987 and the principles of BS 476: Part 22: 1987 (and current FTSG Resolutions where applicable)	
Performance	**Doorset A**	Integrity: 35 minutes Insulation: 0 minutes[1]

[1] In accordance with Section 8.6.1 of BS 476: Part 22: 1987, the specimen has not been evaluated for insulation.

3.1.6 Test report IF10072

The referenced test report, the essential details of which are summarised below, is the supplementary data for Door Type 6, with Pilkington Pyroshield 2 glazing, considered for assessment in this report.

Date of test	21st September 2010	
Identification of test body:	Chiltern International Fire now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.	
Sponsor:	Lignum International Ltd.	
Tested Product:	Section of door leaf, hung within a door frame with a glazed aperture. For the purpose of the test the leaf was referenced 'A'	
Summary of test specimen:	Dimensions leaf A: 1010 (h) x 1010 (w) x 44 (t) Doorset A: Linex particleboard 28 (t), incorporating Wan Hua Chinse Strawboard 8 (t), Douglas Fir lipping 5 (t) fitted to all edges, with a glazed aperture incorporating Pilkington Pyroshield 2 6 (t) aperture size 800 (h) x 800 (w) fitted with a 13Deg chamfered Sapele beading 20 (h) x 22 (d) including a 5 (h) x 5 (w) bolection return, glazed aperture included a Sealmaster Fireglaze compound 2 (t) fitted between the glass and bead on both faces, leaf was hung in a European Redwood frame 22 (w) on 2No. Steel hinges.	
Test Standard:	Indicative fire resistance test utilizing the temperature and pressure conditions of BS 476: Part 20: 1987 and the principles of BS 476: Part 22: 1987 (and current FTSG Resolutions where applicable)	
Performance	**Doorset A**	Integrity: 35 minutes[1] Insulation: 0 minutes[2]

[1] A cotton pad test was performed at the top hinge position at 35:23 minutes, which resulted in ignition of the cotton pad. No failures occurred to the glazed unit until continuous flaming at the top left corner of the beading at 41:10 minutes.

[2] In accordance with Section 8.6.1 of BS 476: Part 22: 1987, the specimen has not been evaluated for insulation.

3.1.7 Test report IF10073

The referenced test report, the essential details of which are summarised below, is the supplementary data for Door Type 5, with Pilkington Pyroshield 2 glazing, considered for assessment in this report.

Date of test	20th September 2010	
Identification of test body:	Chiltern International Fire now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.	
Sponsor:	Lignum International Ltd.	
Tested Product:	Section of door leaf, hung within a door frame with a glazed aperture. For the purpose of the test the leaf was referenced 'A'	
Summary of test specimen:	Dimensions leaf A: 1010 (h) x 1010 (w) x 44 (t) Doorset A: Dare Global particleboard 28 (t), incorporating Dare Global Particleboard facings 8 (t), Douglas Fir lipping 5 (t) fitted to all edges, with a glazed aperture incorporating Pilkington Pyroshield 2 6 (t) aperture size 800 (h) x 800 (w) fitted with a 13Deg chamfered Sapele beading 20 (h) x 22 (d) including a 5 (h) x 5 (w) bolection return, glazed aperture included a Sealmaster Fireglaze compound 2 (t) fitted between the glass and bead on both faces, leaf was hung in a European Redwood frame 22 (w) on 2No. Steel hinges.	
Test Standard:	Indicative fire resistance test utilizing the temperature and pressure conditions of BS 476: Part 20: 1987 and the principles of BS 476: Part 22: 1987 (and current FTSG Resolutions where applicable)	
Performance	**Doorset A**	Integrity: 42 minutes Insulation: 0 minutes[1]

[1] In accordance with Section 8.6.1 of BS 476: Part 22: 1987, the specimen has not been evaluated for insulation.

3.1.8 Test report IF10074

The referenced test report, the essential details of which are summarised below, is the supplementary data for Door Type 3 with Pilkington Pyroshield 2 glazing, considered for assessment in this report.

Date of test	20th September 2010	
Identification of test body:	Chiltern International Fire now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.	
Sponsor:	Lignum International Ltd.	
Tested Product:	Section of door leaf, hung within a door frame with a glazed aperture. For the purpose of the test the leaf was referenced 'A'	
Summary of test specimen:	Dimensions leaf A: 1010 (h) x 1010 (w) x 44 (t) Doorset A: 2No Dare Global particleboard 22 (t) each, incorporating Dare Global Particleboard facings 8 (t), Douglas Fir lipping 5 (t) fitted to all edges, with a glazed aperture incorporating Pilkington Pyroshield 2 6 (t) aperture size 800 (h) x 800 (w) fitted with a 13Deg chamfered Sapele beading 20 (h) x 22 (d) including a 5 (h) x 5 (w) bolection return, glazed aperture included a Sealmaster Fireglaze compound 2 (t) fitted between the glass and bead on both faces, leaf was hung in a European Redwood frame 22 (w) on 2No. Steel hinges.	
Test Standard:	Indicative fire resistance test utilizing the temperature and pressure conditions of BS 476: Part 20: 1987 and the principles of BS 476: Part 22: 1987 (and current FTSG Resolutions where applicable)	
Performance	**Doorset A**	Integrity: 57 minutes Insulation: 0 minutes[1]

[1] In accordance with Section 8.6.1 of BS 476: Part 22: 1987, the specimen has not been evaluated for insulation.

3.1.9 Test report IF10075

The referenced test report, the essential details of which are summarised below, is the supplementary data for Door Type 2 with Pilkington Pyroshield 2 glazing, considered for assessment in this report.

Date of test	20th September 2010	
Identification of test body:	Chiltern International Fire now trading as Warringtonfire Testing and Certification Ltd. UKAS Notified Body 1762.	
Sponsor:	Lignum International Ltd.	
Tested Product:	Section of door leaf, hung within a door frame with a glazed aperture. For the purpose of the test the leaf was referenced 'A'	
Summary of test specimen:	Dimensions leaf A: 1010 (h) x 1010 (w) x 44 (t) Doorset A: Linex particleboard 44 (t), Douglas Fir lipping 5 (t) fitted to all edges, with a glazed aperture incorporating Pilkington Pyroshield 2 6 (t) aperture size 800 (h) x 800 (w) fitted with a 13Deg chamfered Sapele beading 20 (h) x 22 (d) including a 5 (h) x 5 (w) bolection return, glazed aperture included a Sealmaster Fireglaze compound 2 (t) fitted between the glass and bead on both faces, leaf was hung in a European Redwood frame 22 (w) on 2No. Steel hinges.	
Test Standard:	Indicative fire resistance test utilizing the temperature and pressure conditions of BS 476: Part 20: 1987 and the principles of BS 476: Part 22: 1987 (and current FTSG Resolutions where applicable)	
Performance	**Doorset A**	Integrity: 47 minutes[1] Insulation: 0 minutes[2]

[1] A cotton pad test was performed at the top hinge position, which resulted in ignition at 47:20 minutes. No failures occurred to the glazing until continuous flaming at the top closing corner caused ignition of the glazing beading at 52:30 minutes.

[2]In accordance with Section 8.6.1 of BS 476: Part 22: 1987, the specimen has not been evaluated for insulation.

3.2 Certifire Certificates

3.2.1 Certifire Certificate CF377

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the AGC Glass UK Ltd glazing Pyrobelite 7 for the proposed door leaf glazing as detailed in section 6 of this report.

CERTIFIRE certification is gained by a third party analysis of previously tested glazing and approval against quality procedures and represents a higher level of attestation than simple 'type' testing.

The Pyrobelite 7 glass is approved on the basis of:

a) Initial type testing on independently sampled product.

b) A design appraisal against a Technical Schedule (TS25).

c) Regular product manufacturing audits and surveillance under ISO 9001

d) Regular audit fire testing on independently sampled product.

It is therefore deemed acceptable to use this approval as a basis for technical justification of the glazing considered in this appraisal.

Validity period	Issued:	1st April 2005
	Revised:	6th August 2024
	Valid to:	20th June 2029
Identification of certification body:	Warringtonfire testing and Certification Limited	
Sponsor:	AGC GLASS UK LIMITED	
Certified Product:	Pyrobelite 7	
Technical Schedule:	TS25 Fire Resistant Glass, Glazing Systems and Materials	
Summary of certification:	The contribution to the fire resistance of Pyrobelite 7 glazing for use with timber door assemblies for 30 integrity, as defined in BS 476: Part 22 (NB: the basis of the approval is outlined in the referenced certificate)	
Test Standard:	BS 476 Part: 22: 1987	

3.2.2 Certifire Certificate CF328

The referenced CERTIFIRE certificate, the essential details of which are summarised below, is to be used to support the Pilkington UK Ltd. glazing Pyrodur 30-104 for the proposed door leaf glazing as detailed in section 6 of this report.

CERTIFIRE certification is gained by a third party analysis of previously tested glazing and approval against quality procedures and represents a higher level of attestation than simple 'type' testing.

The Pyrodur 30-104 glass is approved on the basis of:

a) Initial type testing on independently sampled product.

b) A design appraisal against a Technical Schedule (TS25).

c) Regular product manufacturing audits and surveillance under ISO 9001

d) Regular audit fire testing on independently sampled product.

It is therefore deemed acceptable to use this approval as a basis for technical justification of the glazing considered in this appraisal.

Validity period	Issued:	8th July 2004
	Revised:	22nd October 2024
	Valid to:	22nd October 2029
Identification of certification body:	Warringtonfire testing and Certification Limited	
Sponsor:	Pilkington United Kingdom	
Certified Product:	Pyrodur 30-104	
Technical Schedule:	TS25 Fire Resistant Glass, Glazing Systems and Materials	
Summary of certification:	The contribution to the fire resistance of Pyrodur 30-104 for use with timber door assemblies for 30 integrity, as defined in BS 476: Part 22 **NB**: the basis and full scope of the approval is outlined in the referenced certificate	
Test Standard:	BS 476 Part: 22: 1987	

4 Technical Specification

4.1 General

The technical specification for the proposed door assemblies 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 – Luli Particleboard – 44mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings
4. Decorative grooves to the leaf face

4.3.2 Leaf 2 – Linex Particleboard– 44mm thick

The door designs can include:

1. Glazing (Pyroshield 2 only)
2. Various hardware options
3. Decorative facings
4. Decorative grooves to the leaf face

4.3.3 Leaf 3 – Twin Layer Darewood Particleboard – 44mm thick

The door designs can include:

1. Glazing (Pyroshield 2 only)
1. Various hardware options
2. Decorative facings
3. Decorative grooves to the leaf face

4.3.4 Leaf 4 – Lulli Particleboard Mock Stile & Rail – 25mm thick core

The door designs can include:

1. Mock stile and rail design
2. Raised and fielded panels
3. Various hardware options

4.3.5 Leaf 5 – Particleboard Mock Stile & Rail – 28mm thick core

The door designs can include:

1. Mock stile and rail design
2. Various hardware options

4.3.6 Leaf 6 – Particleboard Mock Stile & Rail Strawboard facing – 28mm thick core

The door designs can include:

1. Mock stile and rail design
2. Various hardware options

4.4 Door Frames

The construction of the door frames is softwood 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 30 minutes integrity for the design
2. The characteristics exhibited during test and
3. The doorset configuration tested

The evaluation of the permitted configurations included in this field of application is based on the configuration(s) tested. The principle is that the more components included in testing, for example, double door leaves and an overpanel – the harder it becomes to pass a test. In this specific example it is because the junction between two door leaves or door leaf and overpanel introduces a discontinuity into the doorset which can be a means of failure. This approach leads to the following statements:

1. A test on a double doorset is more onerous than a test on a single doorset
2. A test on a doorset with a flush overpanel is more onerous than a test on a doorset without an overpanel. A flush overpanel has the same thickness as the door leaf and is flush with the leaf/leaves.
3. 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

4. A test on an unlatched single acting doorset is considered to be equivalent to a double acting doorset, due to the known deflection of an unlatched single acting doorset towards the furnace conditions i.e. away from the door stop. However, this does not cover doorsets with flush overpanels
5. A doorset with transomed overpanel is considered to perform comparably to a similar doorset without an overpanel. This is because the transom structurally separates the overpanel from the doorset.

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 Lignum International Paneled and Glazed Timber Based 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				
Ref	Depiction	Abbreviation	Description	Leaf Type
A		LSASD	Latched Single Acting Single Doorset	All
B		ULSASD	Unlatched Single Acting Single Doorset	All
C		LSADD	Latched Single Acting Double Doorset	2, 3, 5 & 6
D		ULSADD	Unlatched Single Acting Double Doorset	2, 3, 5 & 6

4.5.3 Orientation

The majority of 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.

Unequal leaf double doorsets are covered by this assessment with no restriction on the smaller leaf dimensions providing it does not exceed the relevant leaf size envelope and is not smaller in width than 300mm.

For equal double doorsets both leaves must comply with the door leaf envelope size limitations.

A table of essential hardware is given in section 10.3 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 are to be fitted centrally unless stated otherwise.
- Intumescent seals are fully interrupted at hardware locations unless stated otherwise.
- Intumescent seals must run the full length of the leaf edge or frame reveals, with tightly formed abutting corner joints, unless stated otherwise.
- Vertical perimeter intumescent seals may include one tight butt joint in their length if needed.
    - Where two seals are fitted, the joints must be offset by a minimum of 100mm and may not be coincident.
    - Where one seal is fitted the joint must be in the lower half of the doorset.

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 six leaf types and single (one) 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 LSASD increasing in configuration complexity up to ULSADD
- for each configuration, each leaf type is considered separately.
- for each configuration and leaf type, each frame 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.

Summary of Permitted Configurations – Subject to Leaf Type

Permitted Configurations with leaf type 1 & 4			
		Configuration	
		LSASD	ULSASD
Frame	1 – Softwood or Hardwood frame*	Yes	Yes

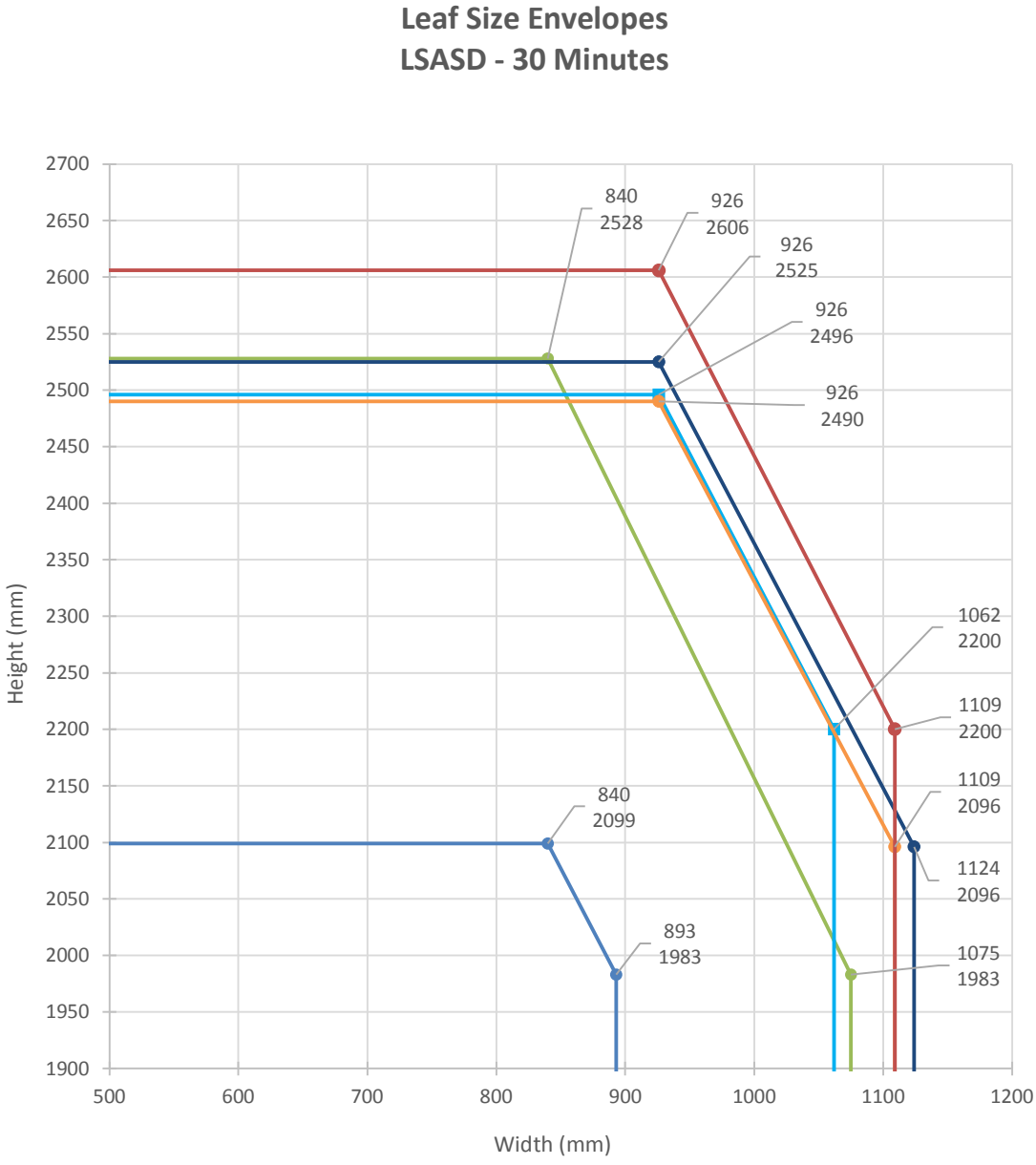
* See Section 7 for specific limitations with respect to the framing types

Permitted Configurations with leaf type 2, 3, 5 & 6					
		Configuration			
		LSASD	ULSASD	LSADD	ULSADD
Frame	2 – Softwood or Hardwood frame*	Yes	Yes	Yes	Yes

* See Section 7 for specific limitations with respect to the framing types

4.5.4.3 LSASD Configuration: Leaf Sizes & Intumescent Specification

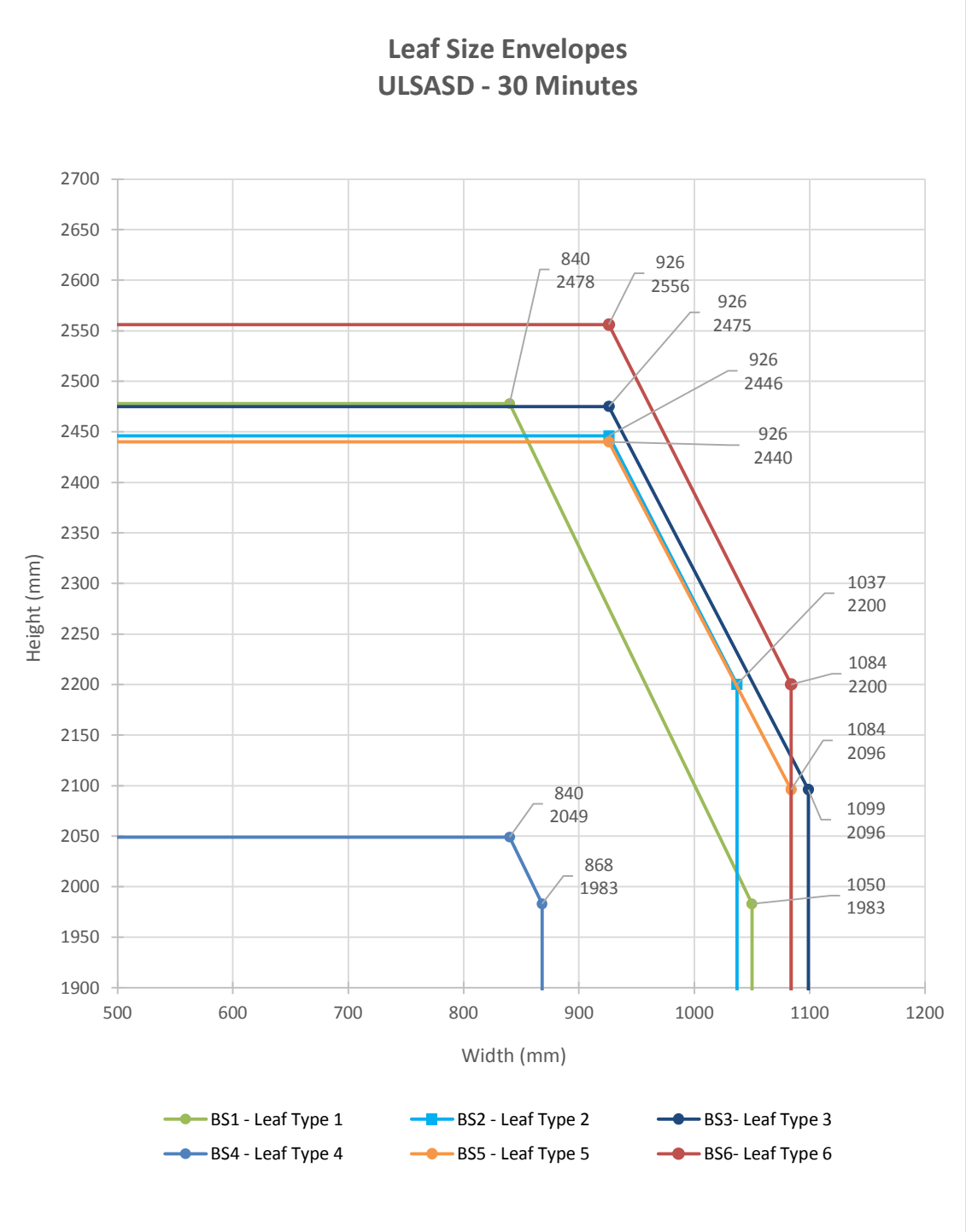
All Leaf Types (1 – 6)



Intumescent Specification for LSASD			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS1 Leaf Type 1 (WF387293 Doorset B)	LP1504 Type 617	Lorient Polyproducts Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges
AS2 Leaf Type 2 (RF10072 Doorset A)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges
AS3 Leaf Type 3 (RF10048 Doorset B)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges
AS4 Leaf Type 4 (WF387293 Doorset A)	LP1504 Type 617	Lorient Polyproducts Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges
AS5 Leaf Type 5 (RF10048 Doorset A)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges
AS6 Leaf Type 6 (RF10072 Doorset B)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges

4.5.4.4 ULSASD Configuration: Leaf Sizes & Intumescent Specification

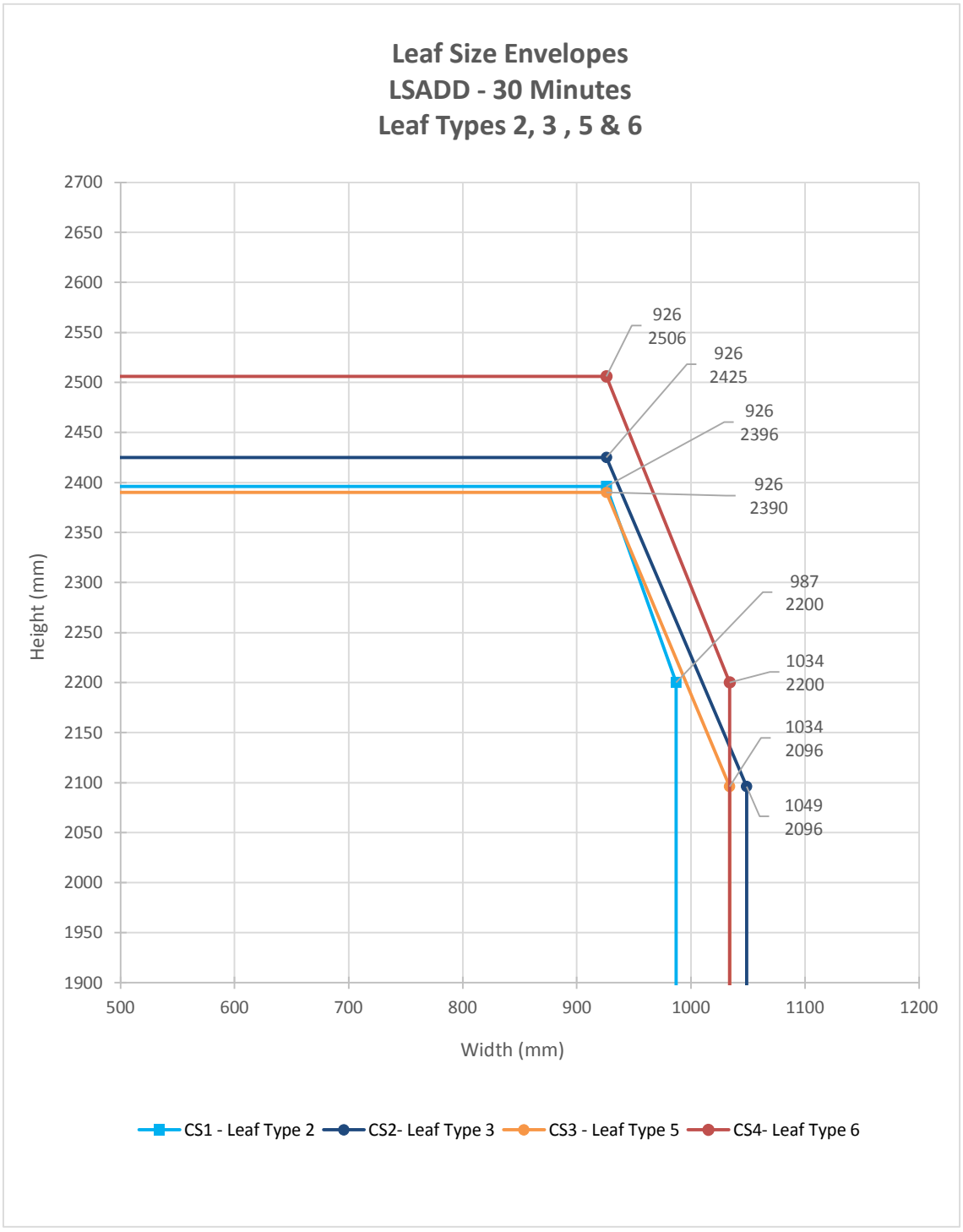
All Leaf Types



Intumescent Specification for LSASD			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BS1 Leaf Type 1 (WF387293 Doorset B)	LP1504 Type 617	Lorient Polyproducts Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges
BS2 Leaf Type 2 (RF10072 Doorset A)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges
BS3 Leaf Type 3 (RF10048 Doorset B)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges
BS4 Leaf Type 4 (WF387293 Doorset A)	LP1504 Type 617	Lorient Polyproducts Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges
BS5 Leaf Type 5 (RF10048 Doorset A)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges
BS6 Leaf Type 6 (RF10072 Doorset B)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges

4.5.4.5 LSADD Configuration: Leaf Sizes & Intumescent Specification

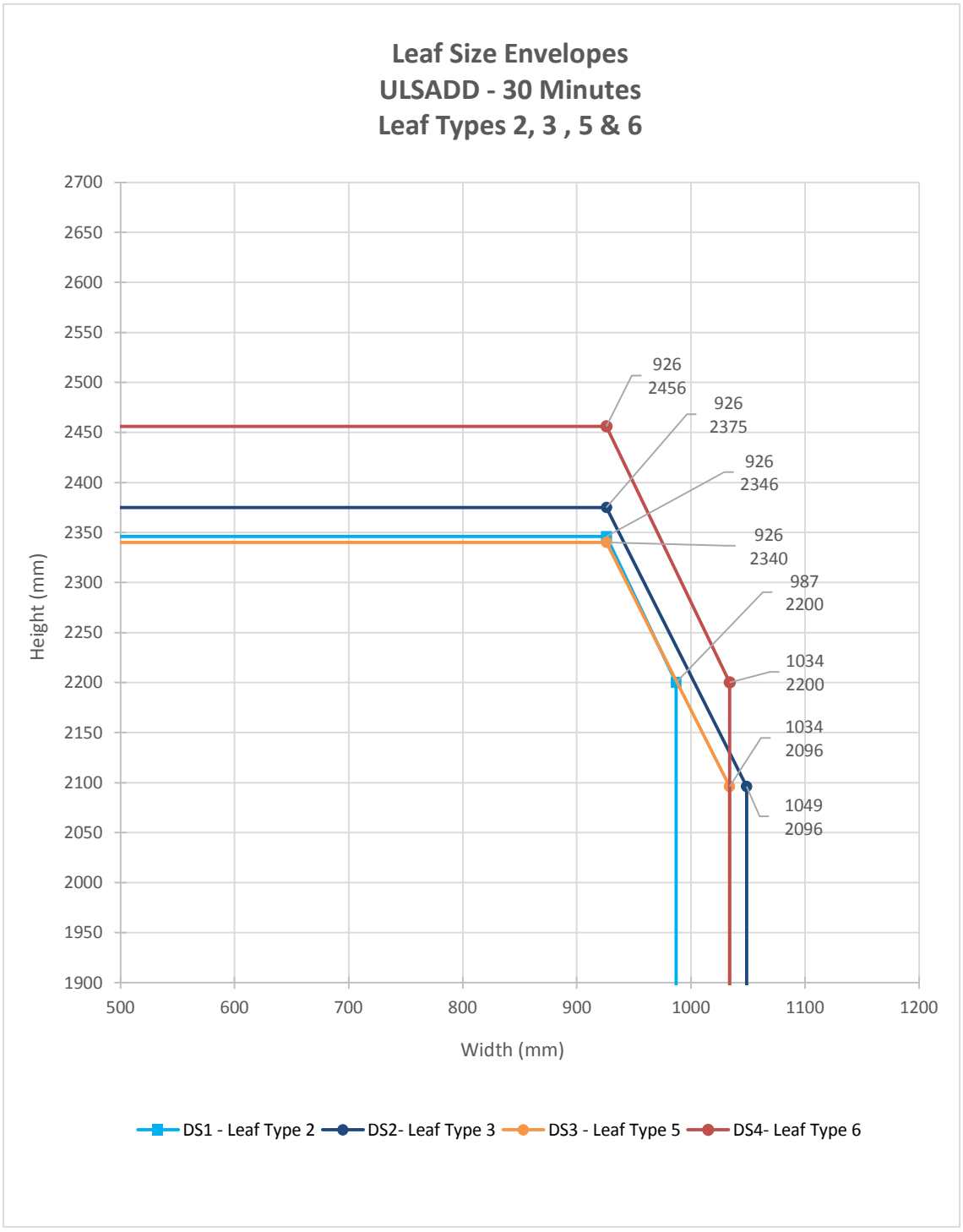
Leaf Types 2,3,5 & 6



Intumescent Specification for LSADD			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
CS1 Leaf Type 2 (RF10072 Doorset A)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges **Meeting Edge:** 1no 15x4mm seal fitted centrally in the inactive leaf.
CS2 Leaf Type 3 (RF10048 Doorset B)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges **Meeting Edge:** 1no 15x4mm seal fitted centrally in the inactive leaf.
CS3 Leaf Type 5 (RF10048 Doorset A)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges **Meeting Edge:** 1no 15x4mm seal fitted centrally in the inactive leaf.
CS4 Leaf Type 6 (RF10072 Doorset B)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges **Meeting Edge:** 1no 15x4mm seal fitted centrally in the inactive leaf.

4.5.4.6 ULSADD Configuration: Leaf Sizes & Intumescent Specification

Leaf Types 2,3,5 & 6



Intumescent Specification for LSADD			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
DS1 Leaf Type 2 (RF10072 Doorset A)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges **Meeting Edge:** 1no 15x4mm seal fitted centrally in the inactive leaf.
DS2 Leaf Type 3 (RF10048 Doorset B)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges **Meeting Edge:** 1no 15x4mm seal fitted centrally in the inactive leaf.
DS3 Leaf Type 5 (RF10048 Doorset A)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges **Meeting Edge:** 1no 15x4mm seal fitted centrally in the inactive leaf.
DS4 Leaf Type 6 (RF10072 Doorset B)	Pyroplex FO8700 Rigid Box Seal	Reddiplex Ltd.	**Head & Jambs:** 1no 15x4mm strip fitted centrally in frame reveal or leaf edges **Meeting Edge:** 1no 15x4mm seal fitted centrally in the inactive leaf.

5 General Description of Construction

5.1 Leaf Core Construction

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

5.1.1 Leaf Type 1 – (Luli Particleboard) – 44mm thick

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

Element		Material	Dimensions (mm)	Density (kg/m³)
Stiles and rails		None fitted	-	-
Core		Luli Particleboard(3)	44mm thick overall	420(1)
Adhesive	Lipping	AkzoNobel EPI System 1911 with Hardener 1990(3)	-	-
	Veneer	AkzoNobel EPI System 1911 with Hardener 1990(3)	-	-
	Core	Urea Formaldehyde(3)		
Lippings- all edges		White Oak	6 thick	700(2)

Table Notes:

(1) Determined by laboratory at 12% moisture content
(2) Nominal density
(3) Stated by client, not verified by laboratory

Notes:

The leaf must be lipped as specified in section 5.3.
The minimum leaf thickness after calibration is 43mm (a maximum of 0.5mm from both sides).
The minimum leaf thickness after finishes applied is 44mm.

5.1.2 Leaf Type 2 – (Linex Particleboard) – 44mm thick

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

Element		Species/type	Dimensions (mm)	Density (kg/m³)
Stiles and rails		None fitted	-	-
Core		Linex particleboard	44 thick including 10mm wide x 3.5mm deep grooves in the leaf faces	530(1)
Facings		None fitted	-	-
Adhesive	Lipping	PVA	-	-
Lippings – all edges		Douglas fir	5 thick	530(1)

Table Notes:

(1) Stated by client, not verified by laboratory

Notes:

The leaf must be lipped as specified in section 5.3.
The minimum leaf thickness after calibration is 43mm (a maximum of 0.5mm from both sides).
The minimum leaf thickness after finishes applied is 44mm.

5.1.3 Leaf Type 3 – (Twin Layer Darewood Particleboard) – 44mm thick

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

Element		Species/type	Dimensions (mm)	Density (kg/m³)
Stiles and Rails		None fitted	-	-
Core		2No layers Dare wood-based panel group Particleboard	22 thick each layer with 10 wide x 3.5mm deep decorative grooves	640(1)
Adhesive	Lipping	PVAc	-	-
	Core	PVAc	-	-
Lippings – All edges		African mahogany	5 thick	500-550(1)

Table Notes:

(1) Stated by client, not verified by laboratory

Notes:

The leaf must be lipped as specified in section 5.3.
The minimum leaf thickness after calibration is 43mm (a maximum of 0.5mm from both sides).
The minimum leaf thickness after finishes applied is 44mm.

5.1.4 Leaf Type 4 – (Lulli Particleboard Mock Stile & Rail) – 25mm thick

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

Element		Species/type	Dimensions (mm)	Density (kg/m³)
Stiles and Rails		None fitted	-	-
Core		Luli particleboard	25 (t) overall	650-700(2)
'Mock' stile facings		Luli particleboard	9 (t)	700-800(2)
'Mock' top rail facings		Luli particleboard	9 (t)	700-800(2)
'Mock' bottom rail facings		Luli particleboard	9 (t)	700-800(2)
'Mock 'stiles and rails edge capping		White Oak(2)	6 thick	695(1)
Adhesive	Lippings	AkzoNobel EPI System 1911 with Hardener 1999(2)	-	-
	Veneer	AkzoNobel EPI System 1911 with Hardener 1999(2)	-	-
	Core	Urea Formaldehyde(2)	-	-
Lippings – all edges		White Oak	6 thick	640(1)

Table Notes:

(1) Determined by laboratory at 12% moisture content
(2) Stated by client, not verified by laboratory

Notes:

The leaf must be lipped as specified in section 5.3.
The minimum leaf thickness after calibration is 43mm (a maximum of 0.5mm from both sides).
The minimum leaf thickness after finishes applied is 44mm.

5.1.5 Leaf Type 5 – (Particleboard Mock Stile & Rail) – 48mm thick

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

Element		Material	Dimensions (mm)	Density (kg/m³)
Stiles and Rails		None fitted	-	-
Core		Particleboard	28mm thick	630(1)
Mock Panel (surface applied stiles and rails to both sides)		Particleboard	8 thick	720(1)
Adhesive	Lipping	PVAc	-	-
	Facing	PVAc	-	-
Lippings (all edges)		African mahogany	5 thick	500-550(2)

Table Notes:

(1) Determined by laboratory at 12% moisture content
(2) Nominal density

Notes:

The leaf must be lipped as specified in section 5.3.
The minimum leaf thickness after calibration is 43mm (a maximum of 0.5mm from both sides).
The minimum leaf thickness after finishes applied is 44mm.

5.1.6 Leaf Type 6 – (Particleboard Mock Stile & Rail Strawboard facing) – 28mm thick

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

Element		Material	Dimensions (mm)	Density (kg/m³)
Stiles and Rails		None fitted	-	-
Core		Particleboard	28mm thick	530(1)
Mock Panel (surface applied stiles and rails to both sides)		Strawboard	8 thick	480-530(2)
Adhesive	Lipping	PVAc	-	-
	Facing	PVAc	-	-
Lippings (all edges)		Douglas fir	5 thick	530(3)

Table Notes:

(1) Determined by laboratory at 12% moisture content
(2) Nominal density
(3) Stated by client, not verified by laboratory

Notes:

The leaf must be lipped as specified in section 5.3.
The minimum leaf thickness after calibration is 43mm (a maximum of 0.5mm from both sides).
The minimum leaf thickness after finishes applied is 44mm.

5.2 Leaf Size Adjustment During Manufacturer – all Leaf Options

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

Pre-Machining Leaf Size Adjustment Specification	
Element	Reduction
Leaf	The manufactured dimensions of the leaf may not be reduced in height or width (smaller doors may be manufactured - see section 4.3)
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

5.3 Timber Lipping – All Leaf Types

The testing documented in section 3 has generally been undertaken using 5 - 6mm thick lippings applied to the vertical or all edges using species at varying densities. A number of different adhesives have also been used to seal the lippings.

On the above basis, Lignum International Paneled and Glazed Timber Based door blanks (leaf types 1 & 6) must be lipped with the following specification, for all leaf types and solid overpanels, where appropriate.

	Timber Lipping Specification for Leaf Types **1- 6**		
Leaf Type	Material	Size (mm)	Min Density (kg/m^3)
2 & 6	Douglas Fir or Hardwood	1. Flat = 5 – 10 thick 2. Rounded – Not Permitted 3. Rebated – Not Permitted	530
3 & 5	Hardwood	1. Flat = 5 – 10 thick 2. Rounded – Not Permitted 3. Rebated – Not Permitted	530~550
1 & 4	Hardwood	1. Flat = 5 – 10 thick 2. Rounded – Not Permitted 3. Rebated – Not Permitted	640~770

Notes:

1. All lippings are to be the same thickness as the door leaf.
2. Overpanels separated from the leaf heads with a transom do not need to be lipped.
3. Single and double doorsets with or without transomed overpanels require lipping to all edges.
4. Lippings can be bonded using the adhesive listed for lippings Section 9. These may be hand applied or may be applied using an edgebander. With either method 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, for either installation application.
5. For flat lippings it is permitted to apply maximum 8mm radius to the corners of the lipping at vertical edges to create a maximum 2mm edge profiling.

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 to the leaf 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[5]	0.2
Timber veneers[3]	2
Plastic or resin laminates (HPL)[3]	2
PVC[3]	2
Cellulosic and non-metallic foils[3]	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 44mm after finishing has been applied.
3. Materials may over sail lippings but must not return around leaf edges.
4. For all options, materials must not conceal intumescent strips.
5. Intumescent paints are not permitted.

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

5.5 Grooving Details - Leaf Types 1, 2 & 3

Both sides of the door leaves may be grooved to the following specifications.

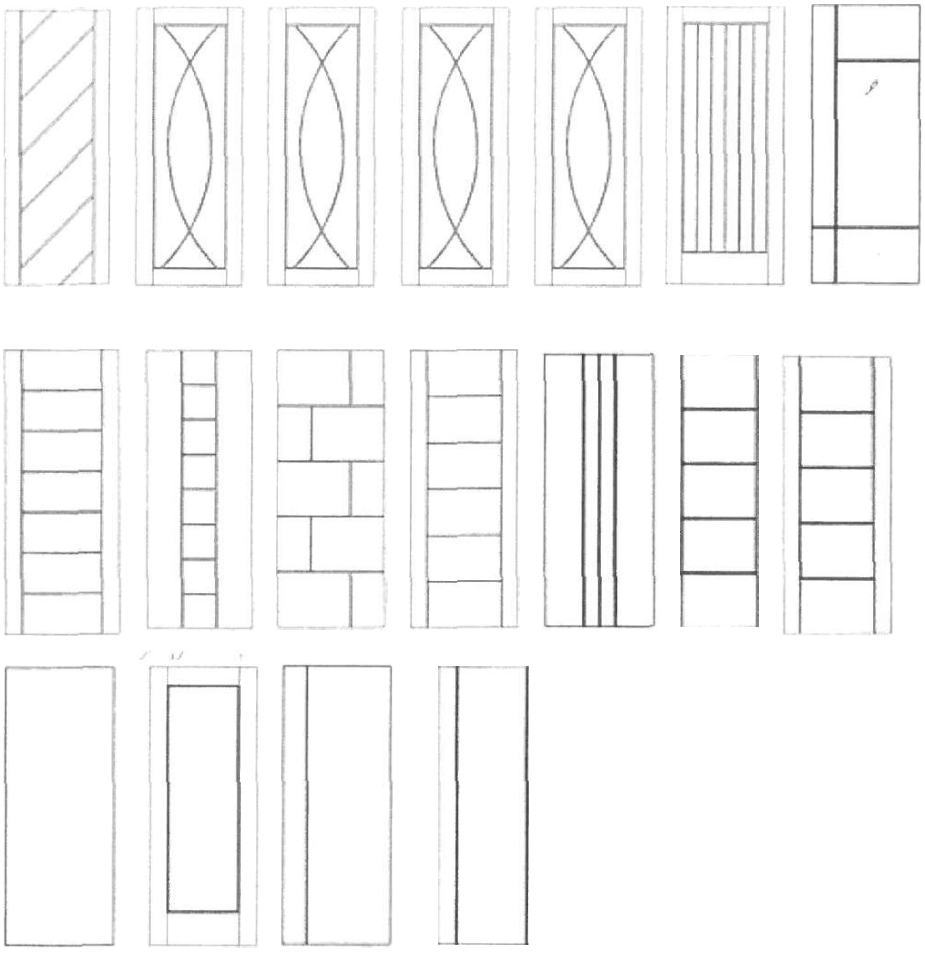
Feature grooves cannot be located within 20mm of any mortice for hardware (i.e. any item which requires material to be removed from the door)

The following section details the tested grooving arrangement and the limitations associated with each groove option.

5.5.1 Groove Option A – Leaf Types 1, 2 & 3

Groove Option A		
Element	Details	
Max. groove size (mm)	10mm wide x 3.5mm deep	
Inserts	Not Permitted	
Adhesive	Not applicable	
Proximity to door edges (mm)	Horizontal Grooves	May extend full width – a minimum of 90mm from the top and bottom of the door leaf must be maintained.
	Vertical Grooves	May extend full height– a minimum of 90mm from the vertical edges of the door leaf must be maintained.
	Diagonal Grooves	May intersect horizontal and vertical grooves and also extend to the top and bottom edges of the leaf.
	Curved Grooves	Must be bounded by and intersect horizontal and vertical grooves.
Groove spacing (mm)	Parallel groves (in any shape of orientation) must be spaced at a minimum of 90mm apart.	
Orientation	Horizontal, Vertical, Diagonal or curved	
Configuration	Latched & unlatched, single acting, single & double leaf doorsets	
Leaf option	Leaf 1, 2 or 3	
Leaf size range (mm)	As given by the appropriate envelopes in section 4.5.4	
Perimeter intumescent seal specification	As given by the appropriate envelopes in section 4.5.4	

5.5.1.1 Assessed Grooving Elevations for Groove Option A

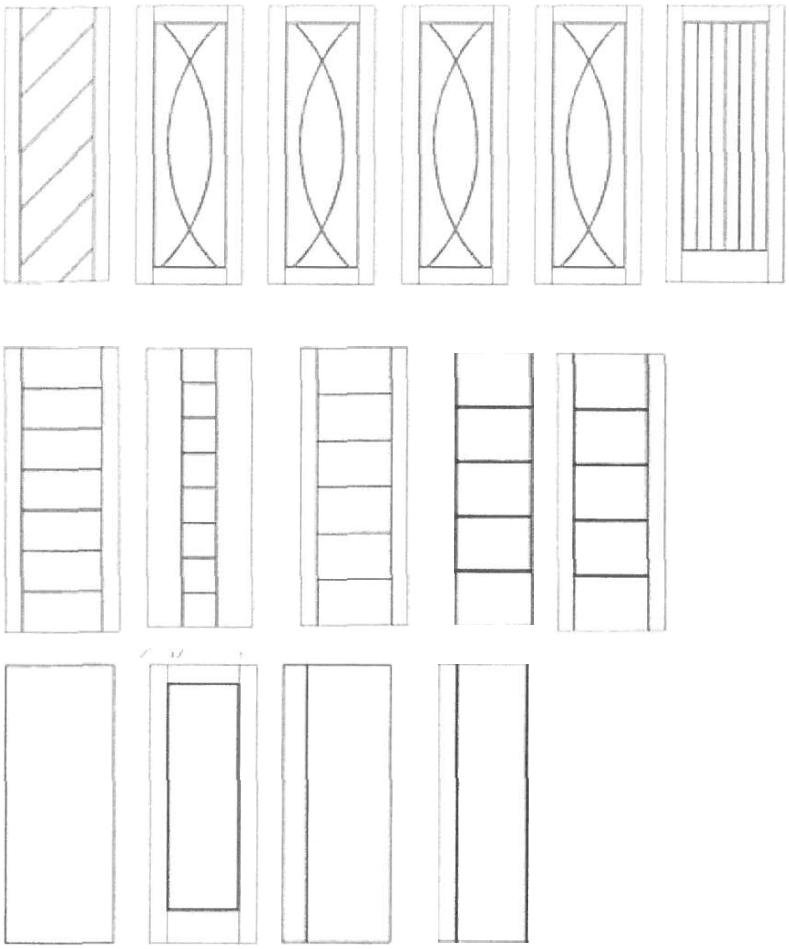


5.5.2 Groove Option B – Leaf Type 1 Only

Decorative mouldings were included within test reference WF387293 without being of detriment to the overall performance of the doorset. The doorset they were included within achieved 45 minutes integrity performance.

Groove Option B		
Element	Details	
Max. groove size (mm)	14mm wide x 7mm deep	
Inserts	These are required and provide a decorative detail. Inserts must be White Oak (minimum density 640kg/m³). The insert can be grooved to a maximum groove dimension in the inlay is 10mm wide by 5mm deep. Curved inserts must be manufactured as a single piece – i.e. jointing is not permitted.	
Adhesive	See Section 9 (Adhesives)	
Proximity to door edges (mm) Grooves are not permitted to extend to the leaf edge	Horizontal Grooves	A minimum of 115mm from the top and 225mmm from the bottom of the door leaf must be maintained.
	Vertical Grooves	A minimum of 115mm from the vertical edges of the door leaf must be maintained.
	Diagonal Grooves	May intersect horizontal and vertical grooves and also extend to the top and bottom edges of the leaf.
	Curved Grooves	Must be bounded by and intersect horizontal and vertical grooves.
Groove spacing (mm)	Parallel groves (in any shape of orientation) must be spaced at a minimum of 90mm apart.	
Orientation	Horizontal, Vertical, Diagonal or curved	
Configuration	Latched & unlatched, single acting, single leaf doorsets	
Leaf option	Leaf Type 1 Only	
Leaf size range (mm)	As given by the appropriate envelopes in section 4.5.4	
Perimeter intumescent seal specification	As given by the appropriate envelopes in section 4.5.4	

5.5.2.1 Assessed Grooving Elevations for Groove Option B



5.6 Mock Stile & Rail – Leaf Types 4, 5 & 6

5.6.1 Framing Dimensions

The minimum framing dimensions must meet the following dimensions where applicable.

Element	Dimension (mm wide)	
	Minimum	Maximum
Mock top rail	100	145
Mock stiles	100	145
Mock mid rail	50	145
Mock intermediate framing	50	130
Mock bottom rails	180	250

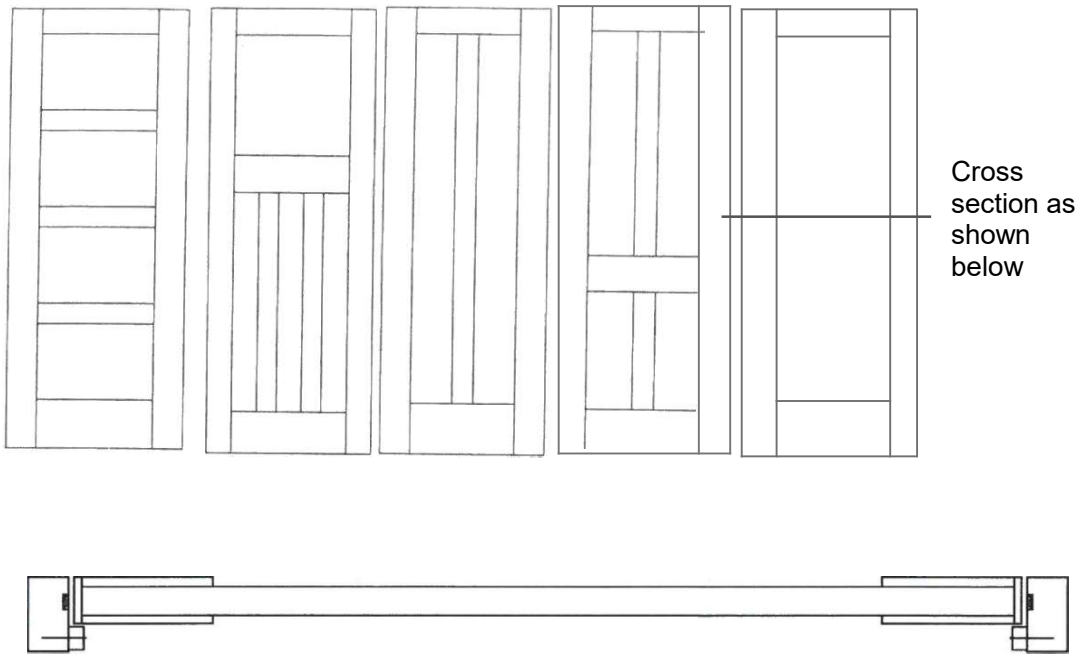
In addition to the applied panel framing detailed above, any profile of MDF or timber moulding may be added to the perimeter of the panels.

5.6.2 Flat Panel Applications - Leaf Types 4, 5 & 6

Leaf Types 4, 5 & 6 are permitted with flat panels meeting the specification below. The door leaves must be constructed as detailed in sections 5.1.4, 5.1.5 and 5.1.6, as appropriate. The door designs may include a minimum of 1 and a maximum of 6 panels with a maximum single panelled area of 1.026m^2 for all configurations mentioned above and depicted in section 5.6.2.1.

5.6.2.1 Flat Panel Applications

Assessed Mock Stile and Rail applications with flat panels:

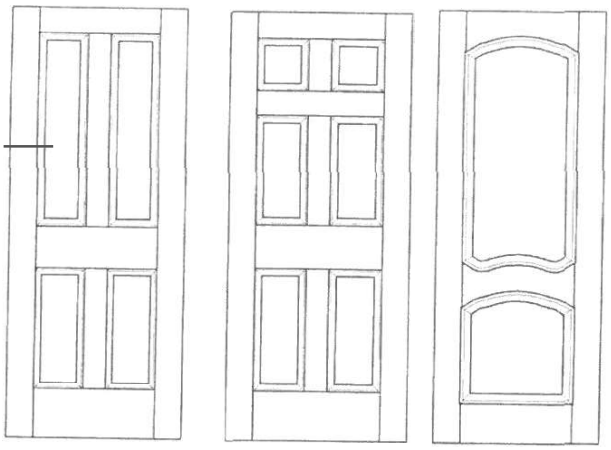


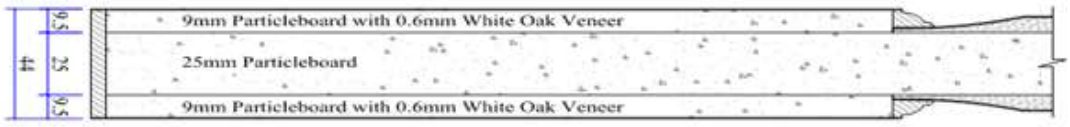
5.6.3 Raised and Fielded Panel Elevations - Leaf Type 4 Only

Raised and fielded doorsets must be constructed of a 25mm particleboard core, with Luli China particleboard facings only, as detailed in section 5.1.4. Based on the testing conducted, this door design may include a minimum of 2 and a maximum of 6 panels with a maximum single panelled area of 1.026m² for all configurations mentioned above and designs depicted in 5.6.3.1.

5.6.3.1 Raised and Fielded Panel Applications

Cross section as shown below





6 Glazing within the Leaf

6.1 General

Glazing is permitted in the following leaf types:

- Leaf Type 1
- Leaf Type 2
- Leaf Type 3

Glazing is therefore acceptable within the following parameters:

- Apertures must not be less than 100mm from top and side edges and 135mm from the bottom edge.
- Aperture shape must be rectilinear unless alternative shape has been proven by test.
- Apertures cannot be rotated (e.g. a square to be rotated to create a diamond effect).

Leaf Type 1:

The testing conducted on Leaf Type 1 – Luli Particleboard door designs has demonstrated that they are capable of tolerating glazed apertures, whilst providing a margin of over performance. For example, test reference WF387294 included a glazed aperture 1735mm high x 626mm wide fitted with 6mm thick LEBEX CFG Toughened glass and 10mm x 2mm Foshan Nanhai Pingzhi Graphite Based Intumescent glazing system.

The maximum total assessed aperture area for any individual door leaf constructed from Leaf Type 1 is 1.086m².

Any single aperture may not be greater than 2.082m high x 0.75m wide or greater than 1.086m² area.

Multiple apertures are acceptable within the permitted glazed area, with a minimum dimension of 100mm of core between apertures.

Leaf Types 2 & 3

The testing conducted on Leaf Type 2 - Linex Particleboard and Leaf Type 3 - Twin Layer Darewood Particleboard door designs has demonstrated that they are capable of tolerating glazed apertures, whilst providing a margin of over performance.

For example, test references:

- IF10075 included Leaf Type 2 with a glazed aperture 800mm high x 800mm wide fitted with Pilkington Pyroshield 2 glass and Sealmaster Fireglaze compound glazing system. Achieving 42 minutes integrity performance.
- IF10074 included Leaf Type 3 with a glazed aperture 800mm high x 800mm wide fitted with Pilkington Pyroshield 2 glass and Sealmaster Fireglaze compound glazing system. Achieving 42 minutes integrity performance.

The maximum total assessed aperture area for any individual door leaf is 0.64m².

Any single aperture may not be greater than 0.96m high x 0.96m wide or greater than 0.64m² area.

Multiple apertures are not permitted with leaf types 2 & 3.

6.1.1 Single Pane Glass & Glazing Systems – Leaf type 1

The glazing system must be one of the following proprietary tested systems.

The table below specifies the maximum assessed area of glazing for each permitted glass type and glazing system.

The numerical figures in the main body of the table are the maximum area of glass (in m^2) that is considered acceptable for an individual glazed aperture, based upon the specific system.

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

Glass & Glazing System Specification			Maximum Assessed Area (m^2), Height & Width (m)			
Glass Type Manufacturer		Thickness	System & Manufacturer →	1	2	3
				10x2mm Graphite Based intumescent seal	10x2mm Graphite Based intumescent seal & 10x2mm liner	2mm Thick Fireglaze Compound
				Foshan Nanhai Pingzhi - Sealing materials Co Ltd	Foshan Nanhai Pingzhi - Sealing materials Co Ltd	Sealmaster
			Certifire Certificate or Fire Test Reference	WF387294	WF412734	IF10074 IF10075
1	6mm LEBEX CFG Toughened Glass - Shenzhen Longdian SCI-tech ex	6	WF387294	Area: 1.086 Height: 2.082 Width: 0.751	Area: 0.64 Height: 1.092 Width: 0.828	-
2	Pyroshield 2 Pilkington UK Ltd	7	IF10074 IF10075	-	-	Area: 0.64 Height: 0.96 Width: 0.96
3	Pyrobelite 7 AGC Flat Glass UK	7	CF377	-	-	Area: 0.64 Height: 0.96 Width: 0.96
4	Pyrodur 30-104 Pilkington UK Ltd	7	CF328	-	-	Area: 0.64 Height: 0.96 Width: 0.96

Notes:

1. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.
2. Pilkington UK Ltd Pyroshield 2 – Textured glass is not permitted for fire resisting applications.

6.1.2 Single Pane Glass & Glazing Systems – Leaf types 2 & 3

The glazing system must be one of the following proprietary tested systems.

The table below specifies the maximum assessed area of glazing for each permitted glass type and glazing system.

The numerical figures in the main body of the table are the maximum area of glass (in m^2) that is considered acceptable for an individual glazed aperture, based upon the specific system.

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

Glass & Glazing System Specification			Maximum Assessed Area (m^2), Height & Width (m)			
Glass Type Manufacturer		Thickness	System & Manufacturer →	1	2	3
				10x2mm Graphite Based intumescent seal	10x2mm Graphite Based intumescent seal & 10x2mm liner	2mm Thick Fireglaze Compound
				Foshan Nanhai Pingzhi - Sealing materials Co Ltd	Foshan Nanhai Pingzhi - Sealing materials Co Ltd	Sealmaster
			Certifire Certificate or Fire Test Reference	WF387294	WF412734	IF10074 IF10075
1	6mm LEBEX CFG Toughened Glass - Shenzhen Longdian SCI-tech ex	6	WF387294	-	-	-
2	Pyroshield 2 Pilkington UK Ltd	7	IF10074 IF10075	-	-	Area: 0.64 Height: 0.96 Width: 0.96
3	Pyrobelite 7 AGC Flat Glass UK	7	CF377	-	-	Area: 0.64 Height: 0.96 Width: 0.96
4	Pyrodur 30-104 Pilkington UK Ltd	7	CF328	-	-	Area: 0.64 Height: 0.96 Width: 0.96

Notes:

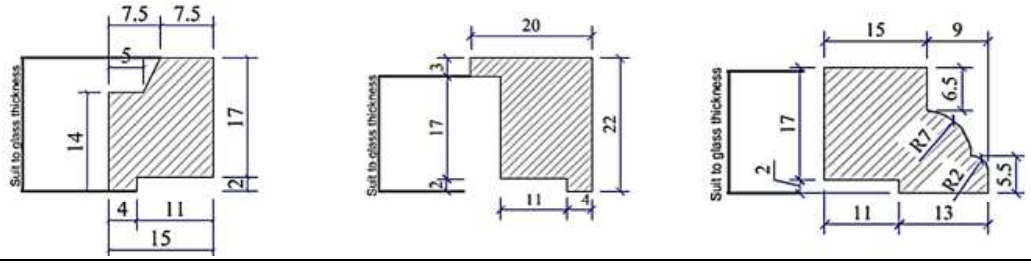
1. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.
2. Pilkington UK Ltd Pyroshield 2 – Textured glass is not permitted for fire resisting applications.

6.2 Glazing Beads & Installation – all Leaf Options

The 3D models in the following sections are provided as a generalised illustration of the glazing installation only; actual installation must be as per the specific details noted within this document.

6.2.1 Profiled Beading Applications for Lebex 6mm Glass- Leaf Type 1 Only

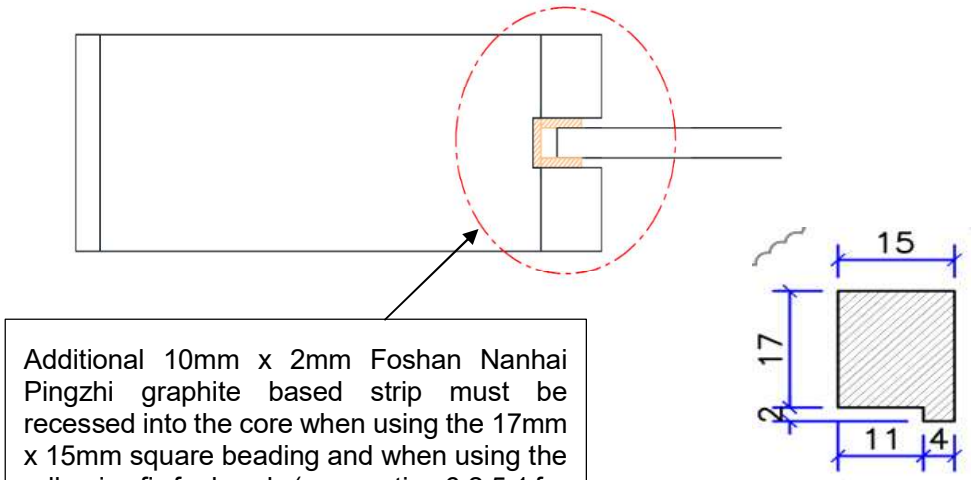
Permitted Glazing Systems (Defined in Section 6.1.1)	**1**



- The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density.
- For all bead types, the 6mm LEBEX CFG glass edge cover must be between a minimum of 11mm and a maximum of 20mm, as appropriate and tested for the bead shapes and dimensions depicted above, and taking into account the required 4mm expansion allowance to all edges, as per the supporting test evidence.
- Based on the test evidence in report WF387294, glazing beads incorporating 6mm LEBEX CFG Toughened Glass can be retained using PVAc adhesive AkzoNobel EPI System 1911 with Isocyanate hardener 1999.
- Glazing beads are not required to be mechanically fixed, however the glazing beads may be pinned in addition to the adhesive bonding as follows:
  - Minimum length of 50mm long steel pins or 50mm long No. 6-8 screws, inserted at 35-40º to the vertical.
  - Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.3.2 below.
- The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.
- Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires

6.2.2 Square Beading Applications for Lebex 6mm Glass- Leaf Type 1 Only

Permitted Glazing Systems (Defined in Section 6.1.1)	2

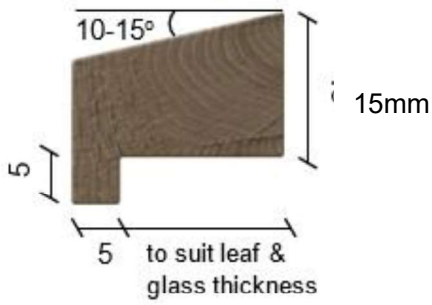


Additional 10mm x 2mm Foshan Nanhai Pingzhi graphite based strip must be recessed into the core when using the 17mm x 15mm square beading and when using the adhesive fix for beads (see section 6.2.5.1 for additional information)

- The glazing beads must be created from hardwood (not Beech fagus species) of a minimum 640kg/m^3 density.
- For all bead types, the 6mm LEBEX CFG glass edge cover must be between a minimum of 11mm and a maximum of 20mm, as appropriate and tested for the bead shapes and dimensions depicted above, and taking into account the required 4mm expansion allowance to all edges, as per the supporting test evidence.
- Based on the test evidence in report WF412734:, glazing beads incorporating 6mm LEBEX CFG Toughened Glass can be retained using PVAc adhesive AkzoNobel EPI System 1911 with Isocyanate hardener 1999.
- Glazing beads are not required to be mechanically fixed, however the glazing beads may be pinned in addition to the adhesive bonding as follows:
  - Minimum length of 50mm long steel pins or 50mm long No. 6-8 screws, inserted at 35-40º to the vertical.
  - Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.3.2 below.
- The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.
- Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires

6.2.3 Chamfered Bead – Leaf Types 1, 2 & 3

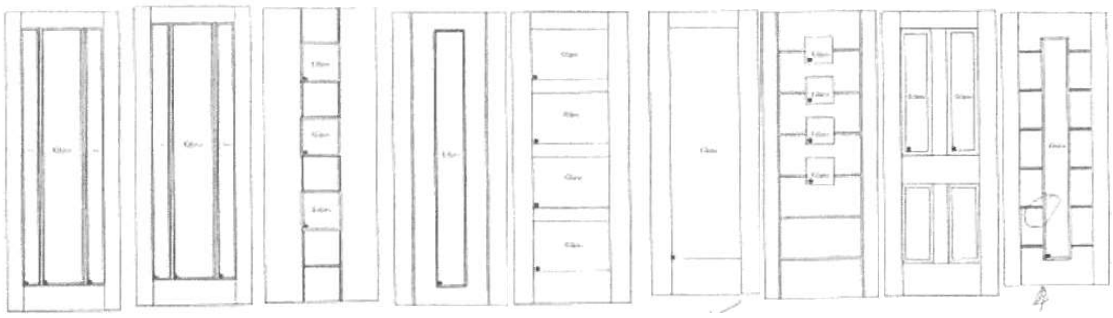
Permitted Glazing Systems (Defined in Section 6.1.1)	3



- The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum.
- The glazing beads must be created from hardwood of a minimum 640kg/m^3 density.
- Glazing beads must be retained in position with 50mm long steel *pins or 50mm long No. 6-8 screws, inserted at 35-40° to the vertical.*
- *Fixings must be at 150mm maximum centres and no more than 50mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.2.5.2.*
- *The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.*
- *Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires*

6.2.4 Glazed Door leaf Elevations

The following door leaf elevations that include glazed apertures are approved for the glass and glazing systems listed in the glazing matrix in section 6.1, providing all other details are complied with in this assessment, as appropriate (i.e. permitted grooving, glazed aperture positioning, glazing area, maximum permitted aperture dimensions etc.)



Note: Multiple apertures are permitted for Leaf Type 1.only.

6.2.4.1 Glazing Pins for Glazing Within Leaf – Leaf Types 1, 2 & 3

The following pin specification is permitted and has been considered suitable for applications requiring a pin fixing to glazing beads:

Option 1 – Round, Oval & Rectangular Pins

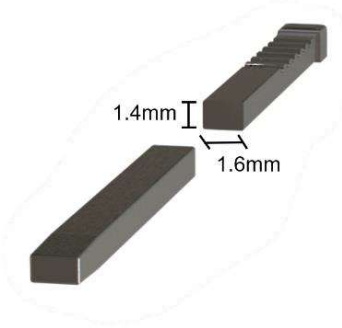
The following dimension of pin has been approved for round, oval and rectangular shaped pins which are hand applied:

- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.03mm^2.
- Minimum linear dimension of 1.6mm in any direction, see figure below. The maximum pin diameter or any linear dimension may be no greater than 2.0mm.

Option 2 – Gun (Pneumatically) Fired Rectangular Pins

The following dimension of rectangular pin has been deemed suitable for gun (pneumatically) fired applications.

- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.24mm^2.
- Minimum linear dimensions as shown in the figure.
- The 1.6mm dimension is predominately oriented perpendicular to the glass, where possible.
- The maximum pin diameter or any linear dimension may be no greater than 2.0mm.



Pins with dimensions less than those stated above are not covered by this assessment.

7 Door Frame Construction

7.1 Door Frame Details

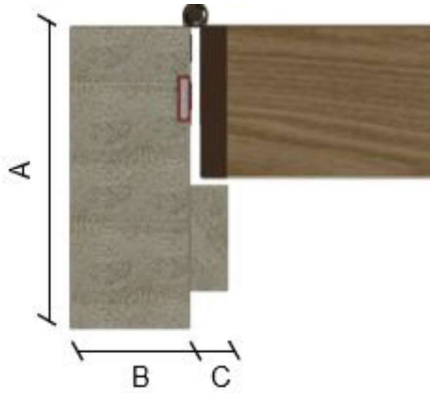
The door frames listed below are the minimum size and density which have been successfully tested and assessed by this report. The frame must be constructed to meet the following specification.

Frame Specification			
Material	Minimum Section Size (mm)	Minimum Density (kg/m^3)	Acceptable Leaf Type
Softwood / Hardwood	Frame: 70 (d) x 32 (w) (excluding stop) Stop: 12(w) (integral or planted on)	510	All Leaf Types
	Frame: 70 (d) x 22 (w) (excluding stop) Stop: 12(w) (integral or planted on)	510	2, 3, 5 & 6

Note:
Minimum section size is subject to size of hardware and the use of transomed overpanel (see frame details below).

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. Any radius to the lipping must comply with section 5.4.



A: Frame depth = 70mm minimum

B: Frame width = 22mm minimum
(Leaf Types 2, 3, 5 & 6

32mm minimum
(All Leaf Types)

C: Stop width = 12mm minimum

Minimum section size when using a transomed overpanel:

A: Frame depth = 70mm minimum

B: Frame width = 44mm minimum

C: Stop width = 12mm 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 may 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.

Half Lapped Joint

Mitre Joint

Mortice & Tenon Joint

Butt Joint

Trenched Joint

Approved door frame jointing options

7.3 Frame – Decorative Facings

Relatively thin 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.

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

Decorative & Protective Facing Specification	
Facing Material	Maximum Permitted Thickness (mm)
Paint[3]	0.2
Timber veneers	0.7

Notes:

1. Facing materials not listed above are not permitted.
2. For all options, materials must not conceal intumescent strips.
3. Intumescent paints are not permitted.

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

8 Overpanels & Fanlights – Leaf Types 1, 2 & 3 Only

Transomed overpanels and fanlights are permitted by this assessment, the following sections outline the constructional details of each of the permitted elements and limitations associated with each configuration.

8.1 General

The testing undertaken on the doorset design allows for the application of:

Solid overpanels with two framing options (Modular and Transomed).

Glazed fanlights with one framing option (Modular).

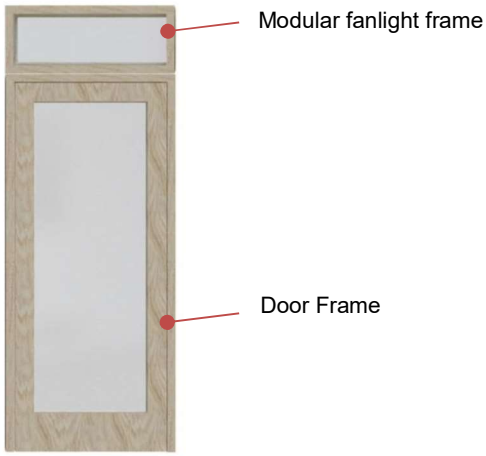
Framing options are detailed in the following section depending on the panel or glazing utilised.

8.2 Framing

The following framing options as detailed below are permitted for the doorset design and are permitted depending on solid panel arrangement or glazed fanlight utilised. Information on the frame type permitted for the solid panel or glazed element is detailed in sections 8.2.1 – 8.2.2.

8.2.1 Modular Framing

Modular framing for the purpose of this document is considered to be an element (glazing or panel) which is independently framed and fixed to the frame of a doorset design. An example of a modular framed solution is given below.

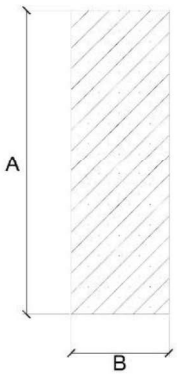


Example of Modular Fanlight

8.2.1.1 Standard Frame Detail (Modular Framing)

The frame listed below is the minimum size and density which has been assessed by this report. The frame must be constructed to meet the following specification for modular units containing solid panels or glazing, the frame section shall meet this specification on all four edges.

Modular Frame specification		
Material	**Minimum section size (mm)**	**Minimum density (kg/m^3)**
Softwood or Hardwood: (see section 2.1)	Frame: 70 (d) x 32 (w)	510



A: Frame depth = 70mm minimum

B: Frame width = 32mm minimum

Notes:

It is possible to include a 3mm x 3mm quirk detail to the rear edges of the frame where the jointing to the door frame or adjacent modular framing element shall occur.

The depth of the modular frame and the door frame shall be equal, this may result in increasing the depth of the permitted door frame to match the modular frame dimension, or vice versa. In all cases the greater dimension shall be used.

8.2.1.2 Frame Jointing (Modular Framing)

Below are depictions of the framing joints that are deemed acceptable for corner jointing of modular framing. Please note that the drawings are provided as general illustrations of each type of frame joint; actual construction in terms of intumescent seal location and material, etc. must be as the text within this document specifies.

Double Rebated Joint

Mitre Joint

Mortice & Tenon Joint

Butt Joint

Trenched or Half Lapped Joint

The modular frame joints are required to be tight, with no gaps, and require mechanical fixing with 2No. steel screws of a minimum dimension Ø5 x 100mm a minimum of 40mm penetration into the frame section must be achieved. Frame joints shall additionally be reinforced with the adhesives approved for the application frame jointing detailed within section 7.

8.2.1.3 Attachment Technique (Modular Framing)

The modular framing shall be affixed to the door frame utilising steel screws appropriate for use with timber substrates.

Screws must be fixed between 100mm and 150mm from corners at maximum of 250mm centres from each face. Fixings shall penetrate approximately half of the depth of the adjacent timber section.

8.2.2 Shared framing (Transomed)

Shared framing (Transomed) for the purpose of this document is considered to be when an element (panel) is contained within the frame for the doorset and separated from the door leaf by a shared transom. An example of a transomed solution is given below, though the construction of doorsets shall be as the text in this document specifies.

8.2.2.1 Standard Frame Detail (Transomed)

The permitted frame detail for the doorset shall meet the minimum requirements as outlined in section 7, where applicable. The detail for the permitted transom can be found within section 8.2.2.2 below.

8.2.2.2 Detail for Transom (Transomed)

It is possible to include a transom to separate a panelled overpanel within a door frame from the door leaf.

Note: It is not permitted to include a mullion within a doorset which is constructed using the shared framing design.

When applied the transom shall meet the following specification:

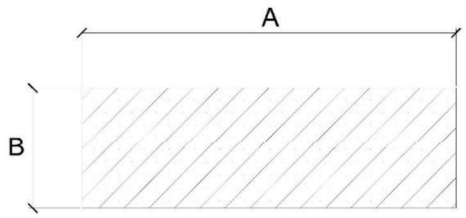
Modular Frame specification		
Minimum Frame Section (mm)	**Minimum section size (mm)**	**Minimum density (kg/m^3)**
Jambs & Head: 70 (d) x 32 (w)	Transom: 70 (d) x 44 (w)	510

Notes:

When applied the material for the transom shall match the timber species used for the frame surrounding the door frame.

The transom when applied shall be mortice and tenon or butt jointed as depicted in section 8.2.2.3. The joints are required to be tight, with no gaps, and require mechanical fixing with 2No. steel screws of a minimum dimension Ø5 x 80mm a minimum of 40mm penetration into the transom section must be achieved.

Minimum Section Size



A: Transom depth = 70mm minimum

B: Transom width = 44mm minimum

8.2.2.3 Frame Jointing (Transomed)

Below are depictions of the framing joints that are deemed acceptable for corner jointing of transomed framing. Please note that the drawings are provided as general illustrations of each type of frame joint; actual construction in terms of intumescent seal location and material, etc. must be as the text within this document specifies.

Mortice & Tenon Joint

Butt Joint

The transom when applied shall be mortice and tenon or butt jointed as depicted above. The joints are required to be tight, with no gaps, and require mechanical fixing with 2No. steel screws of a minimum dimension Ø5 x 100mm a minimum of 40mm penetration into the frame section must be achieved

8.3 Solid Panels

Solid overpanels are permitted for use with the modular framing option given in section 8.2.1 above (Modular Framing).

Solid overpanels are also permitted for use with the shared framing option given in section 8.2.2 above. (Shared Framing).

8.3.1 Solid Panel Construction (Over Panels)

Based on the testing undertaken on the doorset design, it has been assessed to include the tested core construction as a solid fixed panel. This is because under test conditions the panel will be fixed within the perimeter framing limiting the deflection throughout the test duration and enhancing the expected fire resistance performance which was observed for the door leaf itself. Therefore, the following specification shall be met:

Element	Leaf Type	Material	Minimum Density (kg/m^3)	Dimensions (mm)	Min Thickness After Calibration[1] (mm)
Core	1	Lulli Particle Board	420kg/m^3	44 (t)	43
	2	Linex particleboard	530kg/m^3	44 (t)	43
	3	Twin Layer Darewood Particleboard)	640kg/m^3	44 (t)	43
	4	Lulli Particle Board	650kg/m^3 - 700kg/m^3	25 (t)	24
	5	Particleboard	630kg/m^3	28 (t)	27
	6	Particleboard	530kg/m^3	28 (t)	27

Note:

1. The minimum panel thickness after calibration allows for a maximum of 0.5mm from both sides.
2. For Leaf Types 4, 5 and 6 the minimum core material thickness is given. Stiles and rails as described in section 5.1 must be applied to complete the door construction and final overall thickness at the leaf perimeter.
3. The panel must be lipped as specified in section 5.3, and the panel shall be constructed of a single board, joints are not permitted within any panels.
4. Decorative & protective facings may be applied to the surface of the solid panels in accordance with section 5.4.
5. Overpanel and door leaf(s) for each doorset must be of the same construction.

8.3.2 Intumescent Sealing Arrangement (Over Panels)

Solid overpanels when included within a doorset design (in either modular or shared framing) shall include the same intumescent specification as utilised within the door leaf or frame reveal.

Permitted intumescent specifications for each leaf type are detailed in section 4.5 and only those seals listed may be used, the specification for the over panel shall match the specification used on the door leaf.

8.3.3 Fixing Arrangement (Over Panels)

Solid panels must be fixed into the framing solution by steel screws appropriate for the timber-based substrates.

Screws shall be applied nominally centrally to the thickness of the solid panel, through the rear of the frame to all edges and transom reveal where applicable and shall penetrate into the solid panel by at least 30mm.

Fixings must be no more than 100mm from each corner and a maximum of 250mm centres in between.

When fitted the solid panel shall have no greater than 1mm between the panel edge and the adjacent framing element.

Where fitted within shared framing (transomed) the face of the solid overpanel shall be nominally in line with the face of the door leaf.

Where fitted within modular framing the panel may either be nominally in line with the face of the door leaf or centrally within the modular frame depth.

8.3.4 Maximum Dimensions - Over Panels

Based on the testing undertaken within the doorset design the following maximum dimensions are permitted for any single panel, subject to the doorset not exceeding 2950mm in height including outer framing dimensions.

Solid Panel & Frame Type	Height (mm)	Width (mm)
Overpanel (Shared Framing)	600	Overall doorset width
Overpanel (Modular Framing)	Up to maximum dimension given in section 4.5 for leaf size based on intumescent specification used.	

The overall assembly shall form a rectilinear shape.

8.4 Glazed Fanlights

It is permitted by this assessment to incorporate glazed fanlights with modular framing given in section 8.2.1 above.

All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.

8.4.1 Glass types & Glazing Systems

The glazing system must have a Certifire certificate – Valid at the date of manufacture of the doorset which has been written in accordance with Warringtonfire Testing and Certification Ltd Technical Schedule 25. More information on the use of Certifire approved glass and glazing systems can be found within section 8.4.2.

The dimensions of any single glazed aperture must not exceed that stated below, nor shall the entire assembly exceed 2950mm high or wide for any single doorset including the dimension of the door frame and fanlight.

8.4.2 Certifire Approved Glass & Glazing Systems

Glass and glazing systems with a Certifire certificate – valid at the date of manufacture of the doorset which has been written in accordance with Warringtonfire Testing & Certification Ltd Technical Schedule TS25 - may be utilised to glaze fanlights for use with the doorset design, subject to the following.

- The chosen Certifire approved glass and glazing system must detail that it is suitable for use for 30 minutes fire resistance performance within a timber screen.
- Certifire approved glass and glazing systems may be utilised with the doorset design providing they are able to be applied in a self-contained modular frame.
- The modular frame must meet or exceed the specification for modular frames given within section 8.2.1 above, however, must be fixed to the doorset or adjacent modules in the manner specified in section 8.2.1.3.
- Where a Certifire certificate is utilised to justify fanlights, the full requirements given within that certificate for the frame (which may require an increase in dimensional requirements given in section 8.2.1 for example), glass type, glazing system and glass retention method specified must be complied with.
- Parameters in section 8.4.1 above relating to the overall dimension of the doorset design including fanlight modules must not be exceeded.
- Bead Fixings - The required pin or screw specification as given in the supporting Certifire certificate must be used, alternatives fixing details are not permitted.
- The doorset assembly must remain rectilinear.

9 Adhesives

The following adhesives must be used in the construction of the doorsets. These may be hand applied or may be applied using an edgebander. With either method 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, for either installation application used.

Element	Leaf Type	Product/Material Type
Decorative facings	All	UF, PVA, PVAc or AkzoNobel EPI System 1911 with Hardener 1999
Mock Stiles & Rails / Panel Facings	4	AkzoNobel EPI System 1911 with Hardener 1999
	5	PVAc (RF10048) PVA (IF10073)
	6	PVA (IF10072)
Lippings	1	AkzoNobel EPI System 1911 with Hardener 1999 or PVA (based on WF412734)
	2 & 6	PVA
	3	PVAc
	4	AkzoNobel EPI System 1911 with Hardener 1999
	5	PVAc or PVA (IF10073)
Decorative Groove Insert	1	AkzoNobel EPI System 1911 with Hardener 1999
Core Bonding	3	PVAc (bonding the two 22mm boards together)

Note: “EPI” is an abbreviation for “Emulsion Polymer Isocyanate”.

10 Hardware

10.1 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
- Door co-ordinators: Test Standard EN 1158
- 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 Lignum International 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.

10.2 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 1No 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**
Hinges	Not Required		Not Required
Lock/latches	Lock Forends up to 100mm high x 25mm wide	Under forend & keep for all doorsets	Not Required

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.

Where it is stated that intumescent is not required for a particular element of hardware, it is permitted to use up to 2mm thick MAP, Interdens or graphite-based gasket tested for the particular application [as appropriate for the hardware]. It is the opinion of Warringtonfire that the additional protection will not detract from the fire resistance performance under test conditions.

10.3 Essential Hardware

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

Configuration	Hardware
LSASD	• Latch • Handle • Hinges • Self-closing device (closer)
ULSASD	• Hinges • Self-closing device (closer)
LSADD	• Latch • Handle • Hinges • Self-closing device (closer) • Surface Mounted bolt
ULSADD	• Hinges • Self-closing device (closer) *Hardware that may be optionally incorporated:* • Deadlock • Surface Mounted bolt

10.4 Latches & Locks

Unless explicitly detailed within the sections below only 1No. lock or latch shall be applied within any individual doorset. When fitted the lock or latch body shall be installed within the vertical edge of the door leaf in all cases, at a height as detailed within the relevant section below. Refer to specific notes contained within each section for further considerations on lock or latch type.

10.4.1 Single Point Engagement

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

Element	Manufacturer & Product Reference
Locks & latches	1. E * S tubular steel mortice latch (RF10048)

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

Single & Double leaf doorsets

Element	Specification
Maximum forend and strike plate dimensions	100mm high x 25mm wide x 4mm thick
Maximum body dimensions	70mm high x 100mm wide x 18mm thick
Intumescent protection	see section 10.2
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel, stainless steel or brass with a melting point ≥ 800^0 C

Notes:

1. In all instances the location of the handle must be between 800 – 1200mm from the threshold.

10.4.2 Cylinders

Components with the following specification are also deemed acceptable.

- Where required for use with single point locks, the cylinder must be constructed of either brass or steel with a melting point in excess of 800^0C.
- 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 2 thirds of the door thickness.
- Intumescent protection and tightness of fitting:
    - If the lock body is not protected with an intumescent material, the maximum clearance between leaf and cylinder is 1mm to each edge.
    - If the lock body is protected with an intumescent material, maximum clearance between leaf and cylinder is 3mm to each edge.
    - 1mm thick MAP or non-pressure forming graphite intumescent around the cylinder is optionally permitted.

10.5 Handles & Escutcheons

The table below details the tested handles that are approved.

Element	Manufacturer & Product Reference
Handles	• Aluminium lever type handle (RF10072) • Zoo Hardware aluminium lever type handle (WF387293)

Alternative handles are permitted providing they meet the specification given below:

- Steel, stainless steel, brass, aluminium or bronze are permitted
- Surface fixings or through fixings are permitted. If through fixed there must be no more than 0.5mm clearance between the hole and the fixing.
- The hole through the leaf to facilitate the spindle must be no greater than 20mm diameter.

The design may be either lever on rose or lever on back plate up to the following maximum sizes:

- Lever on rose with a rose diameter up to 54mm
- Lever on back plate with a back plate size up to 243mm high x 56mm wide
- Lever handle length 250mm

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

Alternative escutcheons are permitted providing they meet the specification given below:

- Steel, stainless steel, brass, aluminium or bronze are permitted
- Surface fixings or through fixings are permitted. If through fixed there must be no more than 0.5mm clearance between the hole and the fixing.
- The escutcheon may be up to Ø52mm overall and up to 8mm thick.

10.6 Hinges

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

Element	Manufacturer & Product Reference
Hinges	• Royde & Tucker H101 lift off type hinge (WF378293) • Royde & Tucker H105 lift off type hinge (RF10048)

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

Element	Specification
Blade height:	90 - 120mm
Blade width (excluding knuckle):	30 - 35mm
Blade thickness	2.5 - 4mm
Fixings:	Minimum of 4 No. 30mm long No. 8 or No.10 steel wood screws per blade
Materials:	Steel or stainless steel

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

Element		Specification	
Hinge positions:	If 3 hinges are required:	Top	150 –200mm from the head to top of hinge
		2nd	Minimum 200mm from top hinge or centrally fitted between top and bottom hinge
		Bottom	180 - 250mm from the foot of leaf to bottom of hinge
	If 4 hinges are required:	Top	150-200mm from the head to top of hinge
		2nd & 3rd	Equispaced between top and bottom or 2nd hinge 200mm from top hinge and 3rd hinge equally spaced between 2nd and bottom hinge
		Bottom	180 - 250mm from the foot of leaf to bottom of hinge
Intumescent protection:		See section 10.2	

Note:

Leaves less than 2400mm (h) must be hung on a minimum of 3 hinges. Leaves greater or equal 2400mm (h) must be hung on 4 hinges.

10.7 Doorset Self Closing

Doorset automatic self-closing can be provided by:

- Overhead face fixed closers

10.7.1 Overhead Face Fixed Closer

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

Element	Manufacturer & Product Reference
Overhead face-fixed closers	• Dorma UK Ltd TS71 overhead type closer (RF10072)

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

- Certifire approved overhead face-fixed closers for 30-minute fire resistance applications on 44mm 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.

10.8 Bolts

10.8.1 Surface Mounted Face Fixed Bolts

These items are suitable in the following applications only:

Leaf options: 2,3,5 & 6

Configurations: LSADD & ULSADD

Surface mounted face fixed bolts constructed from steel, stainless steel, aluminium or bronze may be fitted to the top and bottom of one leaf within a double doorset design, providing the following maximum dimensions given below are not exceeded and the components are fitted at least 50mm from the meeting edge:

- 300mm long x 20mm wide (footprint).

Intumescent protection is not required.

10.9 Non-Essential Hardware

Only the following items of non-essential hardware are permitted in addition to the prescribed essential hardware as detailed within section 10.3.

Note: For Leaf Types 4, 5 & 6 any bolt through fixings must be through the stile and rail sections of the door leaf. I.e. not thorough the panelled areas of the door leaf.

10.9.1 Pull Handles

Steel, stainless steel or bronze handles may be surface-fixed or bolted through the door leaf, providing the length is limited to 1200mm 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.

10.9.2 Push Plates & Kick Plates

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 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.
- In all cases plates meeting the above specification shall not be applied under glazing beads or door stops.

10.9.3 Security Viewers

Up to 2no. viewers are permitted within a single door leaf, viewers are to be positioned no closer than 100mm to door edges, glazed apertures or any other hardware component.

Components with the following specification are also deemed acceptable.

- Door security viewers with brass or steel bodies of a diameter less than or equal to 15mm may be used provided that the through-hole is bored tight to the case of the viewer (maximum tolerance +1 mm). Lenses must be glass and the item must be protected with a tested acrylic intumescent mastic and / or a 0.5 – 1.0mm thick graphite based intumescent wrap.

10.9.4 Environmental Seals

These are limited to seals that are integrated into the perimeter intumescents strips.

10.9.5 Knockers, Numerals & Signage

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 specifications:

Knockers:

- Steel, stainless steel, aluminium or bronze knockers, may be surface fixed or bolted through the door leaf, providing they are fitted no closer than 75mm from the leaf edge, other elements of building hardware or to any glazing and are no greater than 200mm high x 120mm wide. If through fixed, there must be no more than 1mm clearance between the hole and stud. It is only permitted to fit 1No. knocker to any one doorset.

Numerals & Signage:

- Steel, stainless steel, aluminium or bronze numerals or signage may be surface fixed to the door leaf, providing they are fitted no closer than 35mm from the leaf edge, other elements of building hardware or to any glazing. The dimension of each numeral or sign must be no greater than 200mm high x 100mm wide x 4mm thick. Up to 5No. numerals or signs may be applied to a doorset, numerals and signs may be applied adjacent to each other providing the 35mm from other elements as detailed above is maintained.

10.9.6 Security Chains

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 with fixings positioned away from the edge of the door leaf and 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 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:

- Metallic security chains may be surface fixed to the face of the door leaf and frame, providing they are fitted such that they do not interfere with the junction between the leaf edge and the frame, and no material is removed in order to facilitate the fitting of the security chain. Screws to affix the security chain shall be no greater than 25mm long.

10.9.7 Fire Door Identification Plates

Plastic or metal fire door identification plates may be glued or screwed to the face of the door leaves providing they are fitted no closer than 35mm from the leaf edge, other elements of building hardware or to any glazing. The dimension of any applied plate must be no greater than 100mm high x 100mm wide x 3mm thick.

These may be required to identify the following:

a) To be kept closed when not in use (Fire Door Keep Shut)

b) To be kept locked shut when not in use (Fire Door Keep Locked Shut)

c) Held open by an automatic release mechanism or free swing device (Automatic Fire Door Keep Clear).

When applied to a door leaf the plate shall be surface mounted to the face without removing material from the leaf.

10.9.8 Panic Hardware

These items are suitable in the following applications only:

Leaf options: All configurations

Configurations: All configurations

Panic hardware may be fitted, providing the installation does not require the removal of any timber from the leaf, stop or frame reveal and it does not interfere with the self-closing action of the door leaf.

The fitting of panic hardware is not considered to change the latching arrangement of the doorset and therefore the permitted leaf size shall be established using unlatched doorset configurations as detailed within section 4.5.

11 Installation

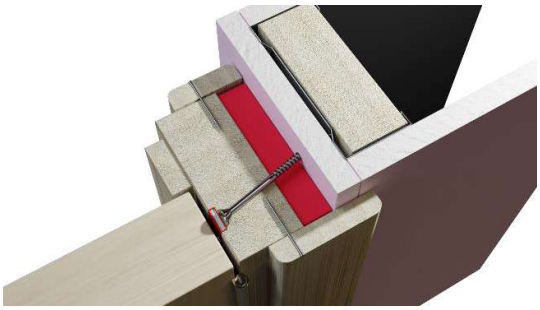
11.1 General

This section considers the installation of doorsets. 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

11.2 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 11.3.

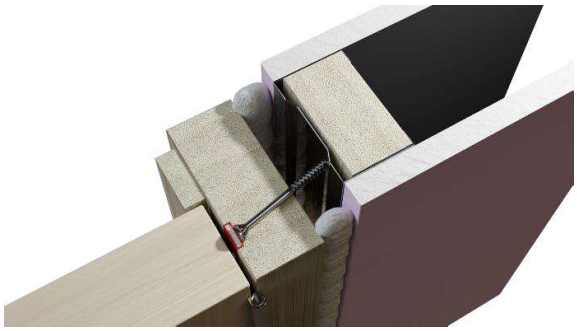
Permitted Installations	
	Instances where the door frame and the wall of the same depth such that architraves are fitted flush to both faces. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see door frame section. Architraves requirements are documented in the firestopping section of this report.
	Instances where the wall thickness is greater than the door frame depth. In this scenario timber architraves of minimum 18mm thick must be fitted to both faces, fitted with a minimum 15mm overlap to the door gap, other than when the architrave abuts the wall.
	Split frames are permitted providing that both frame sections are secured to the wall in accordance with section 11.5. 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.

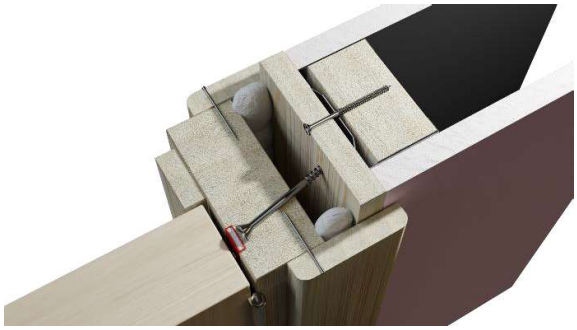
Note:

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.

11.3 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. 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
0 – 2	In practice, unlikely to occur, but if present, must be sealed with architraves, as below, fitted over a bead of acrylic intumescent sealant, tested as below.	
3 – 10	Gap must be sealed on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Timber architraves of a minimum 18mm thick must be fitted to both faces, fitted with a minimum 15mm overlap to the door gap.	
10 – 20	Gap must be tightly packed with mineral fibre capped on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1 or full depth expanding PU foam, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Timber architraves of a minimum 18mm thick must be fitted to both faces, fitted with a minimum 15mm overlap to the door gap.	 

Gap (mm)	Requirement	3D model depiction
Over 20	A timber based or non-combustible subframe up to 50mm thick can be inserted and fixed to the wall bedded on intumescent mastic, the gap between door frame and subframe filled as follows: Gaps 5 to 10mm filled on both sides with 10mm depth of acrylic intumescent mastic or full depth expanding PU foam, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Timber architraves of a minimum 18mm thick must be fitted to both faces, fitted with a minimum 15mm overlap to the door gap.	 

11.4 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.

Packers must be present local to all fixing positions.

11.5 Wall Types, Structural Opening & Fixity

11.5.1 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 30 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.

11.5.2 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.

11.5.3 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.

For single leaf doorset without sidepanels, the frame jambs only are to be fixed to the supporting construction using steel fixings at 600mm 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 50mm. It is not necessary to fix the frame head, although packers must be inserted.

For all other configurations of doorset, the upper horizontal framing section abutting the structural opening must also be secured to the wall using steel fixings at 600mm 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 50mm.

11.6 Post Production (Onsite) Leaf Size Adjustment

The Lignum International Paneled and Glazed Timber based range of doorsets may be altered as follows:

Leaf Size Adjustment Specification	
Element	Reduction
Lipping	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

11.7 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 each other or from the door frame by more than 1mm.
Threshold / Bottom edge of the leaf This is the maximum tolerance for fire resistance only.	8mm between bottom of leaf and top of floor covering.

12 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% glazing.
Fully insulating	Unglazed doorsets.

13 Conclusion

If Lignum International Paneled and Glazed Timber based 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 30 minutes integrity and insulation (subject to section 12).

14 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: Signed by: Bryan ACCF1AA7E882422...

Name: Bryan

Position: Admin Manager

Date: 25-Oct-2024

For and on behalf of: Lignum International Ltd

15 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 4 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.

16 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 14 duly signed by the applicant.

Position:	Assessor	Reviewer
Signature:	Signed by: 3A9C822F3E7F487...	Signed by: 43935C1A192A419...
Name:	**Chris Newton***	**N Whitelock***
Title:	Senior Product Assessor	Technical Manager Doors & Smoke Leakage

* For and on behalf of Warringtonfire

Appendix B: Revisions

Rev.	WF Ref.	Date	Description
-	WF396769	31/05/2018	First Issue
A	WF409098	21/01/2019	Updated into the Warringtonfire format and incorporate test evidence IF10074, IF10075, RF11048 and RF10072 as test evidence. Increase glazing and grooving scope on designs 1B and 1A and add door configurations 1B and 1C.
B	WF419326	22/10/2019	Update assessment in line with the general principles of BS EN 15725 and the inclusion of test report WF412734 to allow smaller square beading in conjunction with LEBEX CFG Toughened Glass.
C	WF540048	23/102024	• Amended door type references as follows: ○ 1A becomes: Door Type 1 ○ 1B becomes: Door Type 2 ○ 1C becomes: Door Type 3 ○ 2 becomes: Door Type 4 ○ 3A becomes: Door Type 5 ○ 3B becomes: Door Type 6 • Double acting doorset configurations removed. ○ Glazing section amended as follows: ○ Maximum permitted glazed aperture area and linear dimensions for each leaf type. ○ Glazing beading and retention associated to the tested glass type, glazing system and core construction. ○ Glazed apertures restricted to rectilinear shapes. ○ Applied moulding to the face of the glass removed. ○ Certifire approved glass and glazing systems will be included. • Size of permitted lockcase forend reduced from 235 to 100mm. • Flushbolt option removed. • Smoke control section removed.