
Title

Field of Application for:
The Halspan Range of Doorsets Using
XT & IT Door Blanks in Timber Based
Door Frames

For 30 minutes Fire Resistance if they
were to be tested in accordance with
BS 476: Part 22: 1987

Assessment Report No.:

Chilt/A13242 Revision G

Issue Date:

25th September 2025

Valid Until:

25th September 2030

Job Reference:

553421

Prepared for:

Halspan Limited
Regent House,
Regent Centre,
West Lothian,
EH49 7HU
United Kingdom

Written permission must be obtained from Halspan Limited in order to manufacture doorsets within the scope of this assessment.

The issue/revision number stated on the front of this report supersedes all previous issues/revisions, if applicable. Previous issues/revisions of the report, if applicable, cannot be used once an updated report has been issued/revised under a new revision.

Signatories and Revision History

Rev No.	Date	FM No.	Report scope and Signatures
A	08.04.2014	14047	Additional glazing options based on CTICM Test 06-V-252.
B	25.06.2014	14134	Based on test report referenced BMT/FEP/F14056, the following items have been assessed for inclusion: Pyroplex & Lorient perimeter intumescent edge seals for single leaf doorsets; maximum glazed area increased from 0.5m ² to 1.08m ² ; 1mm thick hinge & lockset protection; PVA adhesive for lippings; 40mm long x 1.5mm diameter pneumatically fired pins for fixing glazing beads and the inclusion of feature grooves (with limitations) as an option.
C	24.05.2017	WF383251	Format update and addition of new test data from RF16105, WF378795 AR1 & WF380257.
D	26.01.2018	WF394831	Change of company name to Halspan
E	03.01.2020	WF423040	The following changes have been undertaken. Technically reviewed and revalidated for 5 years • The new blank with the modified glue line will be included with reference to the purchasing specification to demonstrate the only change is an upgrade in the glue line. • Test summaries to be included for all existing tests plus new tests CFR1910291_1 and WF414679. • 2 leaf constructions to be identified • XT30 – based on plywood facing • IT30 – based on MDF facing • FR scope to be identical for both constructions • The current envelopes to be retained and supplemented by above tests. The new layout for envelopes to be used based on many envelopes on 1 graph with reference to intumescent spec. • The presentation of glazing will be as a large table glass versus glazing system. • The max glazed aperture to be reduced to 0.98m² • The permitted evidence for Fanlights and hardware items changed • DASD+OP and DADD+OP configurations removed
F	03.02.2025	WF430639	Change in glue specification in the XT30 and It to Phenol Formaldehyde
G	25.09.2025	WF553421	Full technical review, reformatting and revalidation for 5 years. Inclusion of additional test evidence • WF428611/R • CFR2101121 • TR20231213-000610A • TR20231213-000710A • TR20231213-000410A • TR20231213-000510A

Rev No.	Date	FM No.	Report scope and Signatures
			- WF429480 - WF429950 - WF429951 Removal of CTICM Test 06-V-252

Assessor	Reviewer
Name: N Whitelock*	Name: E L Wilson*
Title: Technical Manager, Doors & Smoke Leakage	Title: Senior Product Assessor
Signature:  Signed by: 43935C1A192A419...	Signature:  Signed by: E399772B03874B1...

* For and on behalf of Warringtonfire

Executive summary

This field of application report presents an assessment of the fire resistance performance of the specified proprietary Halspan XT & IT doorset designs, as fire tested and described in the reports detailed within Appendix A when modified as detailed herein.

The proposed modifications include leaf and frame design options, doorset configurations and sizes, glazing details, various hardware and installation parameters as discussed in the relevant sections below.

This assessment report is subject to the requirements and limitations described in Sections 2 and 15.

The findings of this report are that if 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 expected that they would be capable of providing a minimum of 30 minutes integrity and insulation (subject to section 12).

This report represents our opinion as to the performance likely to be demonstrated on a test in accordance with the test standard specified above, on the basis of the test evidence referred to in this report. We express no opinion as to whether that evidence, and/or this report would be regarded by any Building Control authorities or any other third parties as sufficient for that or any other purpose.

Contents

Signatories and Revision History	2
Executive summary	4
1 Introduction	7
2 Assessment framework	7
3 General requirements and assumptions	8
4 Technical Specification	9
4.1 General	9
4.2 Intended Use	9
4.3 Door Leaf	9
4.4 Door Frames	11
4.5 Doorset Configurations & Maximum Leaf Sizes	12
5 General Description of Construction	45
5.1 Leaf Core Construction	45
5.2 Comparison of Door Core Designs	47
5.3 Leaf Size Adjustment During Manufacture – all Leaf Options	48
5.4 Timber Lipping – all Leaf Options	49
5.5 Decorative & Protective Facings – all Leaf Options	57
5.6 Decorative Planted on Timber Mouldings	57
5.7 Feature Grooves	58
5.8 Astragal	60
6 Glazing within the Leaf	61
6.1 General	61
6.2 Certifire Single Pane Glass and Glazing System Options	62
6.3 Single Pane Glass and Glazing Systems (Timber Beading)	63
6.4 Double Glazed Units & Glazing Systems	71
7 Door Frame Construction	74
7.1 Details for Frame 1	74
7.2 Details for Frame 2	76
7.3 Threshold – Frame 1 and 2	78
7.4 Door Frame Joints	80
7.5 Decorative Facings – All Frame Options	81
8 Overpanels & Fanlights, Sidepanel & Sidelights	82
8.1 General	82
8.2 Framing	82
8.3 Solid Panels	90
8.4 Glazed Fanlights & Sidelights	92
9 Adhesives	96
10 Hardware	97
10.1 General	97
10.2 Intumescent to Hardware	98
10.3 Essential Hardware	98
10.4 Latches & Locks	100
10.5 Handles & Escutcheons	104
10.6 Butt Hinges	105
10.7 Doorset Self Closing	107
10.8 Bolts	111
10.9 Cable Loops & Cableways	113
10.10 Pull Handles	115
10.11 Push Plates & Kick Plates	116
10.12 Security Viewers	117
10.13 Door Selectors	118
10.14 Environmental Seals	118
10.15 Threshold drop Seals	119

10.16 LetterBoxes / Plates	120
10.17 Knockers, Numerals & Signage	121
10.18 Security Chains	122
10.19 Fire Door Identification Plates	122
10.20 Panic Hardware	122
10.21 Mag Lock	122
10.22 Halspan Smart Tags	123
10.23 Rain Deflector	124
10.24 Hold Open Armatures	124
10.25 Air Transfer Grilles	124
11 Installation	125
11.1 General	125
11.2 Door Frame Installation	125
11.3 Firestopping	126
11.4 Packers	127
11.5 Wall Types, Structural Opening & Fixity	128
11.6 Post Production (Onsite) Leaf Size Adjustment	130
11.7 Door Gaps	130
12 Insulation Performance	131
13 Conclusions	132
14 Declaration	132
15 Limitations	133
16 Validity	134
Appendix A Summary of supporting data	135
A.1 Primary Evidence	136
A.1.1 Chilt/RF13196	136
A.1.2 BMT/FEP/F14056A	136
A.1.3 BMT/FEP/F14056B	137
A.1.4 BMT/FEP/F16105	137
A.1.5 WF378795 AR1	138
A.1.6 WF380257A	138
A.1.7 WF380257B	139
A.1.8 WF414679	139
A.1.9 CFR1910291_1 Revision 3	140
A.1.10 WF428611/R A	140
A.1.11 WF428611/R B	141
A.1.12 CFR2101121	141
A.1.13 TR20231213-000610A	142
A.1.14 TR20231213-000710A	142
A.1.15 TR20231213-000410A	143
A.1.16 TR20231213-000510A	143
A.1.17 WF429480 A	144
A.1.18 WF429950	144
A.1.19 WF429951	145

1 Introduction

This field of application report presents an assessment of the fire resistance performance of the specified proprietary doorset designs, as fire tested and described in the reports detailed within Appendix A when modified as detailed herein.

Analysis of specific construction details that require assessment are given within this report against the relevant element of construction, as appropriate.

2 Assessment framework

An assessment is an opinion of the likely performance of a component or element of structure if it was subjected to a standard fire test.

This assessment report has been carried out in accordance with the Passive Fire Protection Forum (PFPF) *'Guide to Undertaking Technical Assessments of the Fire Performance of Construction Products Based on Fire Test Evidence - 2021'* and has been written in accordance with the general principles outlined in BS EN 15725: 2023; Extended application reports on the fire performance of construction products and building elements, as applicable.

This scope document cannot be used as supporting documentation for either a CE or UKCA marking application nor can the conclusion be used to establish a formal classification against EN13501-2.

The scope presented in this report relates to the behaviour of the element 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 report 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 - 2021'*. 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.

This report uses established empirical methods of extrapolation and experience of fire testing similar elements, 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 the test standard specified.

This report 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 stated design and is summarised in Appendix A.

3 General requirements and assumptions

The specified proprietary Halspan XT & IT doorset designs shall be constructed in a similar manner from materials and components of the same manufacturer and equivalent quality as those tested or otherwise assessed by Warringtonfire.

The following assumptions have been made in the preparation of this report:

- 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 $\pm 2\%$ except where minimum, maximum or a range of dimensions are given.
- Where morticed items of hardware are used (within the leaf or frame) it is assumed that the preparation for such items are tight to the item (and where applicable intumescent protection) as tested with no excessive gaps, unless stated otherwise within a particular section of this report.

It is assumed that the end user will have an understanding of the tested specification as defined in the relevant test report(s) summarised in Appendix A.

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.

If a design variation or extension to scope is not explicitly detailed within the assessment it should not be assumed to be acceptable by omission.

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 Appendix A.

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

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

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

Doorsets constructed using different leaves can include various design features as summarised below.

The same leaf option must be used for door leaf, solid side panel and solid overpanel components of any individual doorset.

4.3.1 Leaf 1 – XT30 – 44mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings
4. Decorative planted on timber mouldings
5. Feature grooves

4.3.2 Leaf 2 – IT30 – 44mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings
4. Decorative planted on timber mouldings
5. Feature grooves

4.3.3 Leaf 3 – XT60 – 54mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings
4. Decorative planted on timber mouldings
5. Feature grooves

4.3.4 Leaf 4 – IT60 – 54mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings
4. Decorative planted on timber mouldings
5. Feature grooves

4.4 Door Frames

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

Section 7 gives the description of the frame including composition and density and minimum dimensions.

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

The same frame option must be used for any individual doorset.

Permitted frame and leaf combinations are detailed within section 4.5.

4.4.1 Frame 1 – Softwood/Hardwood Timber

The construction of the door frames is softwood or hardwood.

4.4.2 Frame 2 – MDF

The construction of the door frames is MDF.

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 Appendix A and takes into account:

- The margin of over performance above 30 minutes integrity for the design
- The characteristics exhibited during test and
- The doorset configuration tested

The evaluation of the permitted configurations included in this field of application is based on the configurations tested. The principle is that the more components included in testing, the harder it becomes to pass a test.

This approach leads to the following statements:

- A test on a double doorset is more onerous than a test on a single doorset.
- 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.
- 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.
- 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.

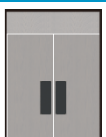
Doorsets with reduced height and width dimensions from those tested are deemed to be less onerous. Therefore, doors with dimensions less than those given in the leaf size envelopes (for the relevant intumescent specification) in the following sections are covered and may be manufactured.

Minimum door leaf width must be no smaller than 300mm. Inclusion of specific design details may require restrictions to maximum or minimum leaf sizes.

4.5.2 Configuration

The table below shows the permitted configurations for the 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.

Depiction	Abbreviation	Description
	LSASD	Latched Single Acting Single Doorset
	ULSASD	Unlatched Single Acting Single Doorset
	DASD	Double Acting Single Doorset
	LSASD+OP	Latched Single Acting Single Doorset + Flush Overpanel
	ULSASD+OP	Unlatched Single Acting Single Doorset + Flush Overpanel
	LSADD	Latched Single Acting Double Doorset
	ULSADD	Unlatched Single Acting Double Doorset
	DADD	Double Acting Double Doorset
	LSADD+OP	Latched Single Acting Double Doorset + Flush Overpanel
	ULSADD+OP	Unlatched Single Acting Double Doorset + Flush Overpanel

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 Configuration

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 provided that all the following criteria are met:

- The relevant door leaf envelopes are not exceeded.
- Door leaf widths are no smaller than 300mm.

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

Single acting double doorsets are only considered acceptable when the leaves are hung to open in the same direction.

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 to the thickness of the leaf 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.
- Intumescent seals are not to be concealed below lippings.
- While intumescent seals are not specified to be applied at the bottom edge of the leaf for all specifications, their application may be a requirement for certain elements of building hardware. It is the opinion of Warringtonfire that the application of intumescent seals across the bottom edge of the leaf will not detract from the fire resistance performance under test conditions, when applied the intumescent may consist of either:
 - 1No. Intumescent seal no greater than 20mm wide centrally fitted or
 - 2No. Intumescent seals, each no greater than 10mm wide no greater than 14mm apart.
- Inclusion of specific design details (e.g. face grooves) and/or hardware may require a different intumescent seal specification compared to that stated for the leaf configurations in sections 4.5. Where this is the case, it is important that the following conditions are met:
 - The intumescent type given for the specific design detail must match that given for the required leaf configuration and leaf size (e.g. if graphite is given as the required seal type for a concealed closer, only leaf configurations and sizes approved for graphite type seals can be used).
 - The largest of the intumescent specifications given for the different design details must take precedence, which is to be determined by the total amount of intumescent required for that design detail (e.g. if the total amount of perimeter intumescent for a particular concealed closer is greater than that required for the associated leaf configuration and size, the intumescent detail stated for the concealed closer would take precedence).

Intumescent seals have been demonstrated both with and without the presence of fins, blades and brushes, on this basis the seals detailed in the following sections may be supplied with or without fins, blades or brushes providing the active intumescent material the carrier and the dimensions of the components are no different from those tested and summarised. For example:

The Halspan SLS range of graphite seals listed in this Field of Application have the following product variants and product codes:

SLS-PLA-154. PVC encapsulated fire only seal, 15mm x 4mm

SLS-PLA-104. PVC encapsulated fire only seal, 10mm x 4mm

SLS-BRU-154. PVC encapsulated fire & smoke brush seal, 15mm x 4mm

SLS-BRU-104. PVC encapsulated fire & smoke brush seal, 10mm x 4mm

SLS-TWF-154. PVC encapsulated fire, smoke & acoustic twin fin bladed seal, 15mm x 4mm

SLS-TWF-104. PVC encapsulated fire, smoke & acoustic twin fin bladed seal, 10mm x 4mm

SLS-OSF-154. PVC encapsulated fire, smoke & acoustic offset fin bladed seal, 15mm x 4mm

SLS-OSF-104. PVC encapsulated fire, smoke & acoustic offset fin bladed seal, 10mm x 4mm

All of the seals listed above contain the same graphite intumescent and may therefore be considered interchangeable, where appropriate.

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 four leaf options and two frame options. 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+OP
- 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.

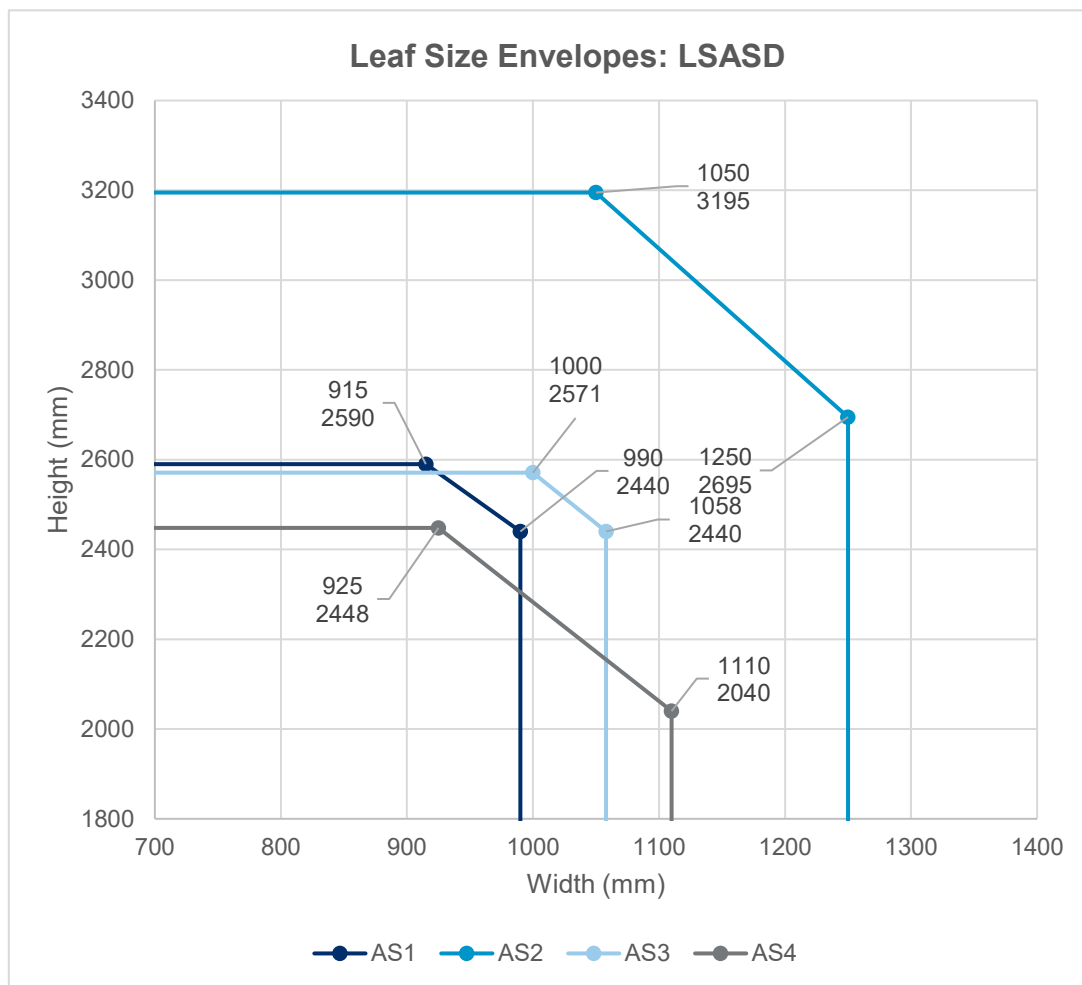
4.5.4.3 Summary of Permitted Configurations (for each Leaf and Frame option)

Permitted Configurations with frame option 1 & 2 with leaf option 1, 2, 3 & 4													
Frame	Configuration												
		LSASD	ULSASD	DASD	LSASD OP	ULSASD OP	DASD OP	LSADD	ULSADD	DADD	LSADD OP	ULSADD OP	DADD OP
	1 – Softwood/Hardwood frame*	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No
	2 – MDF frame*	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No

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

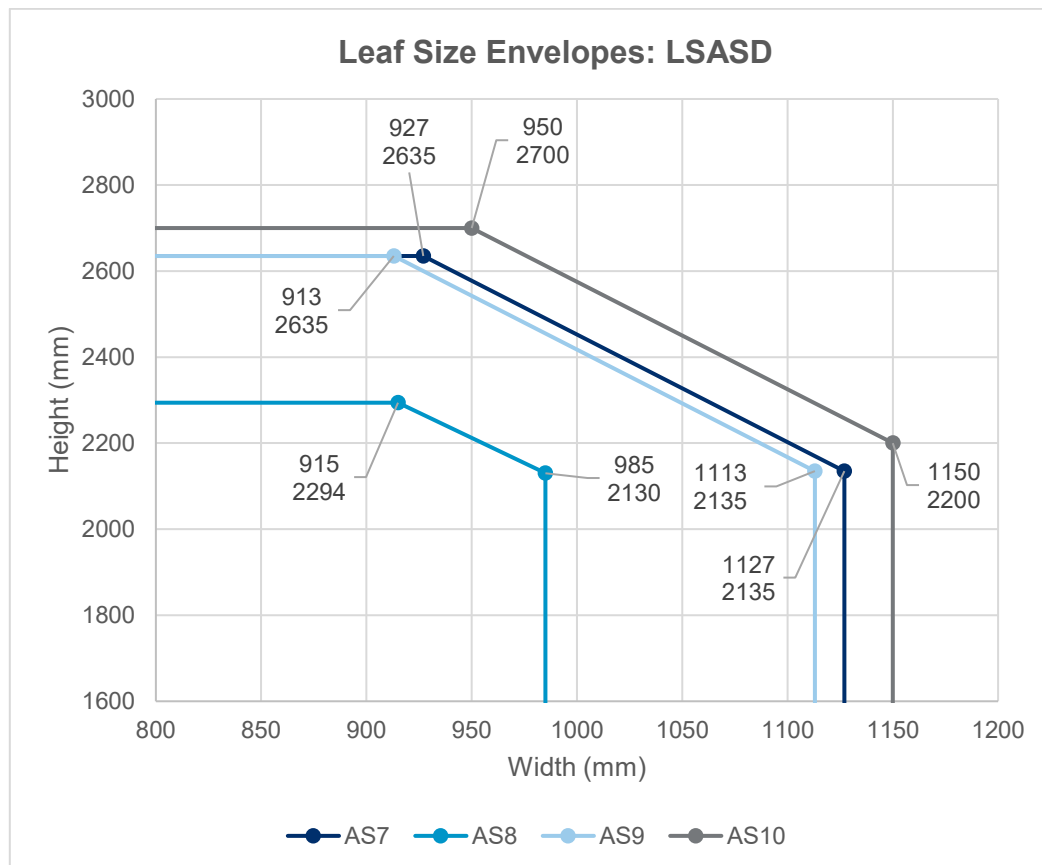
4.5.5 LSASD Configuration: Leaf Sizes & Intumescent Specification

4.5.5.1 Leaf 1, 2, 3 & 4 with Frame 1 & 2



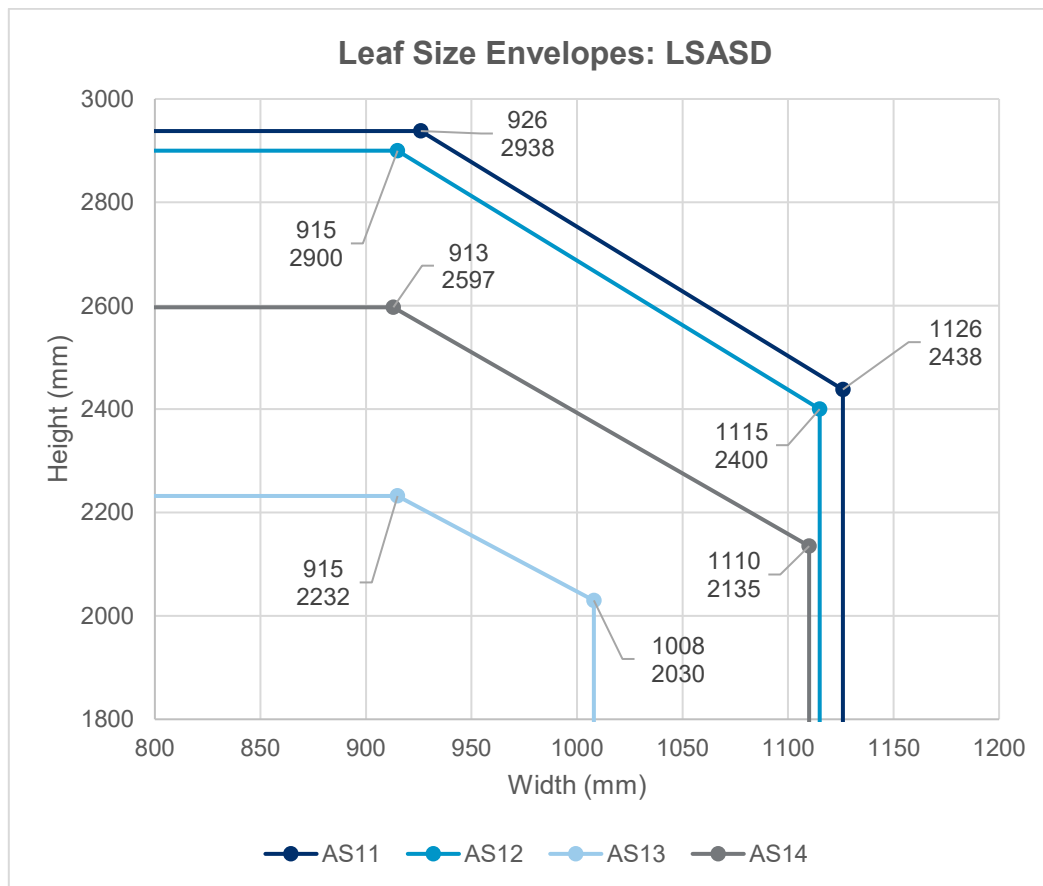
Intumescent Specification for LSASD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS1 (Chilt/RF13196)	SLS Type (15 x 4)	Halspan	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal
AS2 (TR20231213- 000710A)	SLS Type (15 x 4) (10 x 4)	Halspan	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal Leaf Head: 2no 10 x 4 fitted centrally in the leaf head 14mm apart

Intumescent Specification for LSASD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS3 (WF414679)	LP1504 Type 617 (15 x 4)	Lorient	Frame Head & Jambs: 1no 15 x 4 seal fitted centrally in frame reveal
AS4 (CFR1910291_1 Revision 3)	SLS Type (15 x 4)	Halspan	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal



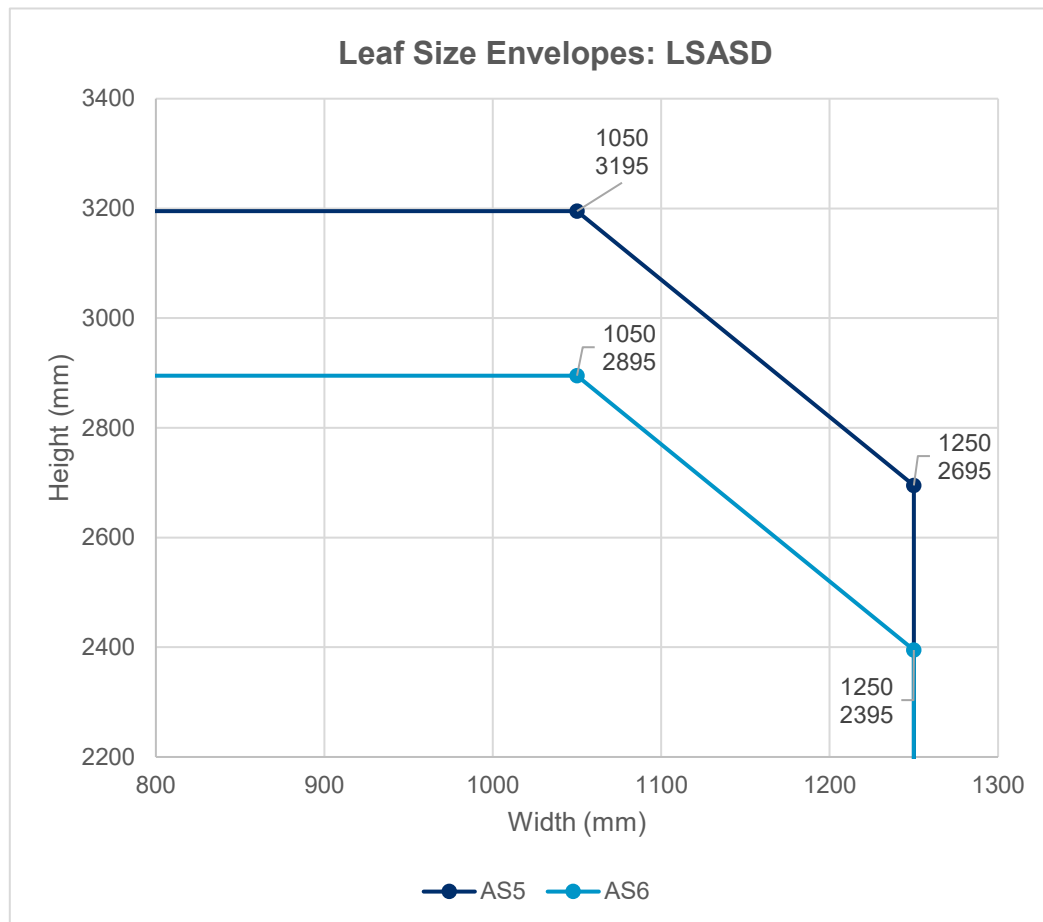
Intumescent Specification for LSASD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS7 (BMT/FEP/F16105)	Twin flipper seal 30175 (15 x 4) Twin flipper seal 30170 (10 x 4)	Pyroplex	Frame Head: For Leaf 1 & 2 (44mm): 1no 15 x 4 seal fitted 8mm from opening face of reveal 1no 10 x 4 fitted centrally 30 mm from opening face of reveal For Leaf 3 & 4 (54mm): 1no 15 x 4 seal fitted 13mm from opening face of reveal 1no 10 x 4 fitted centrally 35 mm from opening face of reveal Frame Jamb: 1no 15 x 4 seal fitted centrally in frame reveal

Intumescent Specification for LSASD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS8 (BMT/FEP/F14056A)	8700 (15 x 4)	Pyroplex	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal
AS9 (WF380257A)	8800 (25 x 4)	Pyroplex	Frame Head & Jambs: 1no 25 x 4 fitted centrally in frame reveal
AS10 (WF429950)	8500 (10 x 4)	Pyroplex	Frame Head & Jambs: 2no 10 x 4 fitted centrally 19mm apart



Intumescent Specification for LSASD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS11 (WF378795 AR1)	STS154FO (15 x 4)	Sealed Tight Solutions Ltd	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal
AS12 (CFR2101121)	LP1504 Type 617 (15 x 4)	Lorient	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal
AS13 (BMT/FEP/F14056B)	LP1504 Type 617 (15 x 4)	Lorient	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal
AS14 (WF380257B)	LP2504 Type 617 (25 x 4)	Lorient	Frame Head & Jambs: 1no 25 x 4 fitted centrally in frame reveal

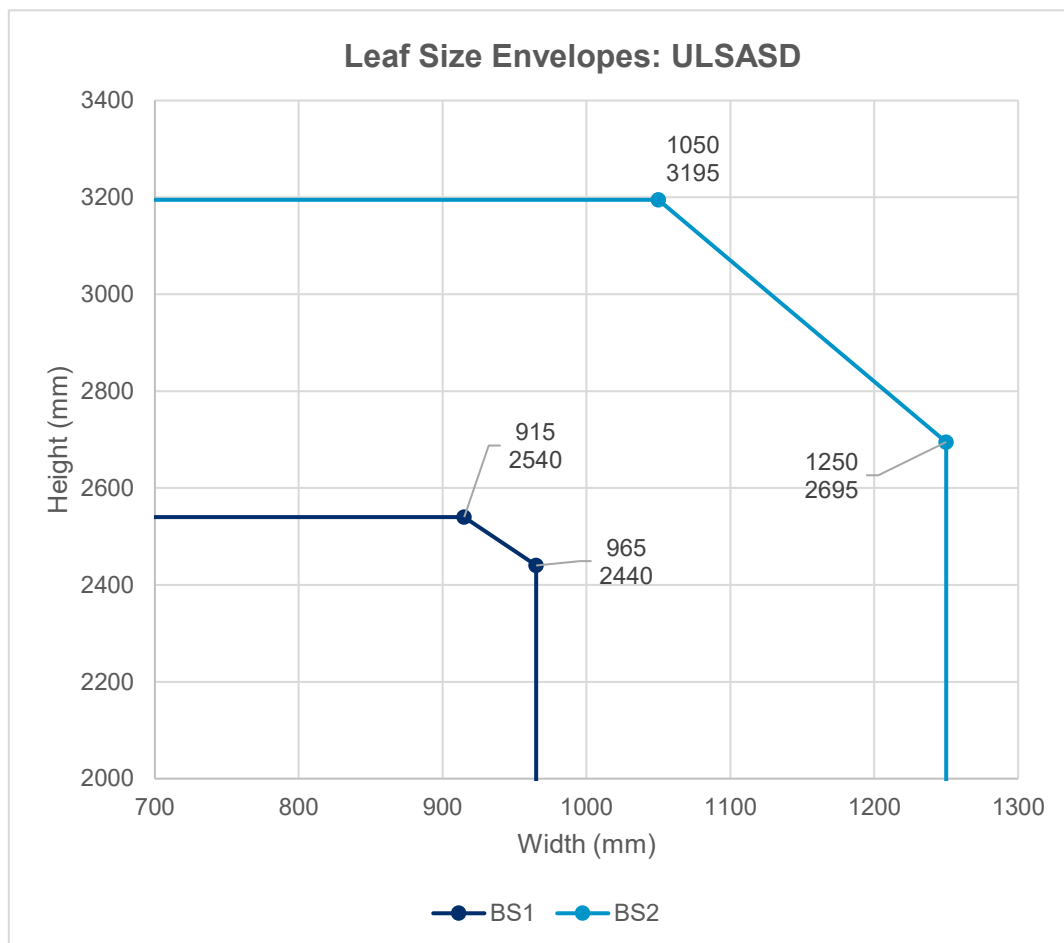
4.5.5.2 Leaf 3 & 4 with Frame 1 & 2



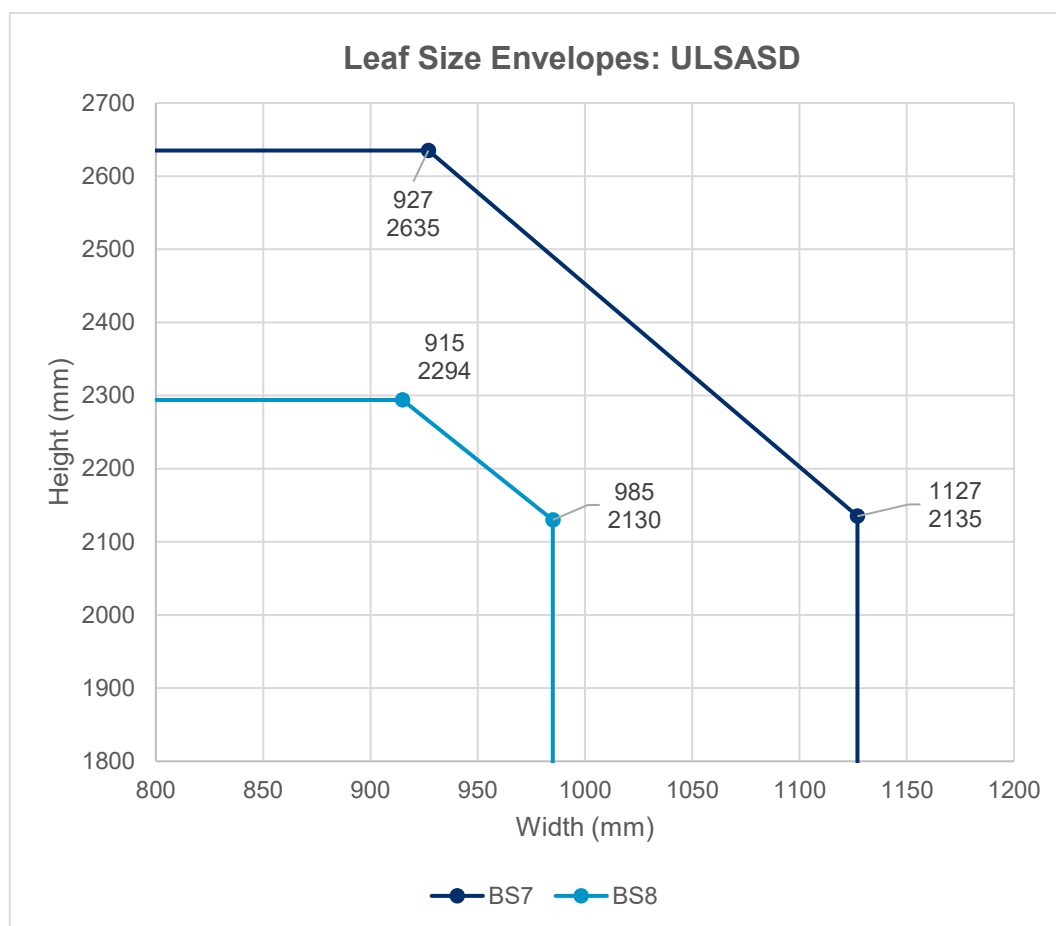
Intumescent Specification for LSASD Leaf 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS5 (TR20231213-000510A)	SLS Type (15 x 4)	Halspan	Frame Head & Jambs: 2no 15 x 4 seals fitted centrally in frame reveal 10mm apart Leaf Head: 1no 15 x 4 seal fitted centrally to the leaf
AS6 (TR20231213-000410A)	SLS Type (15 x 4)	Halspan	Frame Head & Jambs: 2no 15 x 4 seals fitted centrally in frame reveal 10mm apart Leaf Head: 1no 15 x 4 seals fitted centrally to the leaf

4.5.6 ULSASD Configuration: Leaf Sizes & Intumescent Specification

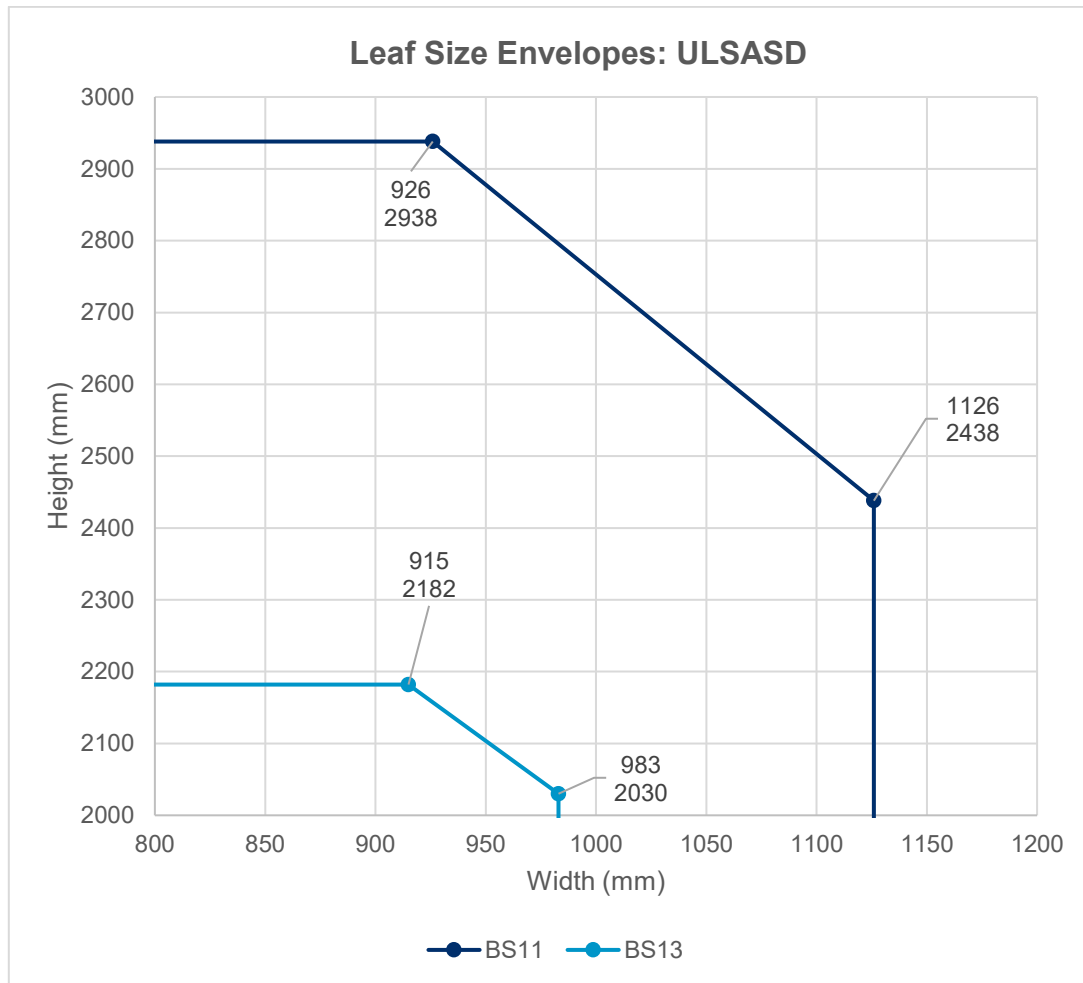
4.5.6.1 Leaf 1, 2, 3 & 4 with Frame 1 & 2



Intumescent Specification for ULSASD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BS1 (Chilt/RF13196)	SLS Type (15 x 4)	Halspan	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal
BS2 (TR20231213- 000710A)	SLS Type (15 x 4) (10 x 4)	Halspan	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal Leaf Head: 2no 10 x 4 fitted centrally in the leaf head 14mm apart

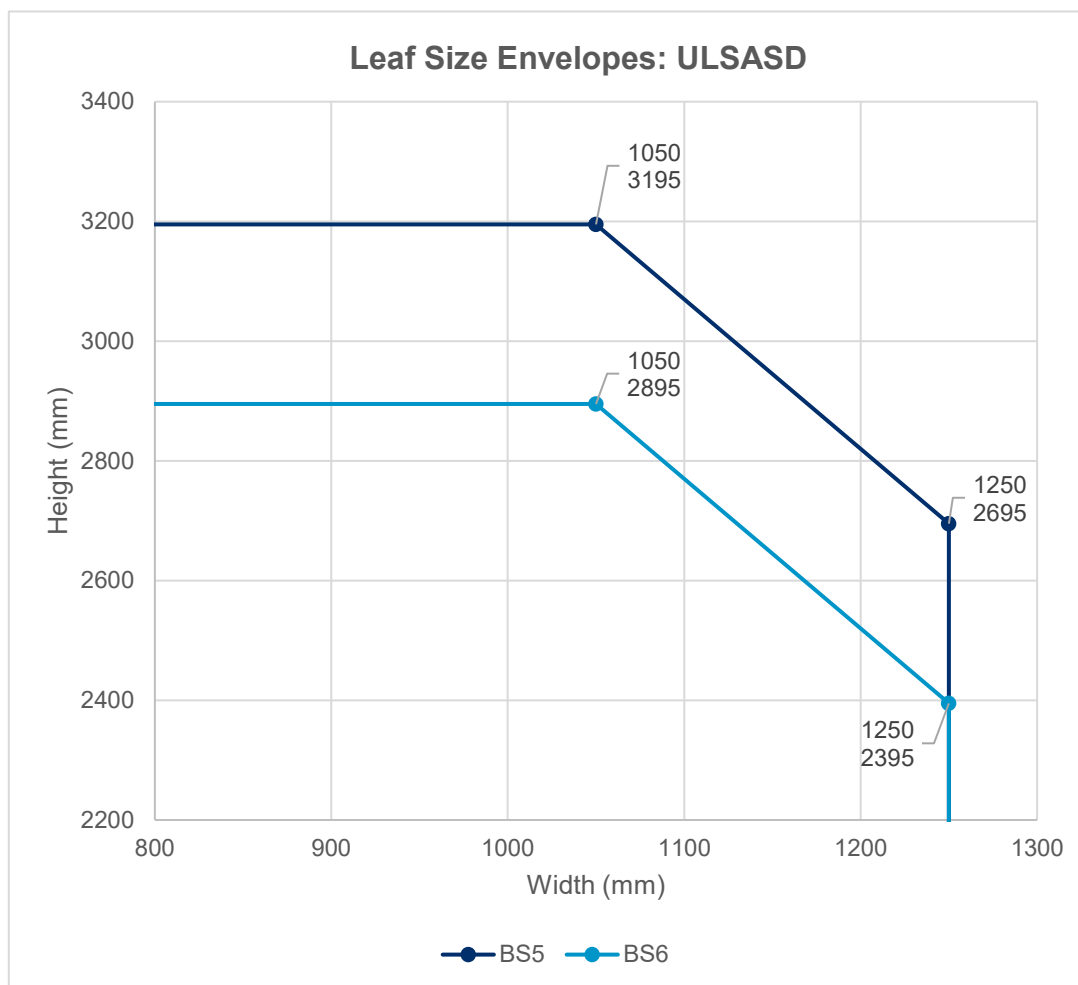


Intumescent Specification for ULSASD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BS7 (BMT/FEP/F16105)	Twin flipper seal 30175 (15 x 4) Twin flipper seal 30170 (10 x 4)	Pyroplex	Frame Head: For Leaf 1 & 2 (44mm): 1no 15 x 4 seal fitted 8mm from opening face of reveal 1no 10 x 4 fitted centrally 30 mm from opening face of reveal For Leaf 3 & 4 (54mm): 1no 15 x 4 seal fitted 13mm from opening face of reveal 1no 10 x 4 fitted centrally 35 mm from opening face of reveal Frame Jamb: 1no 15 x 4 seal fitted centrally in frame reveal
BS8 (BMT/FEP/F14056A)	8700 (15 x 4)	Pyroplex	Frame Jamb: 1no 15 x 4 fitted centrally



Intumescent Specification for ULSASD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BS11 (WF378795 AR1)	STS154FO (15 x 4)	Sealed Tight Solutions Ltd	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal
BS13 (BMT/FEP/F14056B)	LP1504 Type 617 (15 x 4)	Lorient	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal

4.5.6.2 Leaf 3 & 4 with Frame 1 & 2



Intumescent Specification for ULSASD Leaf 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BS5 (TR20231213- 000510A)	SLS Type (15 x 4)	Halspan	Frame Head & Jambs: 2no 15 x 4 seals fitted centrally in frame reveal 10mm apart Leaf Head: 1no 15 x 4 seal fitted centrally to the leaf

Intumescent Specification for ULSASD Leaf 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BS6 (TR20231213- 000410A)	SLS Type (15 x 4)	Halspan	Frame Head & Jambs: 2no 15 x 4 seals fitted centrally in frame reveal 10mm apart Leaf Head: 1no 15 x 4 seals fitted centrally to the leaf 10mm apart

4.5.7 DASD Configuration: Leaf Sizes & Intumescent Specification

4.5.7.1 Leaf 1, 2, 3 & 4 with Frame 1 & 2

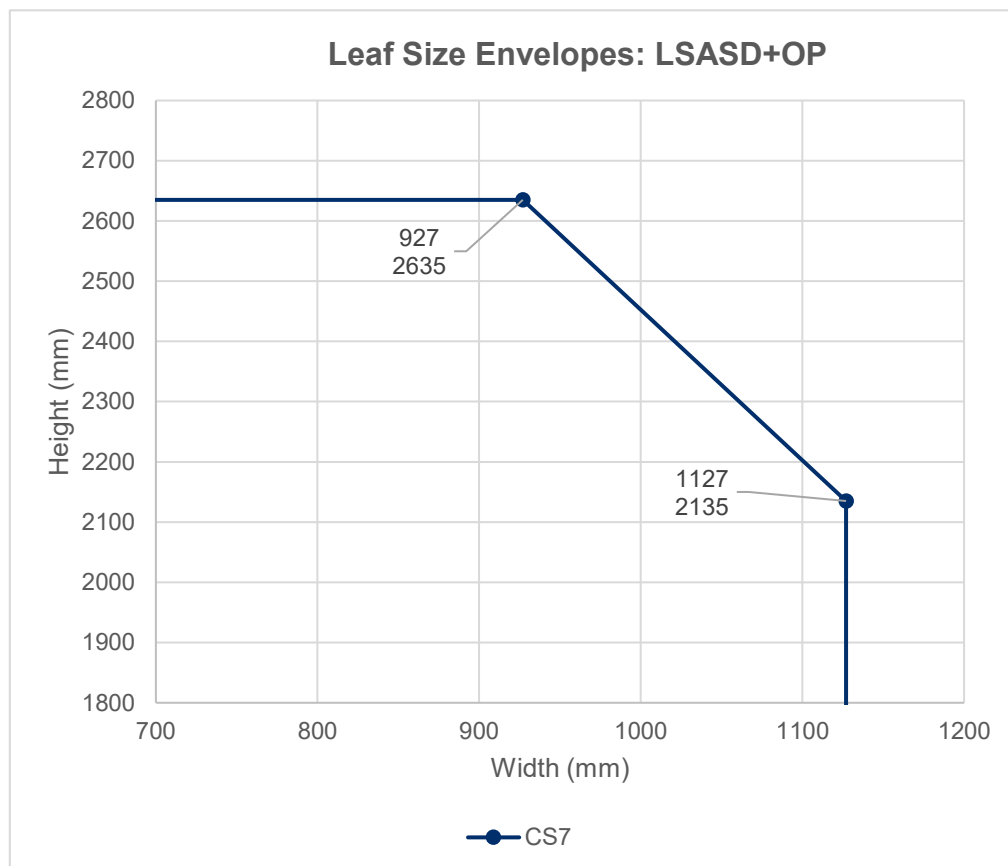
For leaf size envelopes for DASD using leaf 1, 2, 3 & 4 with Frame 1 & 2 see intumescent specification BS2 within section 4.5.6.1.

4.5.7.2 Leaf 3 & 4 with Frame 1 & 2

For leaf size envelopes for DASD using leaf 3 & 4 with Frame 1 & 2 see intumescent specification BS6 within section 4.5.6.2.

4.5.8 LSASD+OP Configuration: Leaf Sizes & Intumescent Specification

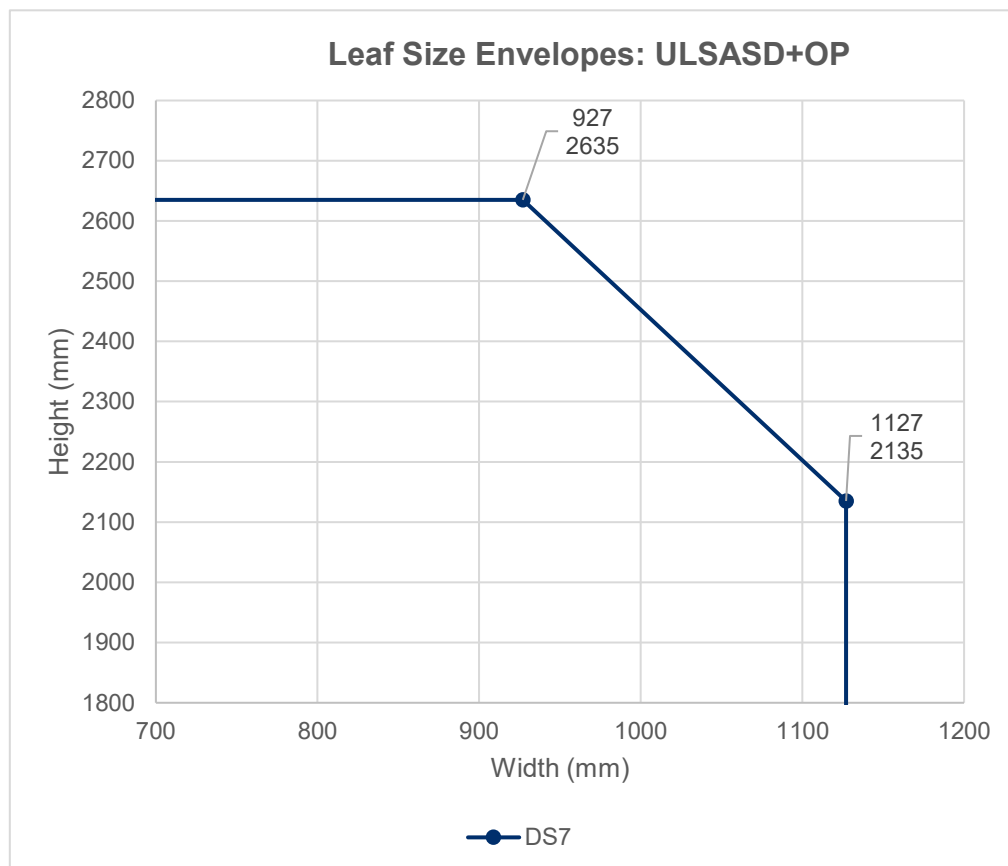
4.5.8.1 Leaf 1, 2, 3 & 4 with Frame 1 & 2



Intumescent Specification for LSASD+OP Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
CS7 (BMT/FEP/F16105)	Twin flipper seal 30175 (15 x 4) Twin flipper seal 30170 (10 x 4)	Pyroplex	Leaf / Overpanel Junction: 1no. 15 x 4 seal fitted in the larger lipping rebate at 6mm from the rebate corner 1no. 10 x 4 fitted in the smaller lipping rebate at 1mm from the rebate corner Frame Head & Jambs: 1no 15 x 4 seal fitted centrally in frame reveal

4.5.9 ULSASD+OP Configuration: Leaf Sizes & Intumescent Specification

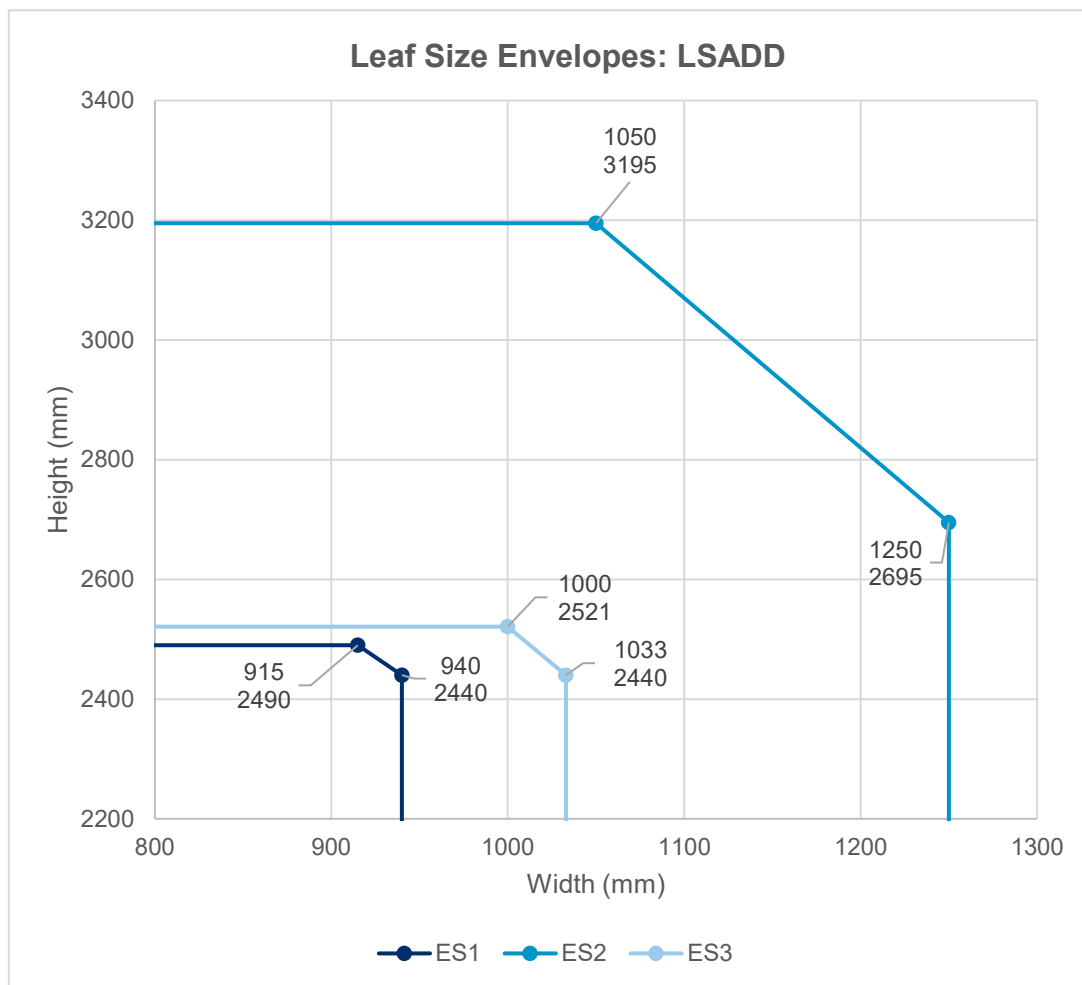
4.5.9.1 Leaf 1, 2, 3 & 4 with Frame 1 & 2



Intumescent Specification for ULSASD+OP Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
DS7 (BMT/FEP/F16105)	Twin flipper seal 30175 (15 x 4) Twin flipper seal 30170 (10 x 4)	Pyroplex	Leaf / Overpanel Junction: 1no. 15 x 4 seal fitted in the larger lipping rebate at 6mm from the rebate corner 1no. 10 x 4 fitted in the smaller lipping rebate at 1mm from the rebate corner Frame Head & Jambs: 1no 15 x 4 seal fitted centrally in frame reveal

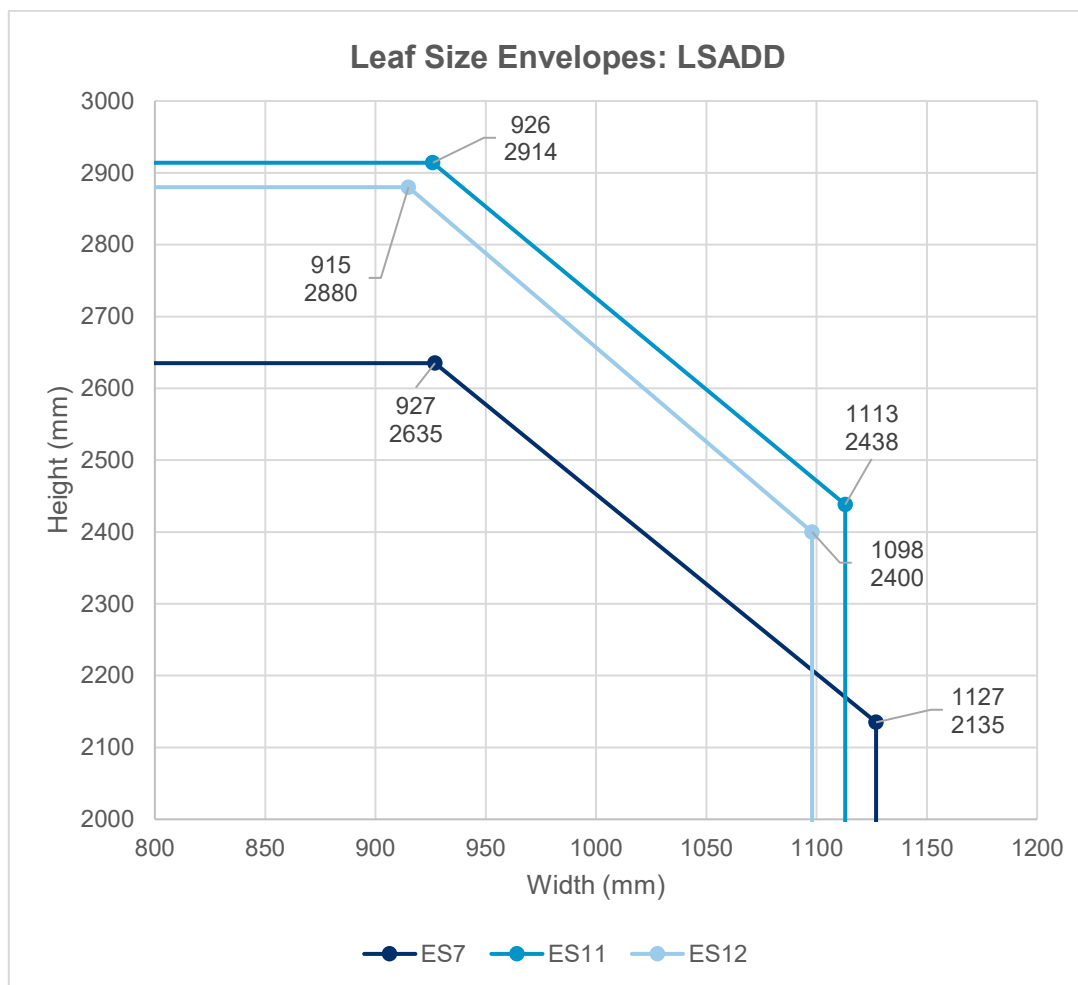
4.5.10 LSADD Configuration: Leaf Sizes & Intumescent Specification

4.5.10.1 Leaf 1, 2, 3 & 4 with Frame 1 & 2



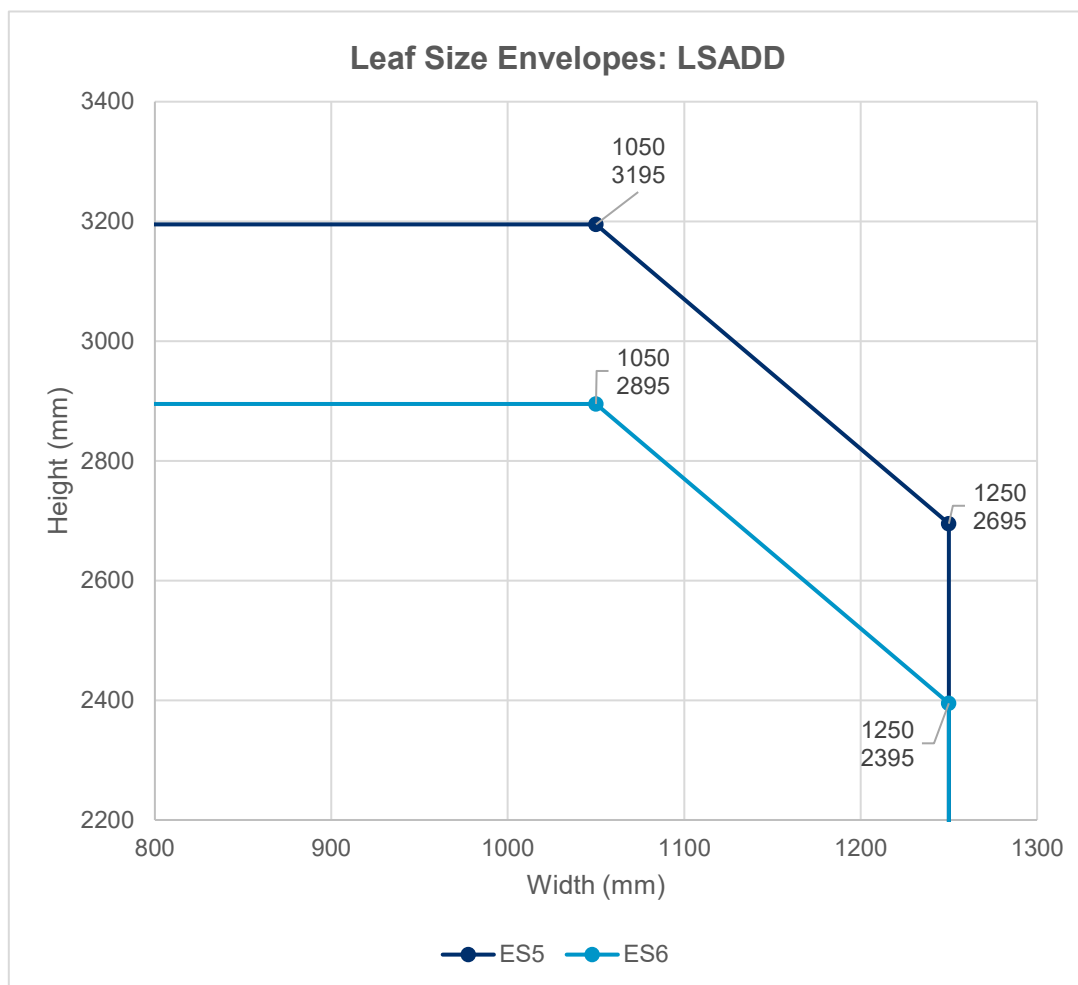
Intumescent Specification for LSADD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
ES1 (Chilt/RF13196)	SLS Type (15 x 4)	Halspan	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal Meeting Edge: 1no 15 x 4 fitted centrally in the active leaf.

Intumescent Specification for LSADD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
ES2 (TR20231213- 000710A)	SLS Type (15 x 4) (10 x 4)	Halspan	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal Leaf Head: 2no 10 x 4 fitted centrally in the leaf head 14mm apart Meeting Edge: 2no 10 x 4 fitted centrally and 14mm apart in active leaf. 1no 10 x 4 centrally fitted in the inactive leaf
ES3 (WF414679)	Halspan Verified Seal (15 x 4) Halspan Verified Seal (10 x 4)	Halspan	Frame Head & Jambs: 1no 15 x 4 seal fitted centrally in frame reveal Meeting Edge: 2no 10 x 4 seals fitted centrally and 10mm apart in the inactive leaf.



Intumescent Specification for LSADD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
ES7 (BMT/FEP/F16105)	Twin flipper seal 30175 (15 x 4) Twin flipper seal 30170 (10 x 4) FO8500 (10 x 4)	Pyroplex	Frame Head: For Leaf 1 & 2 (44mm): 1no 15 x 4 seal fitted 8mm from opening face of reveal 1no 10 x 4 fitted centrally 30 mm from opening face of reveal For Leaf 3 & 4 (54mm): 1no 15 x 4 seal fitted 13mm from opening face of reveal 1no 10 x 4 fitted centrally 35 mm from opening face of reveal Frame Jambs: 1no 15 x 4 seal fitted centrally in frame reveal Meeting Edge: 2no. 10 x 4 seals fitted 10 apart central to the leaf thickness. 1no 10 x 4 seal fitted central to the opposing leaf
ES11 (WF378795 AR1)	STS154FO (15 x 4) STS104FO (10 x 4)	Sealed Tight Solutions Ltd	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal Meeting Edge: 2no 15 x 4 seals fitted centrally and 10mm apart in active leaf.
ES12 (CFR2101121)	LP1504 Type 617 (15 x 4) LP1004 Type 617 (10 x 4)	Lorient	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal Meeting Edge: 2no 10 x 4 seals fitted centrally and 10mm apart in the active leaf

4.5.10.2 Leaf 1, 2, 3 & 4 with Frame 1 & 2

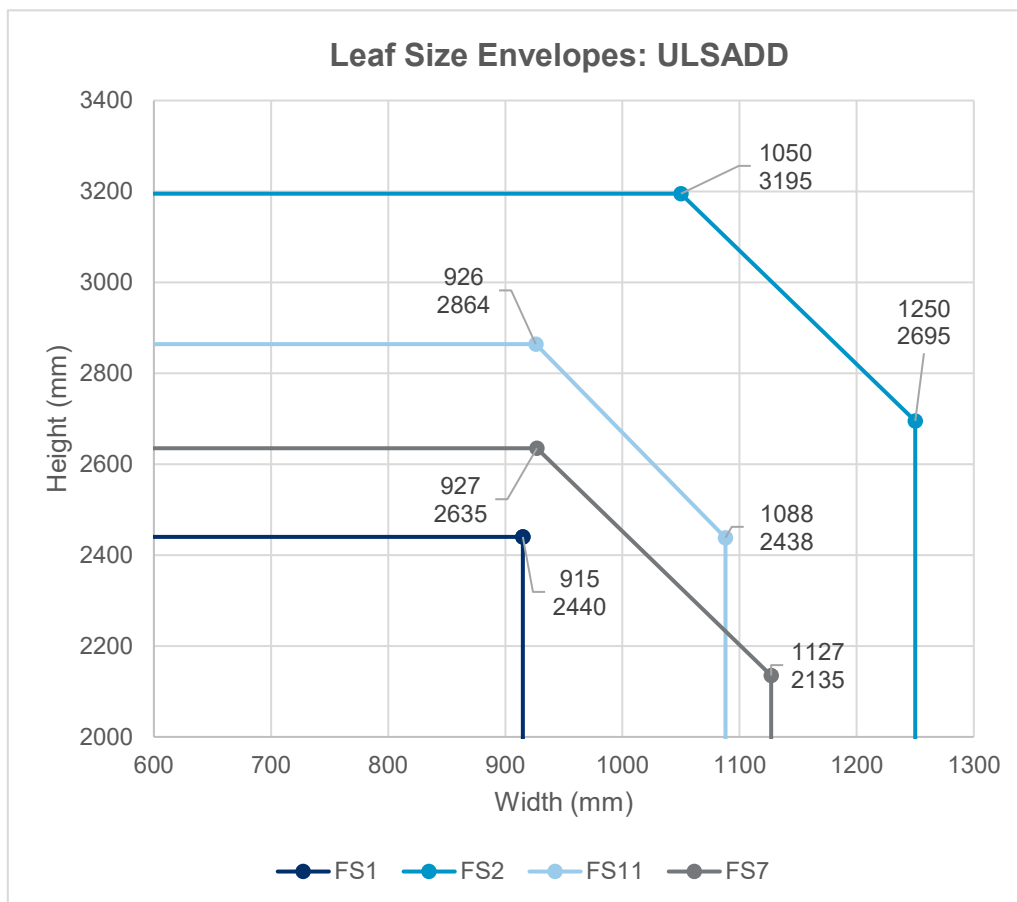


Intumescent Specification for LSADD Leaf 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
ES5 (TR20231213- 000510A)	SLS Type (15 x 4)	Halspan	Frame Head & Jambs: 2no 15 x 4 seals fitted centrally in frame reveal 10mm apart Leaf Head: 1no 15 x 4 seal fitted centrally to the leaf Meeting Edge: 1no 15 x 4 seal fitted centrally in the inactive leaf 2no 15 x 4 seals fitted centrally and 10mm apart in active leaf.

Intumescent Specification for LSADD Leaf 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
ES6 (TR20231213- 000410A)	SLS Type (15 x 4)	Halspan	Frame Head & Jambs: 2no 15 x 4 seals fitted centrally in frame reveal 10mm apart Leaf Head: 1no 15 x 4 seal fitted centrally to the leaf Meeting Edge: 1no 10 x 4 seal fitted centrally in the inactive leaf 2no 10 x 4 seals fitted centrally and 10mm apart in active leaf.

4.5.11 ULSADD Configuration: Leaf Sizes & Intumescent Specification

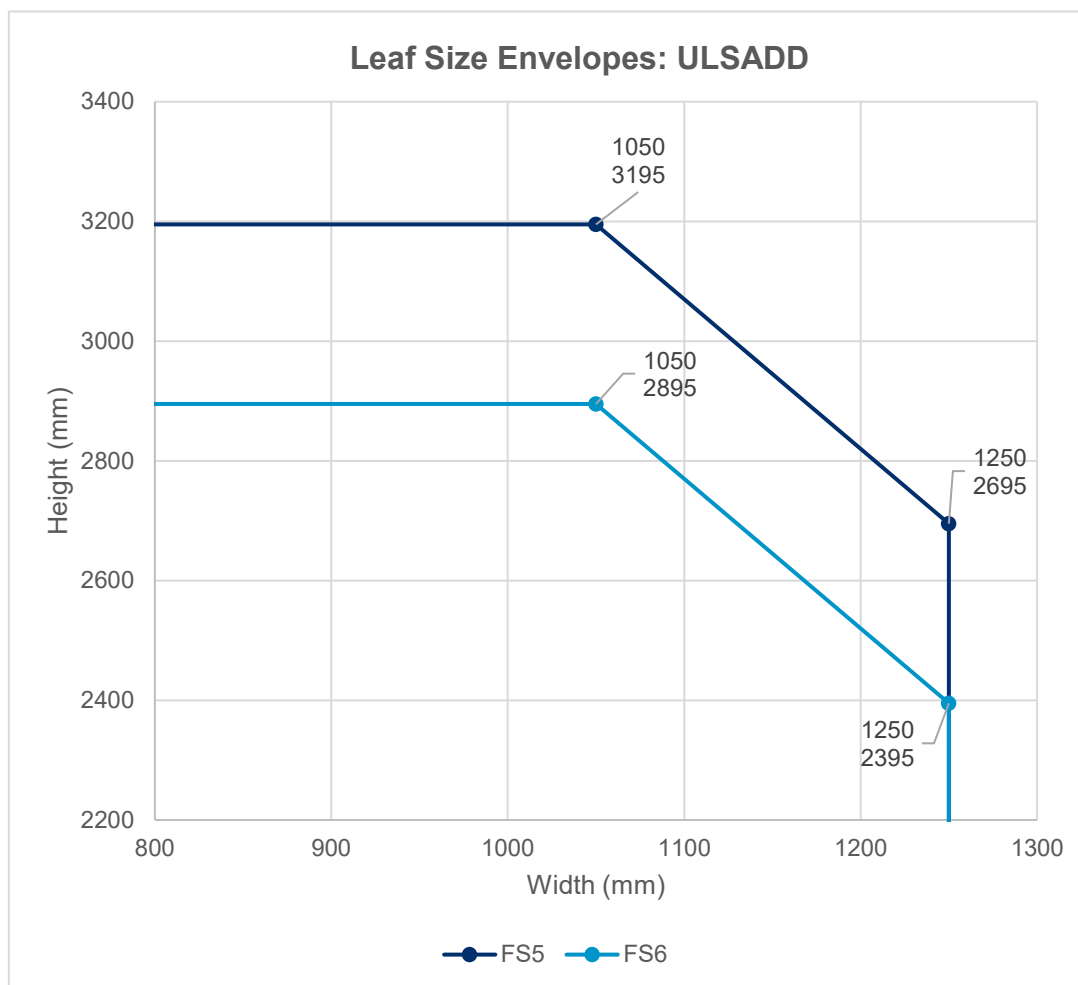
4.5.11.1 Leaf 1, 2, 3 & 4 with Frame 1 & 2



Intumescent Specification for ULSADD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
FS1 (Chilt/RF13196)	SLS Type (15 x 4)	Halspan	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal Meeting Edge: 1no 15 x 4 fitted centrally in the active leaf.

Intumescent Specification for ULSADD Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
FS2 (TR20231213- 000710A)	SLS Type (15 x 4) (10 x 4)	Halspan	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal Leaf Head: 2no 10 x 4 fitted centrally in the leaf head 14mm apart Meeting Edge: 2no 10 x 4 fitted centrally and 10mm apart in active leaf. 1no 10 x 4 centrally fitted in the inactive leaf
FS11 (WF378795 AR1)	STS154FO (15 x 4) STS104FO (10 x 4)	Sealed Tight Solutions Ltd	Frame Head & Jambs: 1no 15 x 4 fitted centrally in frame reveal Meeting Edge: 2no 10 x 4 seals fitted centrally and 10mm apart in inactive leaf.
FS7 (BMT/FEP/F16105)	Twin flipper seal 30175 (15 x 4) Twin flipper seal 30170 (10 x 4) FO8500 (10 x 4)	Pyroplex	Frame Head: For Leaf 1 & 2 (44mm): 1no 15 x 4 seal fitted 8mm from opening face of reveal 1no 10 x 4 fitted centrally 30 mm from opening face of reveal For Leaf 3 & 4 (54mm): 1no 15 x 4 seal fitted 13mm from opening face of reveal 1no 10 x 4 fitted centrally 35 mm from opening face of reveal Frame Jambs: 1no 15 x 4 seal fitted centrally in frame reveal Meeting Edge: 2no. 10 x 4 seals fitted 10 apart central to the leaf thickness. 1no 10 x 4 seal fitted central to the opposing leaf

4.5.11.2 Leaf 3 & 4 with Frame 1 & 2



Intumescent Specification for ULSADD Leaf 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
FS5 (TR20231213- 000510A)	SLS Type (15 x 4)	Halspan	Frame Head & Jambs: 2no 15 x 4 seals fitted centrally in frame reveal 10mm apart Leaf Head: 1no 15 x 4 seal fitted centrally to the leaf Meeting Edge: 1no 15 x 4 seal fitted centrally in the inactive leaf 2no 15 x 4 seals fitted centrally and 10mm apart in active leaf.

Intumescent Specification for ULSADD Leaf 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
FS6 (TR20231213- 000410A)	SLS Type (15 x 4) (10 x 4)	Halspan	Frame Head & Jambs: 2no 15 x 4 seals fitted centrally in frame reveal 10mm apart Leaf Head: 1no 15 x 4 seal fitted centrally to the leaf Meeting Edge: 1no 10 x 4 seal fitted centrally in the inactive leaf 2no 10 x 4 seals fitted centrally and 10mm apart in active leaf.

4.5.12 DADD Configuration: Leaf Sizes & Intumescent Specification

4.5.12.1 Leaf 1, 2, 3 & 4 with Frame 1 & 2

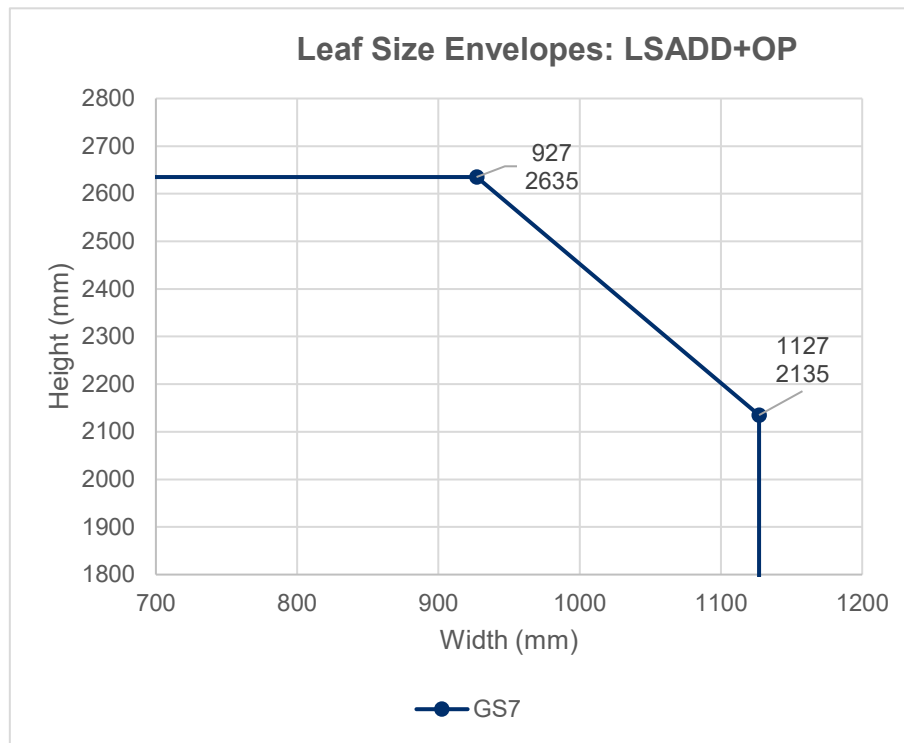
For leaf size envelopes for DADD using leaf 1, 2, 3 & 4 with Frame 1 & 2 see intumescent specification FS2 within section 4.5.11.1.

4.5.12.2 Leaf 3 & 4 with Frame 1 & 2

For leaf size envelopes for DADD using leaf 3 & 4 with Frame 1 & 2 see intumescent specification FS6 within section 4.5.11.2.

4.5.13 LSADD+OP Configuration: Leaf Sizes & Intumescent Specification

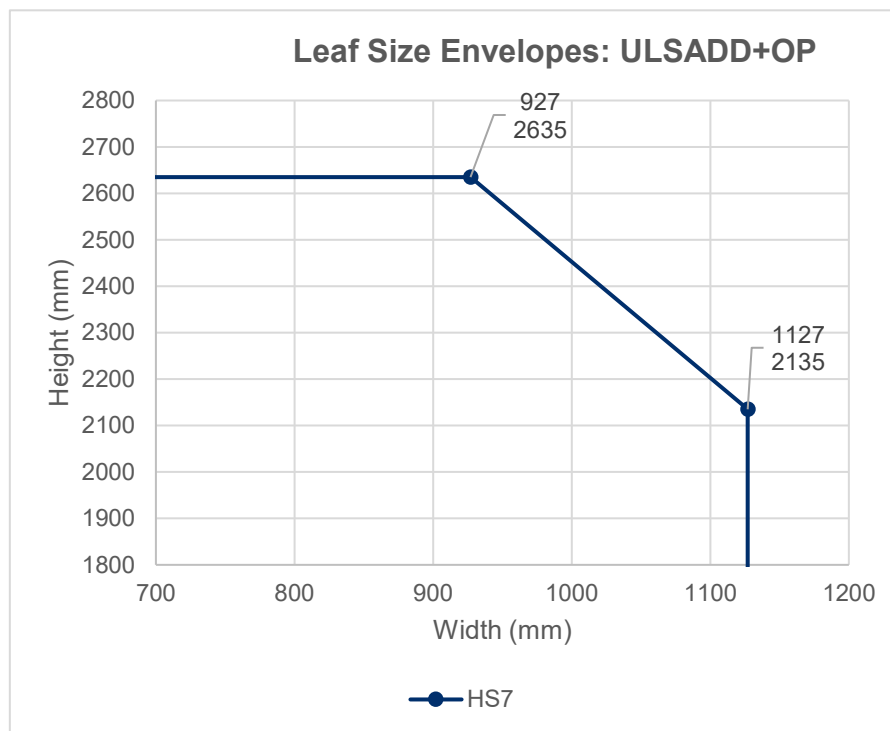
4.5.13.1 Leaf 1, 2, 3 & 4 with Frame 1 & 2



Intumescent Specification for LSADD+OP Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
GS7 (BMT/FEP/F16105)	Twin flipper seal 30175 (15 x 4) Twin flipper seal 30170 (10 x 4) 8500 (10 x 4)	Pyroplex	Leaf / Overpanel Junction: 1no. 15 x 4 seal fitted in the larger lipping rebate at 6mm from the rebate corner 1no. 10 x 4 fitted in the smaller lipping rebate at 1mm from the rebate corner Frame Head & Jambs: 1no 15 x 4 seal fitted centrally in frame reveal Meeting Edge: 2no. 10 x 4 seals fitted 10 apart central to the leaf thickness. 1no 10 x 4 seal fitted 17mm from opening face of the opposing leaf

4.5.14 ULSADD+OP Configuration: Leaf Sizes & Intumescent Specification

4.5.14.1 Leaf 1, 2, 3 & 4 with Frame 1 & 2



Intumescent Specification for ULSADD+OP Leaf 1, 2, 3 & 4 with Frame 1 & 2			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
HS7 (BMT/FEP/F16105)	Twin flipper seal 30175 (15 x 4) Twin flipper seal 30170 (10 x 4) 8500 (10 x 4)	Pyroplex	Leaf / Overpanel Junction: 1no. 15 x 4 seal fitted in the larger lipping rebate at 6mm from the rebate corner 1no. 10 x 4 fitted in the smaller lipping rebate at 1mm from the rebate corner Frame Head & Jambs: 1no 15 x 4 seal fitted centrally in frame reveal Meeting Edge: 2no. 10 x 4 seals fitted 10 apart central to the leaf thickness. 1no 10 x 4 seal fitted 17mm from opening face of the opposing leaf

5 General Description of Construction

5.1 Leaf Core Construction

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

5.1.1 Leaf 1 – XT30 – 44mm thick

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

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	Mixed Pine 3-layer core comprising outer vertically orientated lamels and inner horizontal lamels	12 ± 0.5 (t) x 36 ± 2 (w)	450
Facing	Eucalyptus core 3 ply hardwood class 3 plywood	4 (t)	450

The leaf must be lipped as specified in section 5.4.

The minimum leaf thickness after calibration is 43mm (i.e. a maximum of 0.5mm from both sides).

The minimum leaf thickness after finishes applied is 44mm.

5.1.2 Leaf 2 – IT30 – 44mm thick

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

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	Mixed Pine 3-layer core comprising outer vertically orientated lamels and inner horizontal lamels	12 ± 0.5 (t) x 36 ± 2 (w)	450
Facing	MDF	4 (t)	830 (CFR2101121)

The leaf must be lipped as specified in section 5.4.

The minimum leaf thickness after calibration is 43mm (i.e. a maximum of 0.5mm from both sides).

The minimum leaf thickness after finishes applied is 44mm.

5.1.3 Leaf 3 – XT60 – 54mm thick

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

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	Mixed Pine 3-layer core comprising outer vertically orientated lamels and inner horizontal lamels	12 ± 0.5 (t) x 36 ± 2 (w)	450
Facing	Eucalyptus core 5 ply hardwood class 3 plywood	9 (t)	450

The leaf must be lipped as specified in section 5.4.

The minimum leaf thickness after calibration is 54mm (i.e. a maximum of 0.5mm from both sides).

The minimum leaf thickness after finishes applied is 54mm.

5.1.4 Leaf 4 – IT60 – 54mm thick

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

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	Mixed Pine 3-layer core comprising outer vertically orientated lamels and inner horizontal lamels	12 ± 0.5 (t) x 36 ± 2 (w)	450
Facing	MDF	9 (t)	830 (CFR2101121)

The leaf must be lipped as specified in section 5.4.

The minimum leaf thickness after calibration is 53mm (i.e. a maximum of 0.5mm from both sides).

The minimum leaf thickness after finishes applied is 54mm.

5.2 Comparison of Door Core Designs

The Halspan XT30 door core is an evolution of the plywood faced Pro Tech 30 core.

The XT30 door core has a different specification of plywood facing and now comprises an external grade (class 3) plywood with a class 3 glue line.

All other construction details for the XT30 door core are the same as the original Pro Tech 30.

Testing undertaken on the XT30 door core design since this change has proven that the new facing material and glue line does not negatively influence the fire resistance performance of the doorset design and therefore, the test evidence generated on the Pro Tech 30 core has been deemed suitable for use to support the XT30 core. (Specifically, WF414679 which demonstrates the performance of a large latched, single acting double doorset design which achieved 32 minutes fire resistance performance).

The Halspan IT30 is the new name for the Pro Tech 30 MDF faced core. The specification of the IT30 remains the same as the Pro Tech 30 MDF faced core.

The XT30 and IT30 door cores comprise of the identical core materials with comparable facing thicknesses. It has been possible to consider the permitted intumescent materials and leaf sizes generated on either of the door cores to both cores based on the similarity in construction and comparison of tests WF414679 and CFR2101121.

WF414679 included a latched, single acting double XT30 doorset design with 15mm wide x 4mm thick PVC encased sodium silicate based seals applied to the frame perimeter and 2No.10mm x 4mm seals applied to the meeting edge which achieved 32 minutes fire resistance performance.

CFR2101121 included a latched, single acting double IT30 doorset design with 15mm wide x 4mm thick PVC encased sodium silicate based seals applied to the frame perimeter and 2No.10mm x 4mm seals applied to the meeting edge which achieved 38 minutes fire resistance performance.

Both doorset designs failed at the upper hinge positions at the respective times, supporting the similarity in performance. It is anticipated that the earlier failure time of the XT30 doorset design has been influenced by the lower density softwood framing material which was used to hang the leaves.

The XT60 and IT60 leaf options are constructed with the same core materials at the same dimension as those used to create the XT30 and IT30 door cores with thicker facing materials applied to finish at 54mm thick overall (increased from 4mm to 9mm applied to each face).

The increase in the thickness of the facing materials of the XT30 and IT30 door cores will not negatively influence the performance of the doorset design. In fact, the thicker material will likely provide more stability, as the thicker material on the unexposed face will provide further rigidity to that of the 4mm thick variant, limiting deflection under test conditions. This is further supported by the evidence contained within Appendix A which provides direct evidence of the 54mm leaf design demonstrating well in excess of the required 30 minutes fire resistance performance, for example TR20231213-000510A.

It is, therefore, the opinion of Warringtonfire that the testing undertaken with XT30 and IT30 is applicable for use within the XT60 and IT60 leaf options.

It is noted that some of the test evidence contained within Appendix A included the application of a head rail in the leaf design tested. This evidence was generated to support unlatched single acting double doorsets through to latched single acting single doorsets on both the XT30 and IT30 doorset designs. Further evidence generated on the 44mm thick design, for example TR20231213-000710A demonstrates that the presence of a top rail is not essential to the fire resistance performance of the doorset design. Particularly as this test demonstrates leaves of a greater dimension performing under test conditions without the top rail present. The leaf designs considered herein do not include a top rail.

5.3 Leaf Size Adjustment During Manufacture – 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 size of the leaf may be reduced in height or width without restriction for manufacturing purposes, providing the finished leaf is lipped in accordance with section 5.4.
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 5.4.

5.4 Timber Lipping – all Leaf Options

The testing documented in Appendix A has generally been undertaken using 6 - 10mm thick lippings applied to the vertical/all edges using species at varying densities. A number of different adhesives have also been used to seal the lippings.

On the above basis, all door blanks must be lipped with the following specification, for all leaf types and solid panels (overpanels or sidepanels), where appropriate.

Timber Lipping Specification		
Material	Size (mm)	Min Density (kg/m ³)
Hardwood	1. Flat = 6 – 14 thick 2. Rounded ⁹ = 12 – 17 thick with a radius matching the distance between leaf edge and floor pivot (see section 6.1.2) 3. Equal Rebated = 18 – 23mm thick with an equal rebate 12mm deep when applied to meeting edges. 4. Offset Rebated for flush overpanel junction. a. For Leaf 1 and 2 (44mm) = 19 – 24mm thick with a 15mm wide x 12mm deep offset rebate to one edge, with 29mm wide x 12mm deep rebate to the opposing edge when applied to flush overpanels. b. For Leaf 3 and 4 (54mm) = 19 – 24mm thick with a 20mm wide x 12mm deep offset rebate to one edge, with 34mm wide x 12mm deep rebate to the opposing edge when applied to flush overpanels.	640

Notes:

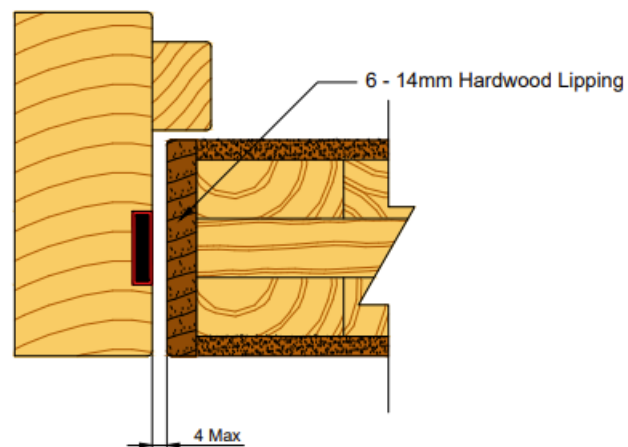
1. All lippings are to be the same thickness as the door leaf (excluding decorative facings). Lippings are also permitted to finish flush with the face of decorative facings.
2. Overpanels separated from the leaf heads with a transom do not need to be lipped.
3. Overpanels flush with the leaf heads must be lipped on their bottom edge but may additionally be lipped on all edges if required, lippings to top three edges where applied must be of type 1 (flat) from the table above. Lippings applied to the leaf / overpanel junction must be either Type 1 (flat) or type 4 (offset rebated).
4. Doorsets require lipping on all edges.
5. Double doorsets may use square or equal rebated meeting edges.
6. Double doorsets with flush overpanels may use an offset rebated overpanel junction but cannot be used in conjunction with a rebated meeting edge junction concurrently.
7. Lippings can be bonded with UF, PUR or hotmelt PUR. 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.
8. For flat lippings it is permitted to apply one of the following:
 - a. Maximum 2mm radius to the corners of the lippings at vertical edges to create edge profiling.
 - b. Maximum of 2mm x 2mm chamfer applied to the corners of the lippings at vertical edges to create edge profiling.
 - c. Maximum 2mm wide x 5mm deep chamfer to the vertical leading edges of the leaves, if this would result in a conflict with intumescent positioning this option is not permitted.

9. For rounded lippings a minimum of 6mm thickness of lipping shall be measured at the face of the door leaf where the lipping is its minimum thickness. This lipping type may only be applied to the hanging edges of the leaves.
10. If flat lippings are used on a doorset which includes a flush overpanel refer to section 5.8 for astragal requirements.

5.4.1 Example Illustrations of Lipping Details

LIPPING DETAILS AND DOOR GAPS SINGLE ACTING DOORS - STILES

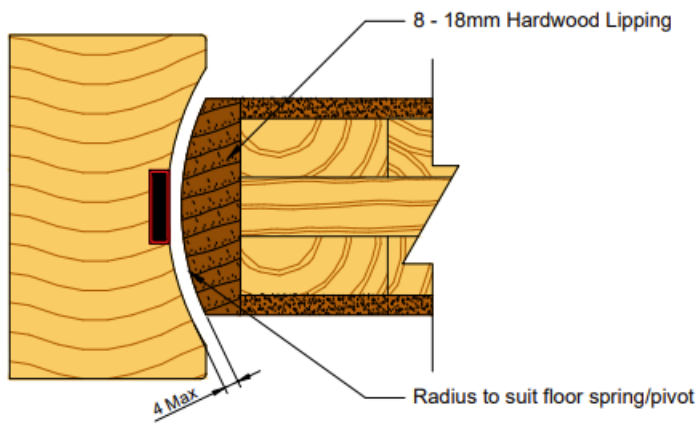
Standard Stile Option



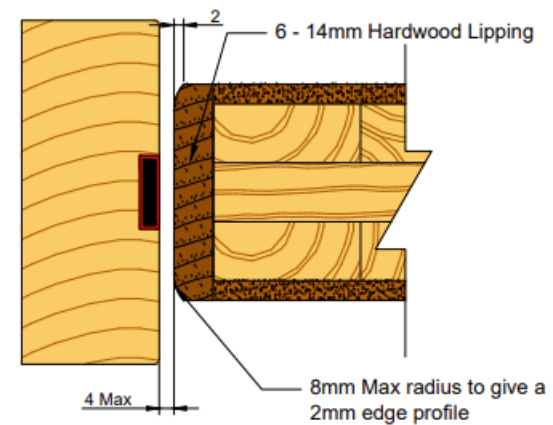
LIPPING DETAILS AND DOOR GAPS

DOUBLE ACTING DOORS - STILES

Hanging Stile

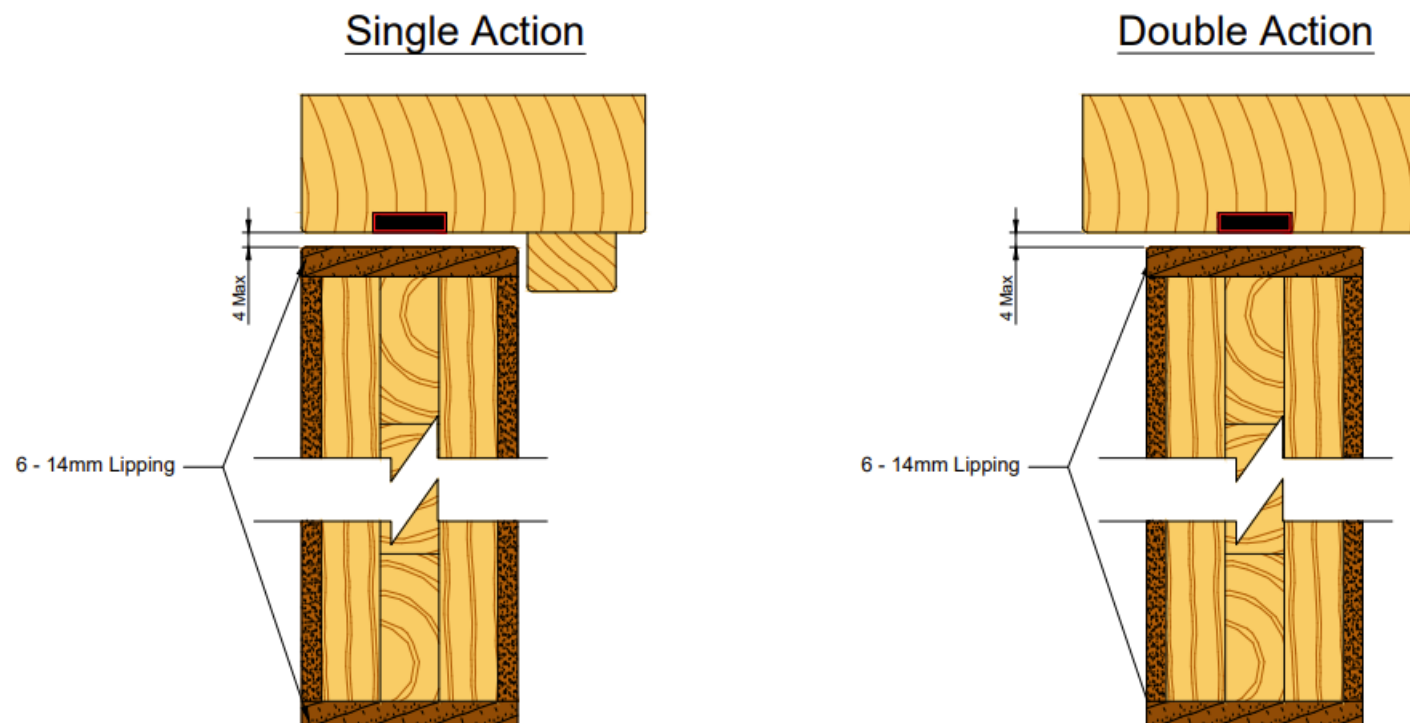


Closing Stile



LIPPING DETAILS AND DOOR GAPS

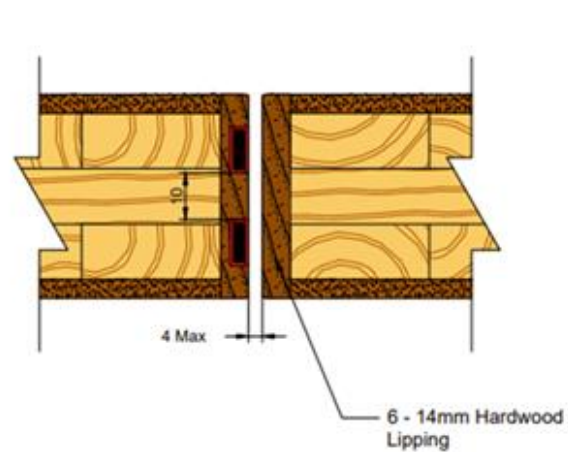
SINGLE AND DOUBLE ACTING DOORS - HEAD & THRESHOLD



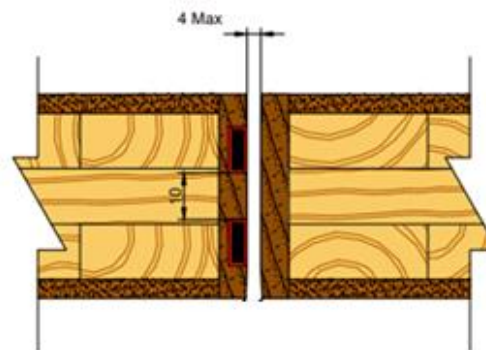
LIPPING DETAILS AND DOOR GAPS

SINGLE ACTING DOORS - MEETING STILES

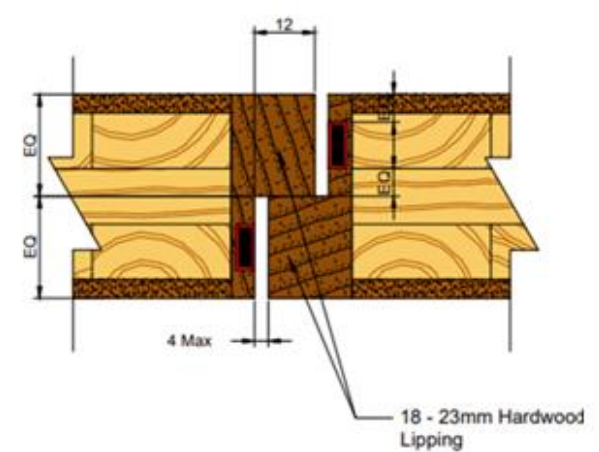
Flush Meeting Stiles



Flush Meeting Stiles
(with leading edge)



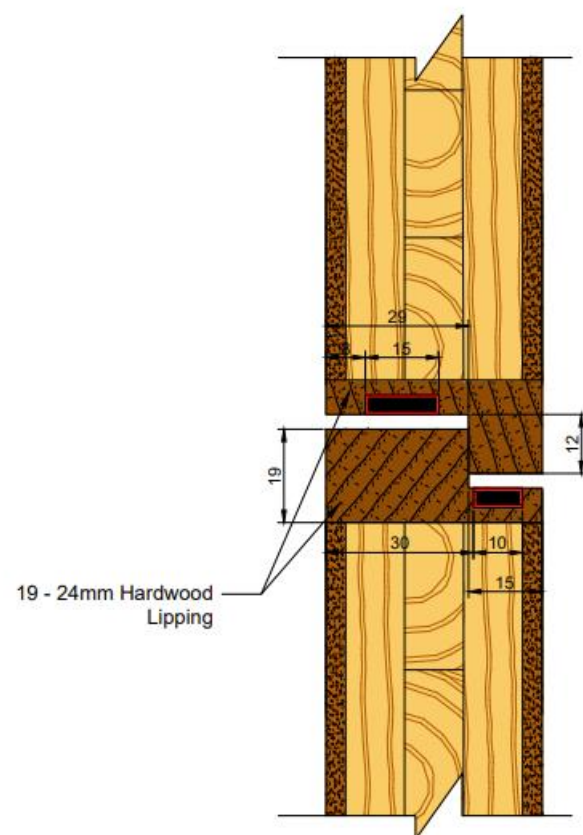
Rebated Meeting Stiles



LIPPING DETAILS AND DOOR GAPS

FLUSH OVERPANEL & LEAF JUNCTIONS

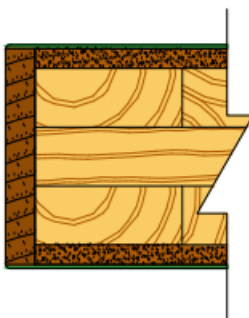
Rebated Lippings



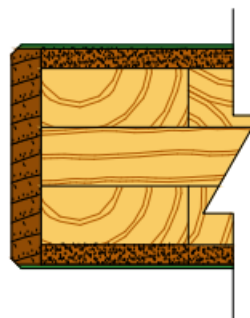
Example shown above is with a 44mm leaf design.

EDGE PROFILES

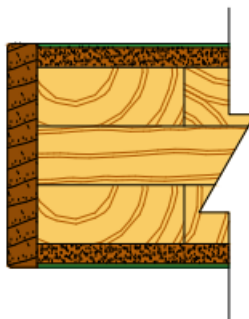
Concealed



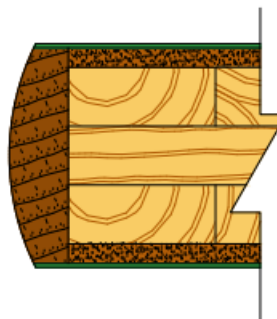
Semi-Concealed



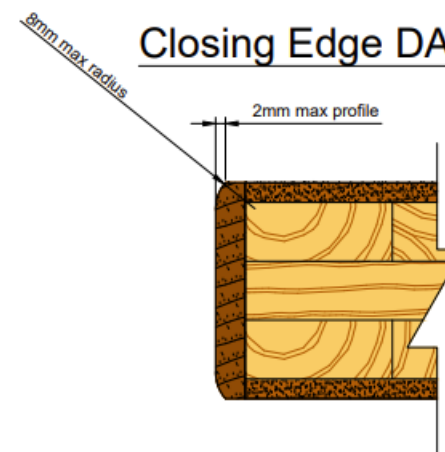
Exposed



Scalloped



Closing Edge DASD



5.5 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 laminates 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 for leaf type 1 & 2 and 54mm for leaf type 3 & 4 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.

5.6 Decorative Planted on Timber Mouldings

Decorative mouldings can be applied to all door leaf options providing the following criteria is adhered to:-

The mouldings:

1. Are surface applied to the door
2. Are no higher than 30mm i.e. proud of the door
3. Are no wider than 50mm
4. Cover no more than 20% of the door leaf area
5. Are no closer than 80mm to the door leaf edge or apertures within the leaf
6. Are bonded into position and small pins may be used up to 12mm penetration into the door core.
7. Are bonded using any glue which is suitable for bonding the lipping of the door.

5.7 Feature Grooves

Feature grooves may be applied to the leaves identified in the following groove options hung within frame option 1 and 2 as applicable.

Both sides of the door leaves may be grooved to the following specification, which also provides limitations on the application of the desired groove option.

Feature grooves cannot be located within 10mm of any mortice for hardware (i.e. any item which requires material to be removed from the door including cableways). Grooves may coincide with hinge positions.

Grooves may be applied to the leaf faces of glazed and unglazed doorsets. When applied to the face of a doorset including glazing the grooves shall not continue under the glazing bead element.

Where maximum leaf dimensions are given in the specification for feature grooving below the dimension must not be exceeded.

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

5.7.1 Groove Option 1

Groove Option 1 (BMT/FEP/F14056 Doorset A & B)		
Element	Details	
Max. groove size (mm)	5mm wide x 3mm deep "V" Groove	
Inserts	Not permitted	
Maximum number of grooves	11No. grooves divided between horizontal and vertical orientations as required.	
Proximity to door edges (mm)	Horizontal Grooves	No closer than 90mm to top or bottom edge of the leaf May extend full width
	Vertical Grooves	No closer than 90mm to vertical edge of the leaf May extend full height
Groove spacing (mm)	No closer than 95mm apart or 90mm to parallel edges of the leaf. Vertical and horizontal grooves may intersect each other.	
Orientation	Horizontal or Vertical	
Configuration	Latched & unlatched, single acting, single leaf doorsets	
Leaf option	Leaf 1, 2, 3 & 4	
Leaf size range (mm)	Maximum 2232 x 1008	
Perimeter intumescent seal specification minimum dimensions (mm)	15 wide x 4 thick	
Frame option	Frame 1 & 2	

5.7.2 Groove Option 2

Groove Option 2 (BMT/FEP/F14056 Doorset A & B)		
Element	Details	
Max. groove size (mm)	5mm wide x 8mm deep "V" Groove	
Inserts	Not permitted	
Maximum number of grooves	11No. grooves divided between horizontal and vertical orientations as required.	
Proximity to door edges (mm)	Horizontal Grooves	No closer than 90mm to top or bottom edge of the leaf May extend full width
	Vertical Grooves	No closer than 90mm to vertical edge of the leaf May extend full height
Groove spacing (mm)	No closer than 95mm apart or 90mm to parallel edges of the leaf. Vertical and horizontal grooves may intersect each other.	
Orientation	Horizontal or Vertical	
Configuration	Latched & unlatched, single acting, single leaf doorsets	
Leaf option	Leaf 3 & 4	
Leaf size range (mm)	Maximum 2232 x 1008	
Perimeter intumescent seal specification minimum dimensions (mm)	15 wide x 4 thick	
Frame option	Frame 1 & 2	

5.8 Astragal

The inclusion of timber astragals is permitted providing they meet the following specification:

- The astragal shall consist of the same material as the door frame with at least the same or greater density.
- The astragal shall be mechanically fixed using steel screws at no greater than 250mm centres, the screws shall penetrate into the substrate by at least 15mm and no greater than $\frac{1}{2}$ the thickness of the substrate.
- The astragal shall measure 50mm wide x 18mm thick and shall be positioned centrally over the junction.

Other materials or dimensions of astragals are not permitted.

It has been considered possible to include the above specified astragal based on the fact that the effective rebate of the doorset design will remain unchanged. The addition of the astragal element will provide further protection at the perimeter gaps increasing the time in which failure modes may develop.

Astragals are permitted in the following designs:

- Optionally permitted at meeting edges of double doors.
- Required to be fitted at the junction between flush overpanel and the top of the door leaf, where flat lippings are applied. When fitted the astragal shall be fixed to the overpanel.

Astragals may only be fitted to one side of any single doorset design.

When fitted to double doors, a door selector as defined within section 10.13 shall be fitted to the doorset to ensure functionality.

6 Glazing within the Leaf

6.1 General

The testing conducted on doorset design has demonstrated that they are capable of tolerating glazed apertures, whilst providing a margin of over performance, this is supported by the summarised test evidence within Appendix A.

Glazing is therefore acceptable within the following parameters.

Apertures must not be less than 100mm from top and side edges and 200mm from the bottom edge. (Supported by TR20231213-000610A & Chilt/RF13196).

Aperture shapes considered herein are rectilinear and as such are permitted unless alternative shapes are detailed within this document for specific glass or glazing systems.

Apertures cannot be rotated (e.g. a square to be rotated to create a diamond effect) unless explicitly stated within this document for specific glass or glazing systems.

Double glazed units are only permitted where they have been directly tested and must be installed as tested and detailed in section 6.4 below.

6.1.1 Maximum Permitted Glazed Aperture Dimensions

The maximum total assessed aperture area for any individual door leaf based on the test evidence detailed within Appendix A is as follows:

Maximum total permitted aperture within the leaf (TR20231213-000610A)		
Maximum Height (mm)	Maximum Width (mm)	Maximum Area (m ²)
2454	900	1.917

Multiple apertures are acceptable within the permitted total assessed aperture area, with a minimum dimension of 80mm of core between apertures. (As demonstrated in Chilt/RF13196).

Maximum glass design thickness permitted is 16mm for single pane glazing.

Minimum glass design thickness permitted is 6.8mm, as tested and may not be reduced.

The subsequent sections within this report detail the permitted glass and glazing systems with their associated size ranges permitted within the Halspan Limited doorset design.

The maximum glazed areas given in each subsection supersede those given above and must be adhered to. However, the dimensional restrictions given above shall not be exceeded under any circumstance.

It is possible to include glass within the door leaf at smaller dimensions than given for any particular glass type or glazing system.

6.2 Certifire Single Pane Glass and Glazing System Options

Alternative 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 used to glaze the Halspan Ltd door design, subject to the following.

- The minimum glass design thickness of glass permitted for alternative glass types is 6.8mm.
- The maximum glass design thickness of glass permitted for alternative glass types is 16mm.
- Where a Certifire certificate is utilised to justify glazing the doorset, the full requirements given within that certificate for the glass and glazing system specified must be complied with.
- All parameters in section 5.1 above must take precedence over those in the supporting Certifire certificate, e.g. the glazed area, maximum height and width permitted in section 5.1 above may not be increased on the basis of the area, height and width permitted within the Certifire certificate. If the area, height and width in the proposed Certifire certificate is smaller than that in section 6.1, the smaller dimension will take precedence for the proposed glass or glazing system.
- The general requirements within the proposed Certifire certificate are still applicable, the Certifire certificate must include the option for the certificated glass and / or glazing system to be fitted within a timber / cellulosic based door leaf within a timber / cellulosic frame with a leaf thickness of 44mm or 54mm as appropriate. Where the Certifire certificate requires a timber aperture liner, these must always be fitted.
- Bead fixings – The required pin or screw specification as given in the supporting Certifire certificate must be used, alternatives fixing details are not permitted.

6.3 Single Pane Glass and Glazing Systems (Timber Beading)

The tested and assessed glass and glazing system(s) combinations, detailed within the table below may be used, subject to the limitations and scope detailed in section 6.1 above.

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

The numerical figures in the main body of the table are the maximum height, width (m) & area of glass (in m²) that is considered acceptable for an individual glazed aperture, based upon the specific system. Where a '-' is applied the glass type and glazing system has not been considered compatible.

Glass & Glazing System Specification			Maximum Assessed Area (m2), Height & Width (m)							
Glass Type Manufacturer		Thickness	System & Manufacturer →	1	2	3	4	5	6	
				MAP 10mm wide x 2mm thick Fitted between the glass and bead	Therm-A-Strip 10mm wide x 2mm thick Between the glass and bead	STS105GT (3) 9mm wide x 3mm thick Fitted between the glass and bead	Therm-A-Strip 10mm wide x 2mm thick & Fire and Acoustic Seals Ltd silicone sealant filling the void around the perimeter of the glass and capping the Therm-A-Strip.	FF1 (Flexible Figure 1) 13.5mm wide x 3.5mm thick Between the glass and bead & Sapele 3(t) aperture liner. Aperture liner fitted to the vertical and bottom edges of the aperture	SLS-GLZ-111 glazing tape 10mm wide x 5mm thick	
				Halspan Limited	Intumescent Seals Limited	Sealed Tight Solutions	Intumescent Seals Limited & Fire and Acoustic Seals Ltd	Lorient Polyproducts	Halspan Limited	
				Fire Test Reference	Chilt/RF13196	BMT/FEP/14056A	WF378795 AR1	WF414679 & CFR1910291_1 Revision 3	WF414679	TR20231213-000610A
1	Pyroguard CGI International	EI30	15	Chilt/RF13196	Area: 0.49 Height: 0.840 Width: 0.672	Area: 0.49 Height: 0.840 Width: 0.672	Area: 0.49 Height: 0.840 Width: 0.42	Area: 0.49 Height: 0.840 Width: 0.48	Area: 0.49 Height: 0.840 Width: 0.48	Area: 0.49 Height: 0.840 Width: 0.672
2	Pyroshield Pilkington	2	7	BMT/FEP/14056A	-	Area: 0.773 Height: 1.04 Width: 0.856	-	-	-	--

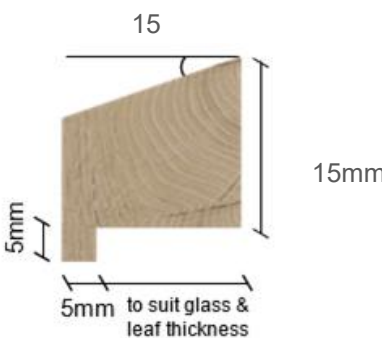
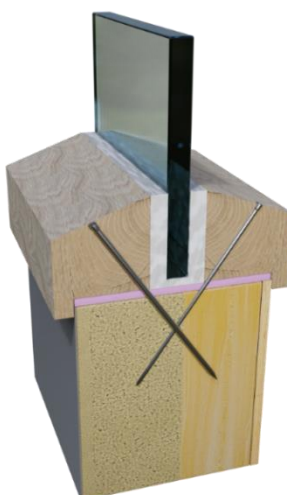
Glass & Glazing System Specification			Maximum Assessed Area (m2), Height & Width (m)						
Glass Type Manufacturer		Thickness	System & Manufacturer →	1	2	3	4	5	6
				MAP 10mm wide x 2mm thick Fitted between the glass and bead	Therm-A-Strip 10mm wide x 2mm thick Between the glass and bead	STS105GT (3) 9mm wide x 3mm thick Fitted between the glass and bead	Therm-A-Strip 10mm wide x 2mm thick & Fire and Acoustic Seals Ltd silicone sealant filling the void around the perimeter of the glass and capping the Therm-A-Strip.	FF1 (Flexible Figure 1) 13.5mm wide x 3.5mm thick Between the glass and bead & Sapele 3(t) aperture liner. Aperture liner fitted to the vertical and bottom edges of the aperture	SLS-GLZ-111 glazing tape 10mm wide x 5mm thick
				Halspan Limited	Intumescent Seals Limited	Sealed Tight Solutions	Intumescent Seals Limited & Fire and Acoustic Seals Ltd	Lorient Polyproducts	Halspan Limited
			Fire Test Reference	Chilt/RF13196	BMT/FEP/14056A	WF378795 AR1	WF414679 & CFR1910291_1 Revision 3	WF414679	TR20231213-000610A
3	Pyrobelite AGC Flat Glass	7	7	WF378795 AR1 TR20231213-000610A	-	Area: 0.773 Height: 1.04 Width: 0.856	Area: 0.678 Height: 1.86 Width: 0.42	-	Area: 1.917 Height: 2.454 Width: 0.9
4	Pyrodur Pilkington	CS	10	WF414679	-	Area: 0.5 Height: 1.04 Width: 0.48	Area: 0.5 Height: 1.20 Width: 0.42	Area: 0.5 Height: 1.20 Width: 0.48	Area: 0.5 Height: 1.20 Width: 0.48
5	Pyroguard Impact	EW30	7	CFR1910291_1 Revision 3	-	Area: 0.226 Height: 0.992 Width: 0.262	-	Area: 0.226 Height: 0.992 Width: 0.262	-

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. Glass types 1 & 4 are fully insulating for 30 minutes in terms of the criteria set out BS 476: Part 20: 1987.

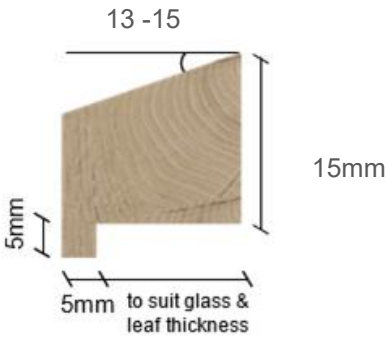
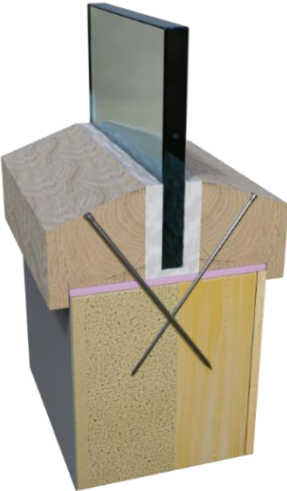
6.3.1 Permitted Glazing Beading and Glass Retention (Timber Beads)

The following sections detail the permitted glazing beading, aperture lining requirements and minimum fixing details for the above detailed glass and glazing systems. Each section deals with a specific type of glazing bead and indicates which glass and or glazing system it is applicable to. Glazing beads shall only be used with the permitted glass and glazing system as identified.

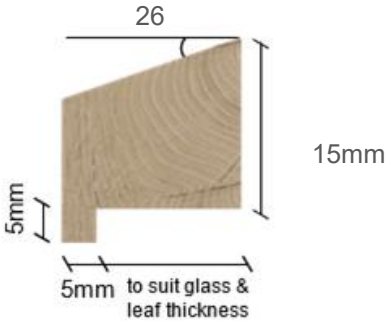
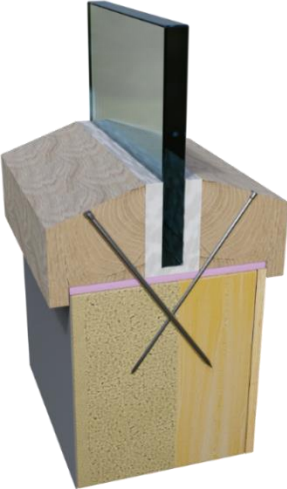
6.3.1.1 Chamfer Bead (Option 1)

Permitted Glazing Systems (Defined in Section 6.3)	1 & 6
	
- 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 (not Beech fagus species) of a minimum 640kg/m³ density. - Glazing beads must be retained in position with minimum length of 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 6.3.2 below. - A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech fagus species) of minimum density 640kg/m³ and glued in position using a UF, PVA or PU type adhesive. - 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, non-combustible or specified setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires. - Glazing System 6 may use SLS-GLZ-113 Setting blocks 7mm wide x 25mm deep x 5mm thick on all edges 20mm from corners	

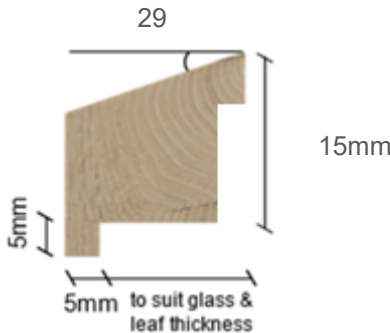
6.3.1.2 Chamfer Bead (Option 2)

Permitted Glazing Systems (Defined in Section 6.3)	2, 4 & 5
	
- 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 (not Beech fagus species) of a minimum 640kg/m³ density. - Glazing beads must be retained in position with minimum length of 40mm long steel pins or 40mm 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 6.3.2 below. - A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech fagus species) of minimum density 640kg/m³ and glued in position using a UF, PVA or PU type adhesive. - 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.	

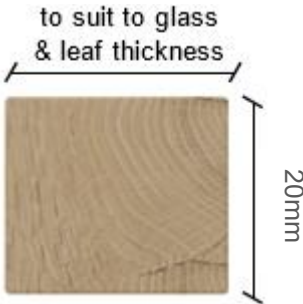
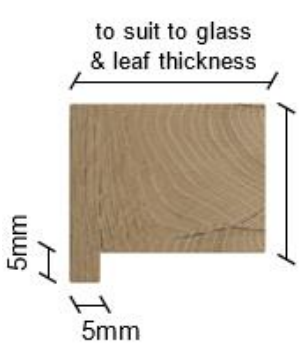
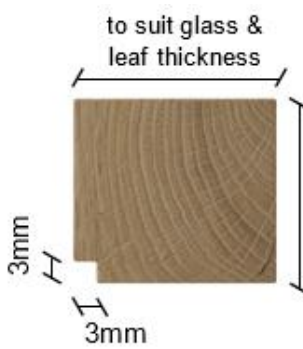
6.3.1.3 Chamfer Bead (Option 3)

Permitted Glazing Systems (Defined in Section 6.3)	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 (not Beech fagus species) of a minimum 640kg/m³ density. • Glazing beads must be retained in position with minimum length of 38mm long steel pins or 38mm 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 6.3.2 below. • A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech fagus species) of minimum density 640kg/m³ and glued in position using a UF, PVA or PU type adhesive. • 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.

6.3.1.4 Chamfer Bead (Option 4)

Permitted Glazing Systems (Defined in Section 6.3)	3
	
• The above bead when used must include an 11mm high x 2mm deep rebate to facilitate the intumescent material. • 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 (not Beech fagus species) of a minimum 640kg/m³ density. • Glazing beads must be retained in position with minimum length of 38mm long steel pins or 40mm 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 6.3.2 below. • A 6 – 10mm thick square aperture liner is optionally permitted for use with the above bead providing it is constructed from hardwood (not Beech fagus species) of minimum density 640kg/m³ and glued in position using a UF, PVA or PU type adhesive. • 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.	

6.3.1.5 Square Bead (Option 1)

Permitted Glazing Systems (Defined in Section 6.3)		6
		
- The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. In addition, it is permitted to apply up to a 15° splay to the bolected bead as detailed above. A splay must not be applied to the bead designs without a bolection. - The glazing beads must be created from hardwood (not Beech fagus species) of a minimum 640kg/m³ density. - Glazing beads must be retained in position with minimum of 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 6.3.2 below. - A 6 – 10mm thick square aperture liner is required for use with square beads it shall be constructed from hardwood (not Beech fagus species) of minimum density 640kg/m³ and glued in position using a UF, PVA or PU type adhesive. - 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, non-combustible or specified setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires.		

6.3.2 Pneumatically Fired Pins

The following pin specification is permitted and has been considered suitable for applications where a pin fixing is permitted for 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:

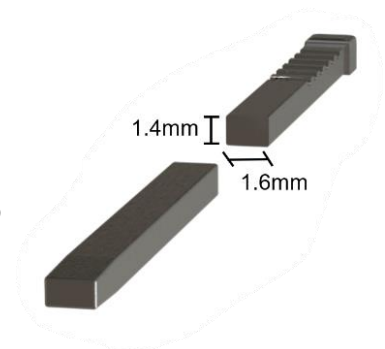
- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.03mm².
- Minimum linear dimension of 1.6mm in any direction, see figure below. The maximum pin diameter or any linear dimensions may be no greater than 2.0mm.



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 2.24mm².
- 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 dimensions may be no greater than 2.0mm.



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

6.4 Double Glazed Units & Glazing Systems

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

The table below specifies the maximum assessed height, width & 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 m²) that is considered acceptable for an individual glazed aperture, based upon the specific system.

The total area of all glazed apertures and requirements on aperture positioning must comply with that stated in section 6.1 above.

Test reference WF429950 was undertaken with the doorset opening in towards the fire exposure and test reference WF429951 was undertaken with the doorset opening out away from the fire exposure. The double-glazed units fitted into the leaves were therefore tested in both orientations due to the tested arrangements.

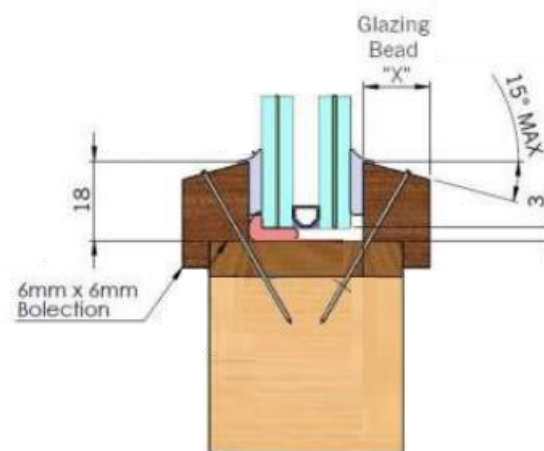
Glass & Glazing System Specification		Maximum Assessed Area (m ²), Height & Width (m)	
Glass Type Manufacturer	System & Manufacturer →	1	
		Pyroplex 30049 Graphite Intumescent 14mm wide x 6mm thick & Silicone applied between the bead and the leaf surface on both faces	
		Pyroplex	
	Fire Test Reference	WF429950 & WF429951	
1	Pilkington Pyrodur 7mm (t), Pilkington 6mm (w) galvanised mild steel spacer, Pilkington Optilam P1A 6.8mm (t) Cleartherm Glass Sealed Units Limited 20mm (t) Overall	WF429950 & WF429951	Area 0.295 Height: 1.2 Width:0.283

Note:

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.

6.4.1 Glazing Beading Arrangement – Double Glazed Units

Permitted with glass types from the table in Section 6.4 as identified and must be used with the specified glazing system in the table



- The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum.
- The depth of bead detailed above must be increased subject to leaf thickness increases.
- The glazing beads must be created from hardwood (not Beech fagus species) of a minimum 640kg/m³ density.
- Glazing beads must be retained in position with PU adhesive as well as mechanical fixings with a minimum length of 50mm long steel pins or 50mm long No. 6-8 screws, inserted at 30-40° 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 6.4.2 below.
- A 6 – 10mm thick square aperture liner is required for use with the above bead and shall be constructed from hardwood (not Beech fagus species) of minimum density 640kg/m³ and glued in position using a UF, PVA or PU type adhesive.
- 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

6.4.2 Pneumatically Fired Pins

The following pin specification is permitted and has been considered suitable for applications where a pin fixing is permitted for 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:

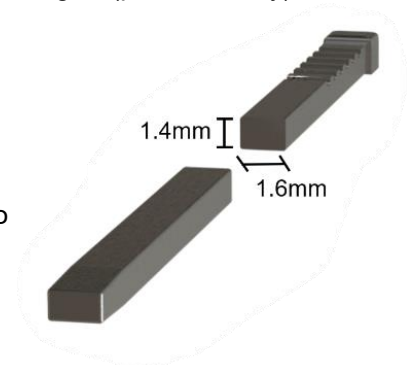
- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.03mm².
- Minimum linear dimension of 1.6mm in any direction, see figure below. The maximum pin diameter or any linear dimensions may be no greater than 2.0mm.



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 2.24mm².
- 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 dimensions 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 Details for Frame 1

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 for single and double acting frames, where applicable.

Frame Specification				
Frame Type	Material	Minimum Section Size (mm)	Minimum Density (kg/m ³)	Acceptable Leaf Type
1	Softwood / Hardwood (Chilt/ RF13196)	Frame: 70 (d) x 30 (w) (excluding stop) Stop: 12 (w) (integral or planted on)	510	All leaf options

Note:

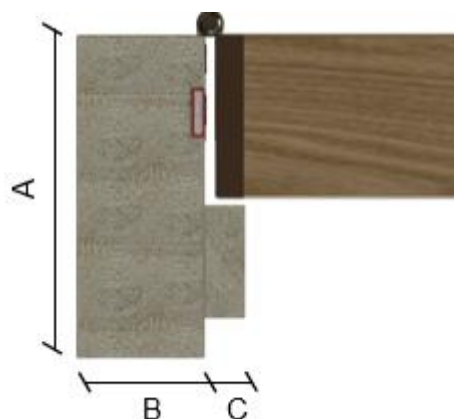
Minimum section size is subject to size of hardware and the use of transomed overpanel (see frame details below).

Architraves may be rebated into the cross section of the frame in a tongue and groove arrangement providing:

- The tongue fully fills the groove provided within the frame material and the groove is no greater than 10mm wide x 10mm deep.
- The groove must be positioned no closer than 10mm from any frame edge.
- The groove must not coincide with the rebate for items of rebated building hardware.
- The architrave when applied must be bonded on all edges with PU or PVA adhesive.
- The material of the architrave must be the same specification including species as the frame material.

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.

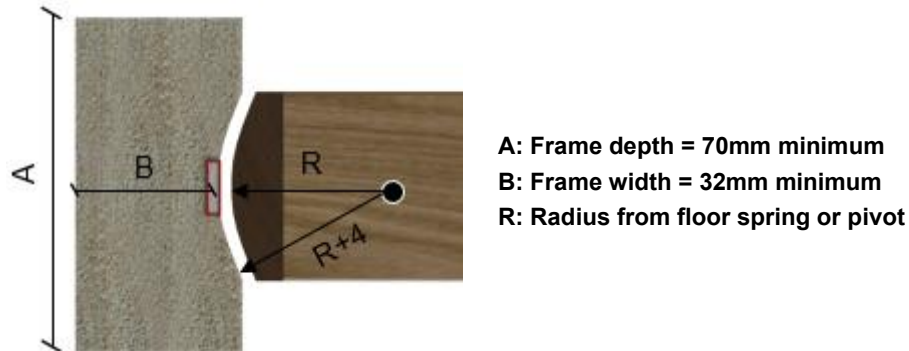


- A: Frame depth = 70mm minimum**
B: Frame width = 30mm minimum
C: Stop width = 12mm minimum

- Minimum section size when using a transomed overpanel:**
A: Frame depth = 70mm minimum
B: Frame width = 44mm minimum
C: Stop width = 12mm minimum

7.1.2 Scalloped frame detail

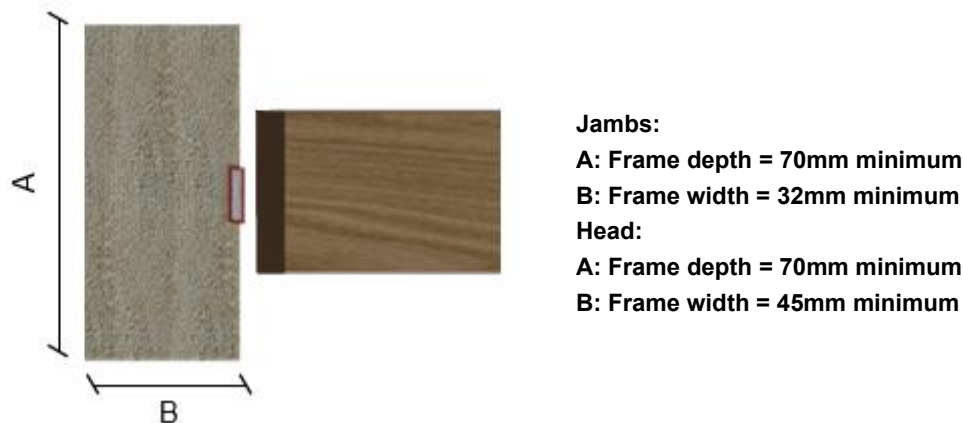
The diagram below shows detail of the scalloped frame construction hanging edge only. When using scalloped frames for double acting doorsets, the groove(s) for the specified intumescent strip(s) must be as defined within section 4.5.



The face of the leaf must be a minimum of 13mm from either face of the frame.

7.1.3 Square frame detail for double acting doorsets

The diagram below shows detail of the square frame construction for the closing edge of a double acting doorset. Where utilising square frames for double acting doorsets, any radius to the lipping must comply with section 5.4.



7.2 Details for Frame 2

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 for single and double acting frames, where applicable.

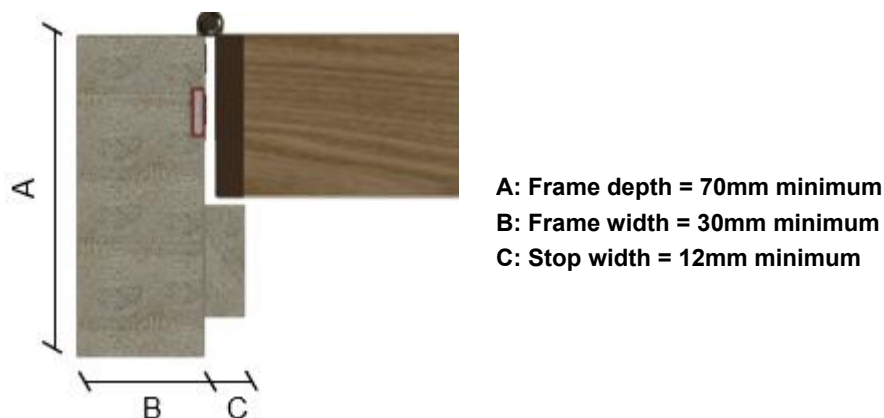
Frame Specification				
Frame Type	Material	Minimum Section Size (mm)	Minimum Density (kg/m ³)	Acceptable Leaf Type
2	MDF (CFR2101121)	Frame: 70 (d) x 30 (w) (excluding stop) Stop: 12 (w) (integral or planted on)	740	All leaf options

Note:

Minimum section size is subject to size of hardware (see frame details below).

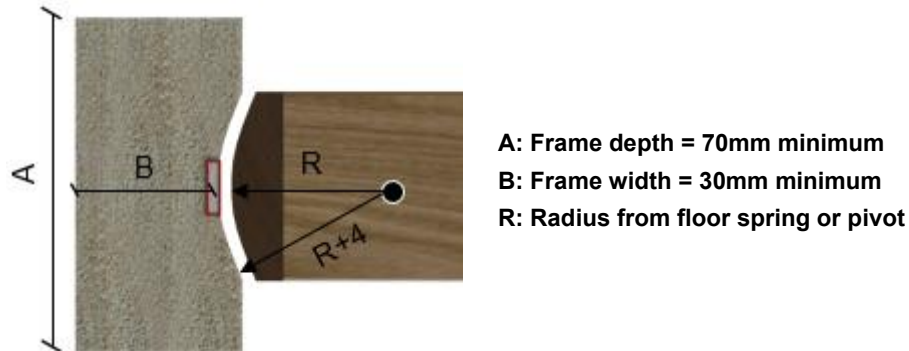
7.2.1 Standard frame detail

The diagram below shows detail of the standard frame construction. Any radius to the lipping must comply with section 5.4.



7.2.2 Scalloped frame detail

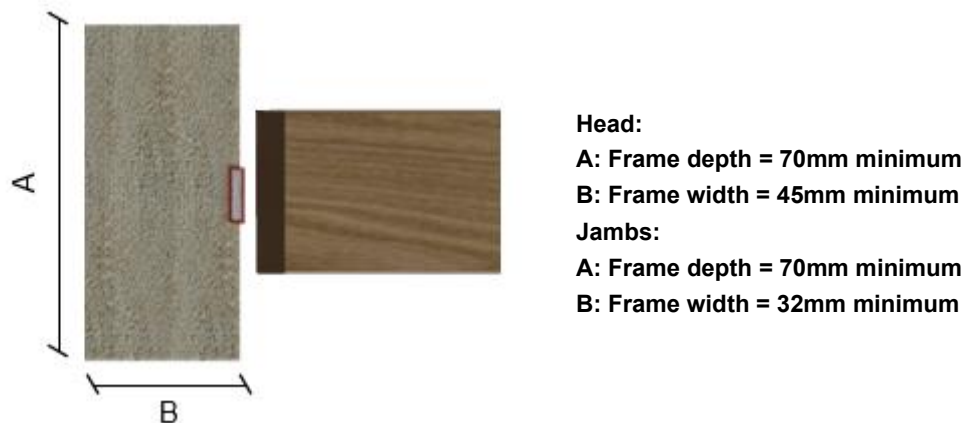
The diagram below shows detail of the scalloped frame construction hanging edge only. When using scalloped frames for double acting doorsets, the groove(s) for the specified intumescent strip(s) must be as defined within section 4.5.



The face of the leaf must be a minimum of 13mm from either face of the frame.

7.2.3 Square frame detail for double acting doorsets

The diagram below shows detail of the square frame construction for the closing edge of a double acting doorset. Where utilising square frames for double acting doorsets, any radius to the lipping must comply with section 5.4.



7.3 Threshold – Frame 1 and 2

The following threshold details are permitted for use with frame types 1 and 2 and all leaf types, based upon the available test evidence.

7.3.1 Aluminium Thresholds

On the basis of the testing, the tested aluminium threshold is suitable in the following applications only:

Frame Options: 1 & 2

Configuration: LSASD

The table below details the aluminium thresholds that have been tested bi-directionally and are approved to be fitted to the doorset at floor level, the tested and approved intumescent arrangement at the bottom edge of the leaf must be applied when using each of the threshold options.

Manufacturer & Product Reference (Test Evidence)	Required Intumescent Protection
Exitex MDS 25-5-2 (WF428611/R & CFR1910291_1 Revision 3)	When applied, the bottom edge of the leaf must include a either 15mm wide x 4mm thick Halspan SLS Type seal centrally to the leaf thickness
Exitex MDS 25-5-2 (WF429950, WF429951)	When applied, the bottom edge of the leaf must include a 24mm wide x 3.5mm thick Pyroplex 30171W seal centrally to the leaf thickness

In all cases the following scope must be complied with:

- The threshold must be screwed to the notional floor level with fixings of minimum 25mm long at 250 to 350mm centres. Optionally a bead of acrylic intumescent mastic may be applied in addition to the fixings.
- Threshold drop seals cannot be used when an aluminium threshold is present
- See section 11.7 for gap requirements at the bottom of the door.

7.3.2 Timber Thresholds

On the basis of the testing, the following timber threshold is suitable in the following applications only:

Frame Options: 1 & 2

Configuration: LSASD

The doorset design must include one of the tested Aluminium Thresholds defined in section 7.3.1.

WF428611/R included a timber based threshold which measured 100mm deep x 12.5mm thick, the threshold was constructed from hardwood. On the basis that no failure was observed local or relative to the threshold position the following timber threshold may be applied to the doorset design:

- Threshold must be constructed of hardwood with a density of greater than 640kg/m³.
- The threshold must be between 75mm and 150mm deep. When applied the threshold must at least match the depth of the frame.
- The threshold may be between 12.5mm and 32mm thick.
- The threshold when fitted must be screw fixed to each of the jambs with 2No. steel screws which penetrate into the bottom of the jamb by no less than 30mm.

7.4 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

7.5 Decorative Facings – All Frame Options

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, Sidepanel & Sidelights

Overpanels, fanlights, sidepanels and sidelights are permitted based on the testing as summarised within Appendix A, 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 three framing options (Modular, Transomed & Flush).

Solid sidepanels with one framing option (Modular).

Glazed fanlights with one framing option (Modular).

Glazed sidelights with one framing option (Modular).

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

It is possible to utilise both methods of framing within any single doorset design providing the restrictions given in the following sections are adhered to. i.e. it is possible to provide a doorset with a solid overpanel separated by a shared transom with a modular framed sidelight beside it.

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 / sidelight utilised. Information on the frame type permitted for the solid panel or glazed element is detailed in sections 8.3.1.

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. This is supported for use in this assessment by test WF429950 and WF429951.

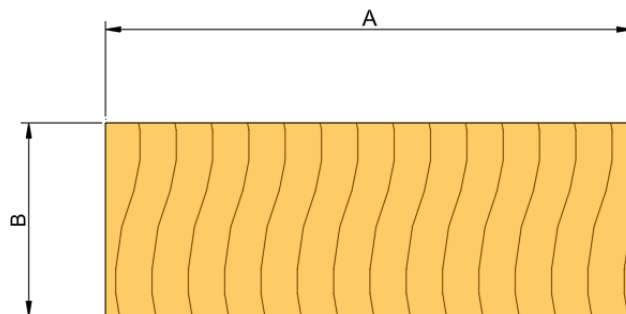


Single leaf doorset with glazed modular sidelight.

8.2.1.1 Standard Frame Detail (Modular Framing)

The frame listed below is the minimum size and density which has been successfully tested and 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)
Hardwood: (WF429950 & WF429951)	Frame: 87 (d) x 32 (w)	510



A: Frame depth = 87mm 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.

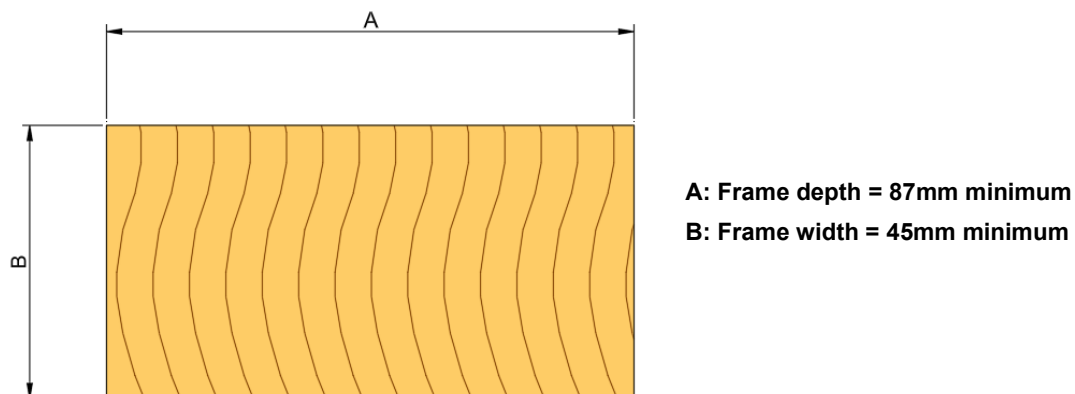
8.2.1.2 Transom or Mullion Detail (Modular Framing)

It is possible to include a single transom within a modular unit applied to the side of a doorset and / or a single mullion within a modular unit applied to the head of a doorset.

When applied the transom or mullion shall meet the following specification:

Modular Frame specification		
Material	Minimum section size (mm)	Minimum density (kg/m ³)
Hardwood: (WF429950 & WF429951)	Frame: 87 (d) x 45 (w)	510

The transom or mullion when applied shall be mortice and tenon jointed as depicted in section 8.2.1.4. The joints are required to be tight, with no gaps, and require mechanical fixing with 2No. Ø5 x 80mm steel screws.



Transoms when applied shall not be greater than 1000mm from the centre of the transom to the notional floor level. This may inhibit the use of transoms in some configurations.

It is possible to include solid panel and glazing arrangements which are permitted as detailed in section 8.3 and 8.4 either side of a transom within a modular unit applied to the side of a doorset subject to the positioning requirement of the transom given above and the maximum permitted glass or panel size given in the following sections.

8.2.1.3 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. Ø5 x 80mm steel screws. Frame joints shall additionally be reinforced with the adhesives approved for the application frame jointing detailed within section 9.

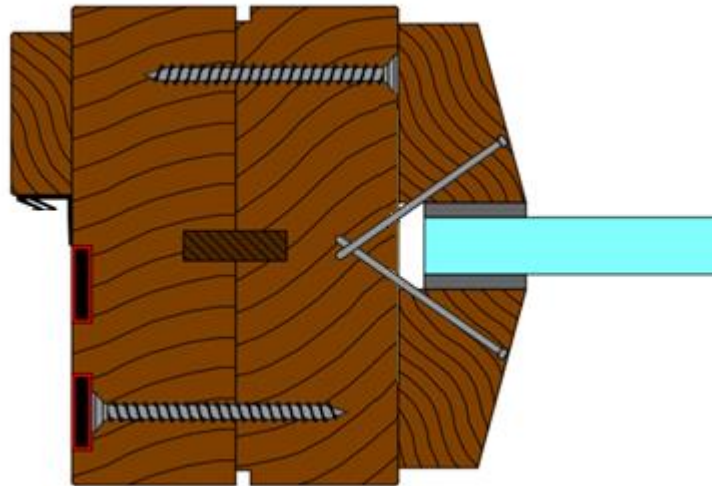
8.2.1.4 Attachment Technique (Modular Framing)

The modular framing must be affixed to the door frame or adjacent modular framed units utilising steel screws appropriate for use with timber substrates.

Screws must be fixed between 100mm and 150mm from corners at maximum of 600mm centres from each face. Fixings shall penetrate approximately half of the depth of the adjacent timber section.

Additionally, a 20mm wide x 6mm thick MDF “Loose Tongue” shall be positioned centrally within the jointed element and bonded to both frame members with PU or PVA adhesive.

A visual representation of the permitted jointing method is detailed below:



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. 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:

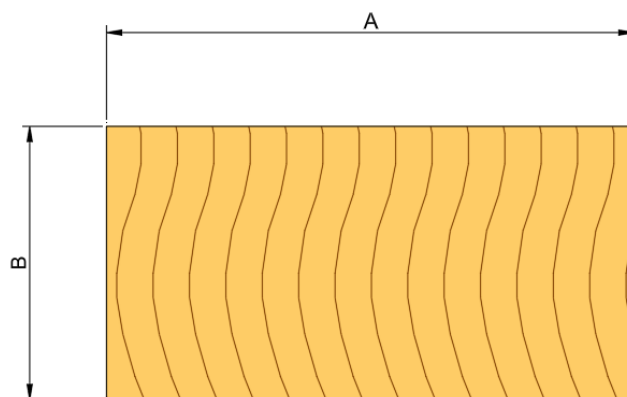
Modular Frame specification		
Frame Type	Minimum section size (mm)	Minimum density (kg/m ³)
Frame 1	Transom 70 (d) x 44 (w)	510
Frame 2	Not Permitted	

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, trenched (Half lapped) 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. Ø5 x 80mm steel screws.

Minimum Section Size



A: Transom depth = 70mm minimum

B: Transom width = 44mm minimum

8.2.2.3 Frame Jointing (Transomed)

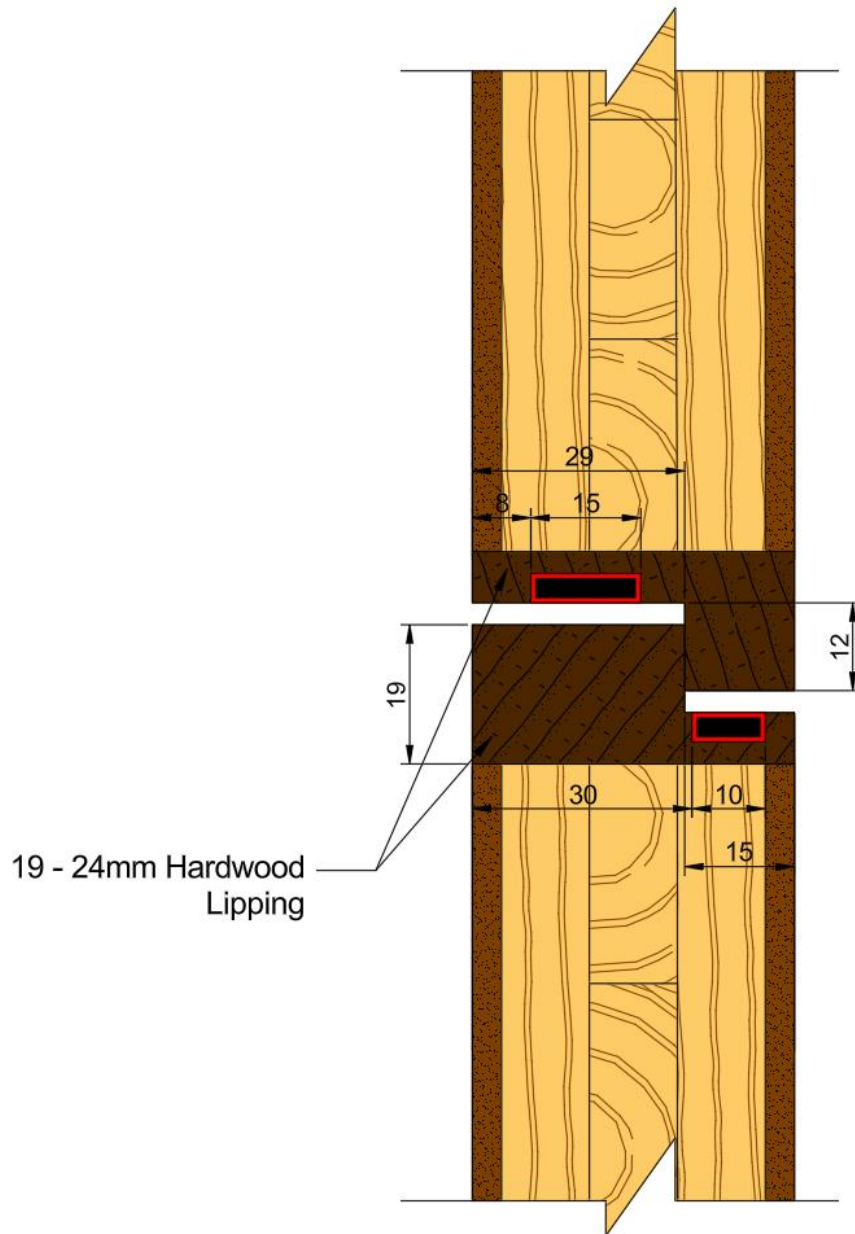
The transom when applied shall be mortice and tenon, trenched (half lapped) or butt jointed. The joints are required to be tight, with no gaps, and require mechanical fixing with 2No. Ø5 x 80mm steel screws.

8.2.3 Flush Overpanels

Based on the testing undertaken on the doorset design it is possible to include solid flush overpanels.

A flush overpanel is where a solid over panel has been included within the door frame and has no additional separating element between the panel and the door leaf or leaves.

An example of the junction between the head of the leaf and a flush overpanel is given below:



Flush overpanels where permitted are detailed within the permitted leaf configurations and require specific perimeter intumescent specifications, HS7, GS7, DS7 & CS7. Offset rebated lippings are permitted for use with flush overpanels as detailed in section 5.4.

8.3 Solid Panels

Solid side and 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).

Solid overpanels are also permitted for use as a flush over panel given in section 8.2.3 above, subject to meeting the requirements outlined within sections 4.5.

8.3.1 Solid Panel Construction (Side or 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:

8.3.1.1 Solid Panel Option 1 – XT30 – 44mm thick

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	Mixed Pine 3-layer core comprising outer vertically orientated lamels and inner horizontal lamels	12 ± 0.5 (t) x 36 ± 2 (w)	450
Facing	Eucalyptus core 3 ply hardwood class 3 plywood	4 (t)	450

8.3.1.2 Solid Panel Option 2 – IT30 – 44mm thick

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	Mixed Pine 3-layer core comprising outer vertically orientated lamels and inner horizontal lamels	12 ± 0.5 (t) x 36 ± 2 (w)	450
Facing	MDF	4 (t)	830 (CFR2101121)

8.3.1.3 Solid Panel Option 3 – XT60 – 54mm thick

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	Mixed Pine 3-layer core comprising outer vertically orientated lamels and inner horizontal lamels	12 (t) x 36 (w)	450
Facing	Eucalyptus core 5 ply hardwood class 3 plywood	9 (t)	450

8.3.1.4 Solid Panel Option 4 – IT60 – 54mm thick

Element	Material	Dimensions (mm)	Minimum Density (kg/m ³)
Core	Mixed Pine 3-layer core comprising outer vertically orientated lamels and inner horizontal lamels	12 (t) x 36 (w)	450
Facing	MDF	9 (t)	830 (CFR2101121)

The panel must be lipped as specified in section 5.4, and the panel shall be constructed of a single board, joints are not permitted within any panels.

For panel option 1 and 2 the minimum panel thickness after calibration is 43mm (i.e. a maximum of 0.5mm from both sides).

For panel option 3 and 4 the minimum panel thickness after calibration is 53mm (i.e. a maximum of 0.5mm from both sides).

Decorative & protective facings may be applied to the surface of the solid panels in accordance with section 5.5.

The minimum panel thickness for panel option 1 & 2 after finishes applied is 44mm.

The minimum panel thickness for panel option 3 & 4 after finishes applied is 54mm.

8.3.2 Intumescent Sealing Arrangement (Side or Over Panels)

Solid side and 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.

Solid flush overpanels shall include the intumescent specifications as detailed within sections 4.5.8, 4.5.9, 4.5.13 & 4.5.14 as applicable.

Permitted intumescent specifications are detailed in section 4.5, while there may be multiple options for manufacturer and seal types only one specification can be utilised with any single doorset, and the specification used shall match the specification used on the door leaf.

8.3.3 Fixing Arrangement (Side or 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.

Where fitted in a flush arrangement the face of the solid overpanel shall be in line with the face of the door leaf.

8.3.4 Maximum Dimensions (Side or 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 width including outer framing dimensions.

Solid Panel & Frame Type	Height (mm)	Width (mm)
Flush Overpanel	610	Overall doorset width
Overpanel (Shared Framing)	2000	
Overpanel (Modular Framing)	2000	
Sidepanel (Modular Framing)	Up to maximum dimension given in section 4.5 for leaf size based on intumescent specification used.	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 & Sidelights

Based on the testing detailed within Appendix A, it has been possible to consider the use of glazed fanlights and sidelights with the modular framing given in section 8.2.1 above.

The glazing system must be one of the following tested or assessed glass types and glazing systems. Alternatively, it is possible to utilise 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 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.

8.4.1 Tested and Assessed Glass types & Glazing Systems

The table below specifies the maximum assessed height and width that is deemed acceptable for different aspect ratios ('landscape' or 'portrait' orientation) for an individual glazed aperture, based upon the test evidence contained within Appendix A.

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

Note: sidelights including a horizontal transom separating two glass panes are to be considered as two apertures for the purpose of the maximum pane dimensions given below.

Double Glazed unit												
Test Reference	Glass Type (thickness)	Perimeter Frame (w x t) mm	Frame Density (kg/m ³)	Transom / Mullion (w x t) mm	Maximum Pane Dimensions (mm)	Max Glazed Area (m ²)	Glazing System	Planted Glazing Bead Size		Bead Shape	Bead: Density (kg/m ³)	Bead Fixing
								Height	Width			
WF429950 WF429951	Double Glazed Unit Consisting Pilkington Pyrodur EW30 (7mm thick) Galvanised Steel Spacer (10mm thick x 7mm) Pilkington Optilam P1A (6.8mm thick) 24mm thick overall	87 x 47	510	87 x 75	Landscape: Not Permitted Portrait: 1287 (h) x 570 (w)	Landscape: Not Permitted Portrait: 0.637	Pyroplex Glazing gasket FF 8492 10x2 between double glazed unit and the upstand of the frame. Pyroplex Glazing gasket 30049 14 x 6 between doubled glazed unit and planted bead.	15	27	Splayed (5 degrees)	640 kg/m ³ Hardwood (Excluding Beech)	Steel pins 40mm long Fitted 50mm from corners and at 300mm centres. 30 degrees to the face of the glass.

Notes:

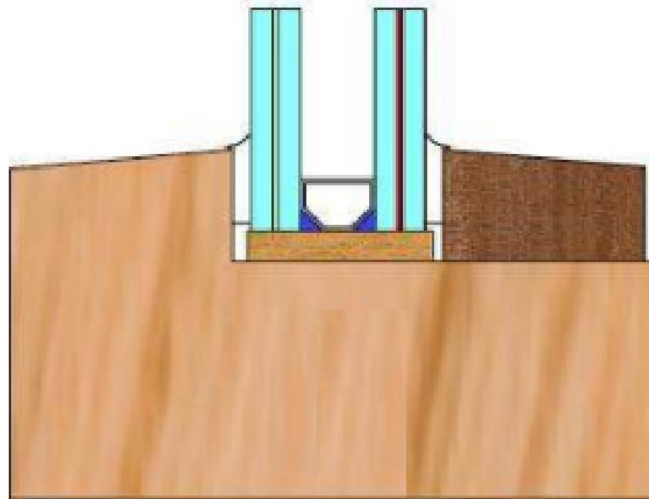
1. Glazing unit must be set on Hardwood setting blocks of a minimum density of 640kg/m³
2. The frame for the double-glazed unit must be rebated to accept the glass by 57mm (w) x 15mm (d) as tested in WF429950
3. Further information on beading is found in section 8.4.1.1 below.

8.4.1.1 Glazing Beads & Installations

The following sections provide visual representation of the permitted glazing beads, these sections are to be read in conjunction with the table in section 8.4.1 which provides the relevant information relative to the tables below.

8.4.1.1.1 Chamfered Bead (Splayed)

Permitted with glass types from the table in Section 8.4.1 as identified and must be used with the specified glazing system in the table



- The glazing beads must be created from hardwood (not Beech fagus species). Refer to Section 8.4.1 for the required density for each system.
- Fixings requirements are identified in Section 8.4.1 for each glass & glazing system.
- 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.

8.4.1.1.2 Pin Fixings

Where it is identified within section 8.4.1 that pin fixings are permitted 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:

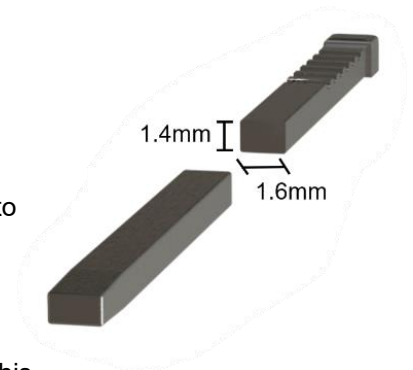
- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.03mm².
- Minimum linear dimension of 1.6mm in any direction, see figure below. The maximum pin diameter or any linear dimensions may be no greater than 2.0mm.



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 2.24mm².
- 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 dimensions may be no greater than 2.0mm.



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

8.4.2 Certifire Approved Glass & Glazing Systems

Alternative 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 Limited Technical Schedule TS25 - may be utilised to glaze fanlights and sidelights 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 8.2.1.4.
- Where a Certifire certificate is utilised to justify fanlights and / or sidelights, 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 and sidelight 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 by mechanical means. 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	Product/Material Type
Door blank core	As per manufacturers tested specification
Door blank facings	As per manufacturers tested specification
Timber lipping & decorative facings	PU or PVA

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 Halspan Limited.
- 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

Hardware that is either morticed in or includes a through component or fixing may not be within 200mm of another item of hardware unless there is test evidence to demonstrate 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/matrix options listed in the table may be used in the specific application noted.

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	Under hinge blade on the frame and leaf sides.	Not Required, however, the below detailed hinge protection may be applied as tested: 1 (t) Halspan – SLS – PAD – 103 (TR20231213-000710A) 0.8 (t) Firestop Graphite (WF429950) 2 (t) MAP (Chilt/RF13196)
Lock/latches Single Point Engagement	Under forend & keep or Under forend & keep and encasing latch body	Not Required, however, the below detailed lock protection may be applied as tested: 1 (t) Interdens (BMT/FEP/F14056) 2 (t) MAP (Chilt/RF13196) 1 (t) SLS-PAD-109 (TR20231213-000510A)
Lock/latches Multi Point Engagement	See section 10.4.2	
Concealed overhead closers	See section 10.7.2	
Flush bolts	Encasing the entire body of the flush bolt including the back surface of the face plate	Halspan SLS-PAD-112-610 (TR20231213-000710A) Halspan SLS-PAD-112 (TR20231213-000710A) 2 (t) MAP (Chilt/RF13196)

Gaskets must be fitted where required by supporting evidence, for example, test evidence or Certify 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)
DASD	• Top pivot & bottom strap • Self-closing device (closer)
LSASD+OP	• Latch • Handle • Hinges • Self-closing device (closer)
ULSASD+OP	• Hinges • Self-closing device (closer)
LSADD	• Latch • Handle • Hinges • Self-closing device (closer) • Flush bolt or surface mounted bolt
ULSADD	• Hinges • Self-closing device (closer)
DADD	• Top pivot & bottom strap • Self-closing device (closer)
LSADD+OP	• Latch • Handle • Hinges • Self-closing device (closer) • Flush bolt or surface mounted bolt
ULSADD+OP	• Hinges • Self-closing device (closer)

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	- Halspan DIN Sash Lock – Square Forend – LCK-BSS-100 (Chilt/RF13196, BMT/FEP/F14056, BMT/FEP/F16105, WF378395 AR1, WF414679 & WF429480 A) - Halspan DIN Sash Lock – Radius Forend – LCK-BSS-104 (CFR2101121, TR20231213-000510A & RE20231213-000710A)

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

Element	Specification
Maximum forend and strike plate dimensions	235mm high x 25mm wide x 4mm thick
Maximum body dimensions	165mm 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 $\geq 800^{\circ}\text{C}$

Notes:

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

10.4.2 Latches & Locks – Multi Point Engagement

These items are suitable in the following applications only:

Configurations: LSASD, LSASD+OP

The table below details the tested multi point latch that is approved.

Element	Manufacturer & Product Reference	Intumescent Protection	Permitted Perimeter Intumescent (Specified in Section 4.5)
Locks & latches	Glutz multi point lock Ref 1893 with B1138 & B1137 keeps (WF380257)	Not Required	AS9 & AS14
	Yale Lockmaster PLSP18 (CFR1910291_1 Revision 3)	Halspan SLS-PAD-121	All latched single acting single leaf arrangements given in section 4.5.5.
	Winkhaus AV2-F (Assessed from WF429950 & WF429951)	Winkhaus AV2/AV3 Door lock intumescent kit	AS10
	Winkhaus AV2-E (WF429950 & WF429951)	Winkhaus AV2/AV3 Door lock intumescent kit	AS10
	Halspan Crimebeater Autolock (WF428611/R)	Halspan SLS-PAD-126	AS10

Note:

1. When a multi-point latch is fitted, the leaf perimeter edge intumescent must be located into the frame reveal along the closing edge.
2. When fitted the forend of the lock must finish a minimum of 50mm from the top of the leaf.
3. The top and bottom locks do not need to be engaged for fire performance, except where the multi-point lock has an auto throw function the top and bottom locks must be engaged.
4. The centre, top and bottom keep plates must be the same as those tested, as supplied by the manufacturer.
5. In all instances the location of the handle must be between 800–1200mm from the threshold.

The AV2-F has been positively assessed from the results generated on the AV2-E lockset as the materials and dimensions of the locks are identical, the AV2-E lock just includes an additional motor to facilitate lock functionality.

10.4.2.1 Lock Security Protection

The testing on the Halspan doorset design was undertaken both with and without the presence of ArmorPlate GBOX lock protection. On the basis of the testing undertaken the following lock protection may be applied to the doorset design without impairing the fire resistance performance of the doorset design:

Manufacturer & Product Reference	Fire Resistance Test Evidence
Winkhaus, ArmorPlate GBOX, 024 5077418	WF429950 & WF429951

The above lock protection plate may only be utilised with the Winkhaus AV2 multipoint lock as detailed within section 10.4.2. The above detailed intumescent protection shall be fitted as tested.

10.4.3 Cylinders

The table below details the tested cylinders that are approved.

Element	Manufacturer & Product Reference
Cylinder	- Zoo VS Stainless Steel Cylinder (CFR1910291_1 Revision 3) - Halspan Kinetica 3* Euro Cylinder & Turn (WF428611/R, TR20231213-000510A & TR20231213-000710A) - Winkhaus XR6-51 (WF429950) - Zoo V5EP70CTSC Cylinder & Turn (WF414679)

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

- Where required for use with either single or multi point latches, the cylinder must be constructed of either brass or steel with a melting point in excess of 800°C.
- The cylinder must be compatible with the lock/latch.
- Cylinder dimensions may be up to 33mm high x 17mm wide at the maximum dimension and may be of euro profile or oval.
- Single and double cylinders, along with cylinder & turn are permitted.
- Door preparation for single cylinders shall penetrate a maximum of 2/3^{rds} 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.

10.4.3.1 Cylinder Security Protection

The testing on the Halspan doorset design was undertaken both with and without the presence of Armorshield cylinder protection. On the basis of the testing undertaken the following cylinder protection may be applied to the doorset design without impairing the fire resistance performance of the doorset design:

Manufacturer & Product Reference	Intumescent Protection	Fire Resistance Test Evidence
Winkhaus, Armorshield, 4932964	0.8mm (t), FlexiFire Winkhaus AV2/AV3 Door Lock Intumescent Kit S/A	WF429950 & WF429951

The above cylinder guard may only be utilised with the Winkhaus AV2 multipoint lock as detailed within section 10.4.2. The above detailed intumescent protection shall be fitted as tested.

10.5 Handles & Escutcheons

The table below details the tested handles that are approved.

Element	Manufacturer & Product Reference
Handles	- Halspan LVR-200-BSS (WF414679) - Glutz OSW S/S OSLO (WF380257) - Hoppe HOP21592S (CFR1910291_1 Revision 3) - Halspan Duo Handle DUO-HDL-100 (WF428611/R) - Zoo Hardware Ltd XCA030SA (TR20231213-000510A) - Zoo Hardware ZCA030SA (WF429480A) - Hoppe Palladio Quickfit handle lever with 0.8mm (t) FlexiFire graphite intumescent under the footprint (WF429950)
Escutcheons	Halspan ESC-528BSS (TR20231213-00510A)

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 25mm diameter.

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

- Handle on rose with a rose diameter up to 54mm
- Handle on back plate with a back plate size up to 245mm high x 54mm 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 Ø54mm overall and up to 12mm thick.

10.6 Butt Hinges

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

Element	Manufacturer & Product Reference
Hinges	- Halspan Grade 13 Square Corner Hinge – HIN-BSS-103 (BMT/FEP/F14056, BMT/FEP/F16105, CFR1910291_1 Revision 3, WF414679, WF428611/R & WF429480A) - Halspan Grade 13 Radius Corner Hinge - HIN-BSS-104 (CFR2101121, Chilt/RF13196, TR20231213-000410A, TR20231213-000510A, TR20231213-000610A, TR20231213-000710A, WF378795 AR1, WF429950 & WF429951) - Royde & Tucker H105 Lift Off Hinge (WF380257)

Alternatively, Certifire approved components certified for use with 30-minute fire resisting applications on 44mm thick timber door and timber frames 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

Intumescent protection shall be as defined in section 10.2 in all instances

Note:

- Projection hinges with blade widths greater than the widths detailed above are permitted providing that no more than 35mm of each blade is rebated within the leaf edge or frame.
- In all instances the hinges must be sufficient to support the weight of the door leaf.

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

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.

Leaves less than 1200mm (h) can be hung on a minimum of 2 hinges located 150mm from the top and bottom of the door leaf (top hinge location is measured from the top of the hinge blade to the top of the door leaf and bottom hinge location is measured from the bottom of the hinge to the bottom of the door leaf).

Element		Specification	
Hinge positions:	If 3 hinges are required:	Top	115 –180mm from the head to top of hinge
		2 nd	Minimum 200mm from top hinge or centrally fitted between top and bottom hinge
		Bottom	150 – 250mm from the foot of leaf to bottom of hinge
	If 4 hinges are required:	Top	115-180mm from the head to top of hinge
		2 nd & 3 rd	Equispaced between top and bottom or 2 nd hinge 200mm from top hinge and 3 rd hinge equally spaced between 2 nd and bottom hinge
		Bottom	150 – 250mm from the foot of leaf to bottom of hinge
Intumescent protection:		See section 10.2	

Additional hinges may be added providing the requirement of 200mm between adjacent items of hardware is maintained.

10.7 Doorset Self Closing

Doorset automatic self-closing can be provided by:

- Overhead face fixed closers
- Concealed overhead closers
- Floor springs with top pivots and bottom straps

Automatic doorset self-closing devices such as transom mounted and offset pivots used with floor springs are not considered acceptable for use with the Halspan Limited doorset range.

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	• Halspan 6000 Series 2-4 Eco Closer CLR-ECO-100 (BMT/FEP/F14056, CFR1910291_1 Revision 3, Chilt/RF13196, WF414679, WF429480A) • Halspan 6100 Series 2-4 Cam Action Eco Closer CLR-CAM-024 (CFR2101121, WF428611/R) • Halspan 9000 Series 2-5 Power Closer CLR-PWR-100 (BMT/FEP/F16105, WF378795 AR1) • Halspan 9100 Series 2-5 Cam Action Power Closer CLR-CAM-025 (TR20231212-000510A, TR20231212-000710A) • Arrone AR1500 (WF380257) • Synergy Hardware S3401.SES.SR (WF429950, WF429951)

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.

10.7.2 Concealed Overhead Self Closing Device

These items are suitable in the following applications only, subject to the details in the table below:

The table below details the tested concealed overhead closers that are approved with the body of the concealed closer morticed into the top of the door leaf and the track morticed into the frame head.

Manufacturer & Product Reference (Test Reference)	Permitted Leaf Type	Intumescent Protection	Closer Body Dimensions	Closer Slide Arm Dimensions	Permitted Frame Option(s)	Permitted Configuration and maximum leaf size if applicable	Perimeter Intumescent Specification (see section 4.5)	Minimum Head Stop Height (mm)
Halspan 6200 Eco CLR-CCL-024 Order code: BOM-CCL-024 includes CLR-CCL-024 & SLS-PAD-130 (TR20231213-000610A)	1, 2, 3 & 4	2 (t) Halspan SLS-PAD-130 Fitted around closer body, over the top of the closer and closer arm mortice and all around the slide arm rail.	Body: 57mm (h) x 215mm (l) x 32mm (w) Forend: 285mm (l) x 32mm (w) x 3mm (t)	Track: 460mm (l) x 20mm (h) x 30mm (w)	1 & 2	LSASD ULSASD LSADD ULSADD	AS2 BS2 ES2 FS2	15
Halspan 9200 CLR-CCL-025 Order code: BOM-CCL-025 includes CLR-CCL-025 & SLS-PAD-131 (TR20231213-000410A)	3 & 4	2 (t) Halspan SLS-PAD-131 Fitted around closer body, over the top of the closer and closer arm mortice and all around the slide arm rail.	Body: 62mm (h) x 260mm (l) x 37mm (w) Forend: 330mm (l) x 37mm (w) x 3mm (t)	Track: 460mm (l) x 20mm (h) x 30mm (w)	1 & 2	LSASD ULSASD LSADD ULSADD	AS6 BS6 ES6 FS6	15

Note:

Based on the test evidence the above tested and assessed concealed closers are permitted for use with the doorset design subject to the following parameters:

- Minimum frame head dimensions (additional to section 7):
 - Frame 1 or 2: 75mm deep x 32mm thick.
- The details identified in the table above for the following items must be followed for the selected concealed overhead closer, and is based on the tested arrangements:
 - Frame option(s).
 - Permitted configuration(s).
 - The frame must be fitted with a head stop of the minimum size, where required.
 - Intumescent protection to the concealed closer.
 - Leaf perimeter intumescent details.
- It must be ensured that the concealed overhead closer is of sufficient strength and power to ensure the door leaf/leaves fully engage into the frame reveal.
- The dimensions of the concealed overhead door closer must not exceed the dimensions given within the tables above.

10.7.3 Floor Spring Self Closing Device

These items are suitable in the following applications only:

Frame options: 1 and 2

Configurations: DASD & DADD

Specification:

Components with the following specification are deemed acceptable.

- Certifire approved floor spring self-closers with their specific associated pivot systems for 30-minute fire resistance applications on 44mm thick timber door and timber frames, providing the Certifire certificate is followed entirely.

It has been possible to include double acting hardware based on the testing undertaken with concealed closers. These items of hardware are similar or greater in size and are constructed of similar materials.

When fitted to a doorset the removal of timber from the leaf and frame to facilitate the fitting is similar to that of a concealed overhead closer and is therefore the opinion of Warringtonfire that floor spring self-closing devices are permitted with the Halspan Limited doorset designs which include the following intumescent specifications:

Configuration	Leaf type	Perimeter Intumescent Specification (see section 4.5)
DASD	1, 2, 3 & 4	BS2
	3 & 4	BS6
DADD	1, 2, 3 & 4	FS2
	3 & 4	FS6

10.8 Bolts

10.8.1 Flush Bolts

The table below details a selection of the tested flush bolts that are approved.

Product (Test evidence)	Reference	Size (mm)	Required Protection	Intumescent
Halspan Limited BLT-FLS-610 Order code: BOM-BLT-610 comes with BLT-FLS-610 & SLS-PAD-112-610 Top Bolt (TR20231213-000710A)		610 x 20 x 38		Halspan SLS-PAD-112-610
Halspan Limited BLT-FLS-203 Order code: BOM-BLT-060 comes with BLT-FLS-203 & SLS-PAD-112 Bottom Bolt (TR20231213-000710A)		203 x 20 x 38		Halspan SLS-PAD-112
Carlisle Brass AA79CP (Chilt/RF13196)		100 x 18 x 25	2mm (t) MAP applied lining the flush bolt and under the keep.	

On the basis of the testing summarised in Appendix A, the tested and following defined alternative flush bolts are suitable in the following applications only:

Frame options: All frame types

Configurations: LSADD (Optionally ULSADD & DADD)

In all cases the following scope must be complied with:

- Flush bolts must be fitted centrally within the thickness of the secondary leaf at the meeting edge.
- Flush bolts may be fitted to only the top of the leaf or alternatively to both the top and bottom of the leaf.
- The components are fitted relative to the meeting edge intumescent strips in one of the following ways:
 - Opposing the leaf edge fitted with intumescent strips such that no interruption occurs in either leaf (primary or secondary).
 - Where there are intumescent strips fitted to both the primary and secondary leaf meeting edges a minimum of 2No. intumescent strips shall be in the leaf opposing the flush bolt.
- Intumescent Protection: All edges of the mortice of the keep and body must be protected with intumescent gaskets as tested and specified above.
- Flush bolts fitted at the bottom of the leaf cannot be used when a morticed in drop seal is present.
- Flush bolts are not permitted in conjunction with rebated meeting edges or rebated flush overpanels.
- The mortice to facilitate the flush bolt must be as tight to the mechanism as is compatible with its operation and the inclusion of intumescent protection.

Alternative flush bolts constructed of steel, which do not exceed the following maximum dimensions are considered not to negatively influence the performance of the doorset design:

- 203mm long x 20mm deep x 20mm wide.

All edges of the mortice of the keep and body must be protected with intumescent gaskets as specified in section 10.2. Alternatively, the hardware manufacturers tested gaskets may be used.

10.8.2 Surface Mounted Face Fixed Bolts

The table below details a selection of the tested surface mounted face fixed bolts that are approved.

Frame options: All frame types

Configurations: All configurations

Manufacturer & Product Reference (Test evidence)
• Halspan Limited – BLT-BZA-100 (CFR2101121)
• Royde & Tucker – B151 Barza bolt (WF414679)

In addition to the above summarised tested surface mounted face fixed bolts, alternative surface mounted face fixed bolts constructed from steel, stainless steel, aluminium or bronze may be fitted, providing the dimensions are no greater than:

- 350mm long x 38mm wide (footprint).

Surface mounted face fixed bolts may be applied to the horizontal or vertical edges of the doorset providing the components are fitted at least 40mm from the corners of the leaf.

Intumescent protection is not required where both the bolt and keep are face fixed.

10.9 Cable Loops & Cableways

Where cable ways are required within the doorset design no recessing of frame or leaf is permitted except the item of hardware and the inclusion of a single hole to facilitate cabling which is no greater than Ø10mm. The hole must be abutting the element of hardware which it is required to facilitate and is only permitted when the frame to which the leaf is hung is adjacent to the supporting structure.

10.9.1 Cable Loops

The table below details the tested and assessed cable loops that are approved.

Test Evidence (Tested configuration)	Item & dimensions (mm)	Hardware Intumescent Protection	Permitted Perimeter Intumescent (Specified in Section 4.5)
WF429950 & WF429951	Winkhaus, AV Cable Transition Unit, 2126942	Pyroplex, 10mm (w) x 2mm (t), 849201, Graphite Intumescent Fitted to the base of the rebate facilitating the transition unit in the leaf. & Tenmat, 0.5mm (t), (60mm x 30mm), FF104E. 2No. applied to the external surfaces of the cable transition unit machine prep for the wire loop.	AS10

Based on the test evidence summarised within Appendix A, the above tested and assessed cable loops are permitted for use with the doorset design subject to the following parameters:

Frame option: 1 or 2

Configurations: LSASD

- When a cable loop is fitted, the leaf perimeter edge intumescent must be located into the frame reveal along the hanging edge.
- In all instances the cable loop must be fitted in the hanging edge opposing the associated motor in the lock, such that and cable routing will run parallel to top and bottom edges of the leaf.
- Intumescent protection to the cable loop used must be as tested and identified within the table above.
- The cable loop body may be rebated into the leaf edge or alternatively the frame reveal, in both instances the positioning shall remain central to the thickness of the leaf.
- When the cable loop body is rebated into the frame reveal, the frame intumescent must be one of the following tested intumescent seals when using one of the identified cable loops:
 - Pyroplex

10.9.2 Cableways

Cableways through the leaf have been tested and are therefore permitted in the methods detailed in the following sections in conjunction with the cable loops in section 10.9.1.

Cableways are only permitted at the perimeter of a glazed aperture in a leaf when fitted as detailed in Method 2 (Section 10.9.2.2).

Except when reaching a glazed aperture at a perpendicular angle to the glazed aperture, cableways must be a minimum of 80mm from any apertures within the leaf e.g. glazing, air transfer grilles or letter plates etc.

Grooves cannot be located within 100mm of any cableway.

10.9.2.1 Cableway Method 1

This method has been successfully tested in test reference WF429950 and WF429951 prior to reaching the glazed apertures. Cableway method 1 is therefore suitable for use within the following scope:

Configurations: LSASD

- A hole drilled centrally through the leaf of maximum 10mm diameter.
- The cable for the electronic closing/latching mechanisms must be wrapped in 0.5mm Tenmat graphite intumescent referenced FF104E.
- The cable must be PVC encased.
- The hole must be positioned no higher than 1620mm from the bottom edge of the leaf and must be fed directly into the motor of the mechatronic lock.

10.9.2.2 Cableway Method 2

This method of routing a cable at the perimeter of a glazed aperture in a leaf is supported by the evidence detailed within WF429950 and WF429951.

This method shall only be utilised with Cableway Method 1 (Section 10.9.2.1).

Cableway method 2 is therefore suitable for use within the following scope:

Configurations: In line with Cableway Method 1 (Section 10.9.2.1)

- Apply the routing for the cableway through the leaf horizontally and perpendicular to the glazed aperture in accordance with method 1. The entry to the glazed aperture must be a minimum of 100mm away from glazing aperture corners.
- The cable must be fed up and over the top of the glass within the leaf until it reaches the same location it entered the aperture on the opposing side; the cable must then continue through the leaf to its terminating point.
- The glazed aperture must be glazed with glazing system 1 as defined within section 6.4. Only the associated glass types assessed for use with this glazing system are permitted.

10.10 Pull Handles

The table below details a selection of the tested pull handles that are approved.

Manufacturer & Product Reference (Test evidence)
Zoo Hardware – ZAAD425BSA (TR231213-000410A)

Pull handles must be positioned as follows:

- Through fixed components must be positioned such that the through going elements are no closer than 75mm to any adjacent morticed item of hardware, leaf edges or apertures.
- Surface mounted items may be applied without restriction, providing they do not inhibit the operation of the doorset design, nor interact with other items of hardware.

Alternatively pull handles must be Steel, stainless steel or bronze handles and 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.

10.11 Push Plates & Kick Plates

The table below details a selection of the tested push & kick plates that are approved.

Manufacturer & Product Reference (Test evidence)

- Zoo Hardware – ZAA40CSA (TR231213-000410A)

Alternatively, components with the following specification are 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.
- When mechanically fixed the fixings must not penetrate more than 50% of the thickness of the door leaf and must not interfere with other items of hardware applied to the door leaf design (e.g. drop seals).

10.12 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.

The table below details the tested security viewers that are approved, in all cases the tested viewers shall include the intumescent specification which has been proven within the doorset design.

Manufacturer & Product Reference (Test Reference)	Intumescent Protection (mm)
Zoo Architectural ZAB30 (CFR1910291_1 Revision 3, WF428611/R)	1 (t) Graphite kit supplied with viewer.
UAP SWALFCH-FR (WF429950 & WF429951)	2no 0.5 (t) FF104E Tenmat graphite sheet
Halspan Door Viewer DOR-VWR-100 (WF428611/R)	1 (t) SLS-PAD-127 Graphite Wrap

Alternatively, 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.

10.13 Door Selectors

These may be freely applied, provided that they are not invasive in the leaf edges or door frames and they do not interfere with the self-closing action of the door leaf. Products that are invasive will require fire resistance test/assessment evidence to support their use.

10.14 Environmental Seals

A number of different environmental seals have been successfully tested as part of the Halspan Limited doorset design. Based on this testing the table below details the approved environmental seals included within the summarised evidence within Appendix A:

Product Reference & Manufacturer (Test Reference)
Sealed Tight Solutions STS 1009 (WF378795 AR1)
Halspan Triple Fin SLS-TRI (Chilt/RF13196, BMT/FEP/F14056, TR20231213-000610A)
Norsound NOR710 (WF380257)
Schlegel Aquamac 63 (WF414679)
Schlegel Aquamac 21 (CFR1910291_1 Revision 3)
Exitex Aquatex A10 (WF429950 & WF429951)

Alternatively, on the basis of the testing undertaken, silicon or PVC based flame retardant acoustic, weather and dust seals may be fitted to this doorset design without compromising the performance, providing their fitting does not interfere with the activation of the intumescent seals or hinder the self-closing function of the leaves.

Where required, the seals must be fitted either rebated into the timber door stop or rebated into the leaf face.

As tested within WF414679 the above environmental seals may be applied to equal rebated meeting edges but must not be applied to any rebated edges applied to flush overpanels.

10.15 Threshold drop Seals

10.15.1 Face mounted threshold drop seal

Aluminium face mounted threshold drop seals may be fitted subject to the following requirements:

- Face mounted threshold drop seal of maximum 35mm high x 31mm wide cross-sectional dimensions.
- Installation must not require the removal of any timber from the leaf, stop or frame reveal (except for screw fixing) and it does not interfere with the self-closing action of the door leaf.
- Screws to affix the threshold drop seal shall be no greater penetration into the leaf than 29mm long.
- 2No. Intumescent seals, each no greater than 10mm wide no greater than 14mm apart.

The above scope has been assessed based on the positive testing undertaken with aluminium based surface mounted items which have been tested with the Halspan doorset design.

10.15.2 Rebated threshold drop seal

Drop seals have been successfully tested within the doorset design and are therefore, acceptable for use in the door designs considered herein. The table below details the permitted threshold drop seal as tested and summarised within Appendix A:

Product Reference & Manufacturer (Test Reference)	Intumescent Protection
Halspan Ltd SLS-DRP (Chilt/RF13196 & TR20231213-000610A)	Not required

The above detailed drop down seals are permitted for use without the requirement for any intumescent protection as demonstrated within Chilt/RF13196.

Alternatively, the components meeting all of the following specifications are also deemed acceptable, recessed into the bottom of leaves:

- Certifire approved threshold drop seals for 30-minute fire resistance applications on 44mm thick timber / cellulosic doors in timber / cellulosic frames.
- The threshold drop seal must not exceed:
 - Body dimensions of 35mm (h) x 14mm (t) and
 - Face plate dimensions of 57mm (h) x 21mm (w) x 1.5mm (t).
- The Certifire certificate shall be adhered to for intumescent protection and fitting requirements.

Note: In all instances, if a rebated drop seal is fitted to the doorset then flush bolts, may not be fitted to the bottom of the doorset.

Drop seals are not permitted for use with aluminium or timber thresholds.

10.16 Letter Boxes / Plates

Letterplates are permitted however the following requirements must be observed:

The area of the letter plate (and air transfer grille if present) plus any glazing must not exceed the total permitted area for glazing in the leaf.

Letterplates shall be installed no closer than 150mm to the edge of the leaf or any other apertures within the leaf, and must meet the positioning requirement as defined below.

It is possible to install the above detailed letterplate within solid side panels providing the side panel is constructed from the same materials as the leaf and the positioning requirements given above are adhered to.

The table below details the tested letter plates that are approved.

Element	Manufacturer & Product Reference (Test Reference)	Positioning Requirements
Letter plate	Halspan TS008 30 Minute Letterplate (WF428611/R)	Between 800mm to 1395mm from the bottom of the leaf to the letterplate aperture.
	Fire Stop Ltd Elite (CFR1910291_1 Revision 3)	Between 800mm to 1000mm from the bottom of the leaf to the letterplate aperture.
	UAP Soterian TS008 (WF429950 & WF429951)	Between 800mm to 1395mm from the bottom of the leaf to the letterplate aperture.

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

- Letter boxes/plates must be Certifire approved for 30 minutes in doorsets with solid timber door leaves. Restriction relating to size, location and intumescent protection around the letter box/plate must be complied with.

10.17 Knockers, Numerals & Signage

The table below details the tested knockers that are approved.

Element	Manufacturer & Product Reference (Test Reference)
Knocker	UAP CSLSAC (WF429950)
Numerals	UAP OTRSAC (WF429950)

Alternatively, 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.

10.18 Security Chains

Components with the following specification are 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.

10.19 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).
- d) For compliance with HTM 58

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

10.20 Panic Hardware

Certifire approved 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.

10.21 Mag Lock

Mag locks which have supporting fire resistance test evidence when applied to a timber-based door leaf in a timber frame which has achieved greater than 30 minutes integrity performance when tested to BS 476: Part 22: 1987 or EN 1634-1, 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 mag locks 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 where no further mechanical latch is fitted.

10.22 Halspan Smart Tags

Based on the testing summarised within Appendix A, including TR20231213-000710A the following Near-Field Communication (NFC) devices as detailed below are permitted to be applied to the doorset within the following parameters:

Tested specification		
Manufacturer & Product Reference (Test evidence)	Material	Overall Dimensions
Halspan Limited, Halspan Edge Mounted Smart Tag: TAG-025-BLK (TR20231213-000710A)	PVC	Ø25mm x 3mm thick
Halspan Limited, Halspan Surface Mounted Smart Tag: TAG-028-BLK (TR20231213-000710A)	PVC	Ø28mm x 1mm thick

The following limitations must be adhered to when fitting the smart tag to the doorset:

Edge Mounted (Door leaf edge)

- The TAG-025-BLK smart tag must be fitted into a tight rebate such that the smart tag results in being flush with the lipping material.
- The TAG-028-BLK smart tag may be surface mounted onto the lipping material or fitted into a tight rebate such that the smart tag results in being flush with the lipping material.
- The smart tags shall be applied within the hanging edge of the door leaf only.
- The smart tag shall be positioned centrally within the thickness of the door leaf.
- The smart tag shall be fitted no closer than 100mm below the top hinge position, measured from the centre of the tracker tag.
- The smart tag must be no closer than 87mm to any other element of hardware.
- It is not permitted to interrupt or remove intumescent material within the doorset to apply the above detailed tags.
- The smart tags shall not be applied over intumescent materials within the leaf edge but may be fitted opposing them.

Surface Mounted (Door leaf face)

- The TAG-025-BLK smart tag must be fitted into a tight rebate such that the smart tag results in being flush with the face of the leaf.
- The TAG-028-BLK smart tag may be surface mounted onto the leaf face or fitted into a tight rebate such that the smart tag results in being flush with the leaf face.
- The smart tags may be applied to the leaf face without restriction providing the tags meet the following limitations:
 - The smart tag shall not be applied such that it interfaces with the door stop.
 - The smart tag shall not be positioned directly above or on a glazed aperture.
 - The smart tag must be no closer than 87mm to any other element of hardware, apertures within the leaf or the edge of the leaf.

10.23 Rain Deflector

The table below details tested face fixed rain deflector that is approved to be face mounted at the bottom of one face of the door leaf.

Manufacturer & Product Reference (Test evidence)
Exitex Ltd – Deflector 20 reference 1.01.0110 (CFR1910291_1 Revision 3)

Tested and alternative aluminium rain deflectors may be fitted subject to the following requirements:

- Rain deflectors of maximum 30mm high x 20mm cross-sectional dimensions.
- Installation must not require the removal of any timber from the leaf, stop or frame reveal (except for screw fixing) and it does not interfere with the self-closing action of the door leaf.
- Screws to affix the rain deflector shall be no greater penetration into the leaf than 24mm long.
- 1No. 15mm wide x 4mm thick seal fitted centrally to the bottom edge of the leaf.

10.24 Hold Open Armatures

Armatures for magnetic hold open devices have been assessed on the basis of the performance of the Halspan doorset design including surface mounted items without detriment to the fire resistance performance.

On this basis armatures may be fitted subject to the following requirements:

- Hold open armatures are to be constructed of metallic or polymeric construction.
- The maximum dimensions of 65mm high x 65mm wide shall not be exceeded.
- Installation must not require the removal of any timber from the leaf, stop or frame reveal (except for screw fixing) and it must not interfere with the self-closing action of the door leaf.
- Screws to affix the hold open armature shall be no greater penetration into the leaf than 24mm long.
- The hold open armature shall be positioned no further than 200mm from the top or bottom edge of the leaf and be positioned no closer than 60mm from the leaf edge or rebated hardware.

10.25 Air Transfer Grilles

Air transfer grilles must be Certifire approved for 30 minutes in doorsets with solid timber door leaves. Restriction relating to size, location and intumescent protection around the air transfer grille must be complied with.

The area occupied by the air transfer grille must not exceed 0.2m² and must be deducted from the area of glazing, if both elements are fitted.

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, architraves when applied, may be fitted to both faces. Where the architrave cannot physically overlap both the wall and the frame it is permitted to apply the architrave abutting the wall as depicted in the figure to the left.
	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 one of the materials permitted for the construction of door frames.

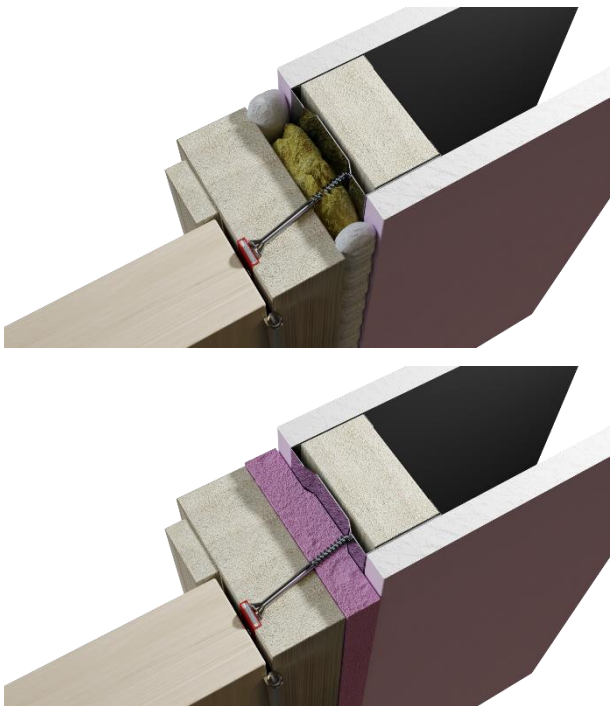
Note:

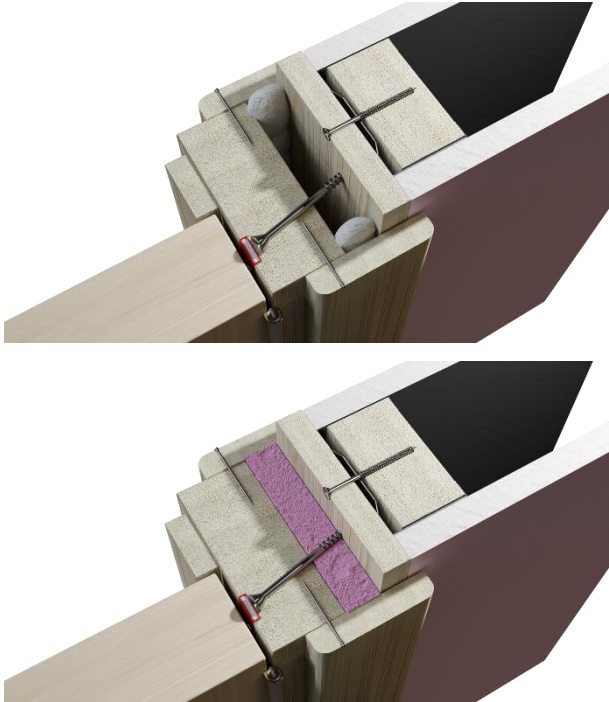
1. The drawings are provided as a generalised illustration of the door frame installation only; actual installation must be as per the text within this document specifies.

2. When fitted within a masonry construction as detailed in section 11.5 the entire thickness of the leaf shall be within the thickness of the masonry element.

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
Up to 10mm	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. If the evidence for the fire stopping used included architraves, they must be fitted as tested. Architraves may be fitted to both faces.	
Up to 20mm	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. If the evidence for the fire stopping used included architraves, they must be fitted as tested. Architraves may be fitted to both faces.	

Gap (mm)	Requirement	3D model depiction
Over 20	A timber based or non-combustible subframe up to 50mm thick x the depth of the frame can be inserted and fixed to the wall bedded on a continuous bead of intumescent mastic, the gap between door frame and subframe filled as follows: Subsequent gaps between the frame and the subframe of 5 to 10mm must be filled utilising one of the options given above. Architraves may be fitted to both faces.	

11.4 Packers

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

Packers must be present local to each fixing position.

Packers should be of a suitable size and set in place to allow the fire stopping materials to be applied over the top.

Packers should not be left exposed when architraves are not applied. Where packers are exposed, regardless of the packing material, they should be cut back at least 5mm and capped with tested intumescent mastic.

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) Blockwork, masonry or homogenous concrete 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.
- Blockwork, masonry or homogenous concrete constructions are anticipated to be solid 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 corners. 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.

For double leaf doorset without side or over panels, the frame jambs are to be fixed to the supporting construction using steel fixings at 600mm maximum centres and maximum of 150mm from corners. The upper horizontal framing section abutting the structural opening must also be secured to the wall using steel fixing at the nominal centre of the width. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm.

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.

For frames which include two elements (including extension liners), both sections of the frame shall be fixed to the supporting structure as detailed above.

11.6 Post Production (Onsite) Leaf Size Adjustment

The Halspan Limited 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 but may be fitted to sit back from the opening face by up to 2mm. Check that the intumescent specification isn't hindered by this. The following specific requirement for double acting arrangements, takes precedence. Required set back distances given in section 7 must be complied with.
Threshold / Bottom edge of the leaf without a drop seal fitted. This is the maximum tolerance for fire resistance only.	8mm between bottom of leaf and top of floor covering. The following specific gap requirements, take precedence: Where an Aluminium Threshold is fitted (section 7.3.1) the maximum gap between bottom of leaf and the top of the Threshold must not exceed 5mm.

12 Insulation Performance

Insulation performance may be claimed for a doorset to this design in line with the following table:

Insulation Performance Criteria	
Type	Details
Non-insulating	Doorsets incorporating greater than 20% of non-insulating glazing
Partially insulating	Doorsets incorporating up to 20% of non-insulating glazing
Fully insulating	Unglazed doorsets or doorsets including 30-minute insulating glazing

13 Conclusions

If the Halspan Limited 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 expected that they would provide a minimum of 30 minutes of integrity and insulation (subject to section 12).

14 Declaration

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

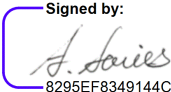
We confirm that any changes to a component or element of structure which are the subject of this assessment have not to our knowledge been tested to the standard against which this assessment has been made.

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.

We understand that this assessment is based on test evidence and will be withdrawn should evidence become available that causes the conclusion to be questioned. In that case, we accept that new test evidence may be required.

We are not aware of any information that could affect the conclusions of this assessment. If we subsequently become aware of any such information, we agree to ask the assessing authority to withdraw the assessment.

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

Signed:  Signed by:
8295EF8349144CB...

Name: Andrew Davies

Position: Technical Manager

Date: 25-Sep-2025

For and on behalf of: **Halspan Limited**

15 Limitations

This assessment report:

- Does not provide an endorsement by Warringtonfire of actual products supplied.
- Has been prepared based on information provided by the Applicant. Warringtonfire has not verified the accuracy or completeness of that information and will not be responsible for any errors or omissions that might be incorporated into this report as a result.
- Any figures included in this report are provided for illustrative purposes only and may not fully reflect the actual scope being assessed. Warringtonfire cannot guarantee the accuracy of the drawings against the scope being assessed. The scope of this report is limited to assessments of the modifications to the tested systems as described herein.
- This report 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.
- This 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 should be re-evaluated if the assessed construction is subsequently tested since actual test data is deemed to take precedence.
- This assessment has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.
- Opinions and interpretation expressed herein are outside the scope of UKAS accreditation.
- This assessment report relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions that are 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 assessment, the element is suitable for its intended purpose.
- This report represents our opinion as to the performance likely to be demonstrated on a test in accordance with the standard to which this assessment concludes, on the basis of the test evidence referred to in this report. We express no opinion as to whether that evidence, and/or this report would be regarded by any Building Control authorities or any other third parties as sufficient for that or any other purpose.
- This report may only be reproduced in full. Extracts or abridgements of reports shall not be published without permission of Warringtonfire. All work and services carried out by Warringtonfire Testing and Certification Limited are subject to, and conducted in accordance with, the Standard Terms and Conditions of Warringtonfire Testing and Certification Limited, which are available at <https://www.element.com/terms/terms-and-conditions> or upon request.
- Previous versions of the report(s), if applicable, are withdrawn from the date of the up-issued assessment report with immediate effect. That means that they may no longer be relied upon in support of any products being placed on the market (or for the stated project/address where applicable) from the issue date stated on the front cover of this report. The withdrawal of an assessment report does not affect any reliance placed on the report up to the issue date stated on the front cover of this assessment; however, going forward, the up-issued report must be referenced in any literature or product specifications in place of the previous versions of the assessment.

16 Validity

This assessment report is not valid unless signed by all signatories identified within the Signatories and Revision History section of this report.

This assessment report is not valid unless it incorporates the declaration given in Section 14 duly signed by the applicant.

The assessment validity is as stated on the front cover of this report, after which time it is recommended that it be submitted to the assessing authority for re-evaluation.

Appendix A

Summary of supporting 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.

Some 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.

The evidence has been generated to BS 476 Part 22: 1987 and EN 1634-1. The latter is known to be more onerous than the BS 476: Part 22: 1987 standard, primarily due to the use of plate thermocouples within the furnace to record the furnace temperature.

The same time temperature curve is used to control the temperature within the furnace for both test methods (the heating curve given within ISO 834-1). However, the plate thermocouple used to record the temperature within the furnace for the EN test method, requires a longer thermal exposure to read the same temperature as the probe thermocouple that is used for the BS 476: Part 22: 1987 test, particularly during the early stages of the test. Furthermore, the neutral pressure regime is positioned lower relative to the specimen height in a European fire door test, therefore resulting in greater relative positive pressure conditions than those expected in a BS 476-22: 1987 test, which has the potential to increase hot gases and flaming on the unexposed side. These factors result in more onerous test conditions for doorsets tested to the BS EN 1634-1 test standard compared with the BS 476: Part 22: 1987 test standard, which has been demonstrated by testing the same products to both standards.

It is therefore the opinion of Warringtonfire that the evidence cited 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 Halspan Ltd doorset designs if tested in accordance with BS 476: Part 22: 1987.

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'.

A.1 Primary Evidence

A.1.1 Chilt/RF13196

Test Report Reference Chilt/RF13196			
Report sponsor	Halspan Ltd		
Test laboratory	Chiltern International Fire Ltd now trading as Warringtonfire Testing and Certification Limited UKAS 1762		
Test date	08 Aug 2013		
Test standard	BS EN 1634-1: 2008 and BS EN 1363-1: 1999		
Sampling information	None detailed in test report		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	ULSADD – Unlatched, Single Acting Double Doorset with glazed apertures		
Test results	Doorset	Integrity:	30 minutes
		Insulation:	28 minutes
Reason for use	• Leaf size envelopes • Frame details • Glazing requirements • Hardware		

A.1.2 BMT/FEP/F14056A

Test Report Reference BMT/FEP/F14056A			
Report sponsor	Sentry Panel Products		
Test laboratory	Chiltern International Fire Ltd now trading as Warringtonfire Testing and Certification Limited UKAS 1762		
Test date	24 Apr 2014		
Test standard	BS EN 1634-1: 2014 and BS EN 1363-1: 2012		
Sampling information	None detailed in test report		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: ULSASD – Unlatched, Single Acting Single Doorset with a glazed aperture.		
Test results	Doorset A	Integrity:	37 minutes
		Insulation:	3 minutes
Reason for use	• Leaf size envelopes • Glazing requirements • Grooving details • Hardware		

A.1.3 BMT/FEP/F14056B

Test Report Reference BMT/FEP/F14056B			
Report sponsor	Sentry Panel Products		
Test laboratory	Chiltern International Fire Ltd now trading as Warringtonfire Testing and Certification Limited UKAS 1762		
Test date	24 Apr 2014		
Test standard	BS EN 1634-1: 2014 and BS EN 1363-1: 2012		
Sampling information	None detailed in test report		
Tested Orientation	Doorset B: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset B: ULSASD – Unlatched, Single Acting Single Doorset		
Test results	Doorset B	Integrity:	33 minutes
		Insulation:	33 minutes
Reason for use	• Leaf size envelopes • Grooving details • Hardware		

A.1.4 BMT/FEP/F16105

Test Report Reference BMT/FEP/F16105			
Report sponsor	Halspan Ltd		
Test laboratory	Exova Warringtonfire now trading as Warringtonfire Testing and Certification Limited UKAS 1762		
Test date	21 Apr 2016		
Test standard	BS 476 Part 20/22: 1987		
Sampling information	None detailed in test report		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: ULSADD+OP – Unlatched, Single Acting Double Doorset with Overpanel.		
Test results	Doorset A	Integrity:	44 minutes
		Insulation:	44 minutes
Reason for use	• Leaf size envelopes • Doorset configurations • Hardware		

A.1.5 WF378795 AR1

Test Report Reference WF378795 AR1			
Report sponsor	Halspan Ltd		
Test laboratory	Exova Warringtonfire now trading as Warringtonfire Testing and Certification Limited UKAS 1762		
Test date	24 Jan 2017		
Test standard	BS 476 Part 20 & 22: 1987		
Sampling information	None detailed in test report		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: ULSADD – Unlatched, Single Acting Double Doorset with glazed apertures.		
Test results	Doorset A	Integrity:	37 minutes
		Insulation:	15 minutes
Reason for use	• Leaf size envelopes • Glazing requirements • Hardware		

A.1.6 WF380257A

Test Report Reference WF380257 A			
Report sponsor	Halspan Ltd		
Test laboratory	Exova Warringtonfire now trading as Warringtonfire Testing and Certification Limited UKAS 1762		
Test date	09 Mar 2017		
Test standard	BS 476 Part 20 & 22: 1987		
Sampling information	None detailed in test report		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: LSASD – Latched, Single Acting Single Doorset		
Test results	Doorset A	Integrity:	42 minutes
		Insulation:	42 minutes
Reason for use	• Leaf size envelopes • Hardware		

A.1.7 WF380257B

Test Report Reference WF380257 B			
Report sponsor	Halspan Ltd		
Test laboratory	Exova Warringtonfire now trading as Warringtonfire Testing and Certification Limited UKAS 1762		
Test date	09 Mar 2017		
Test standard	BS 476 Part 20 & 22: 1987		
Sampling information	None detailed in test report		
Tested Orientation	Doorset B: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset B: LSASD – Latched, Single Acting Single Doorset		
Test results	Doorset B	Integrity:	43 minutes
		Insulation:	43 minutes
Reason for use	• Leaf size envelopes • Hardware		

A.1.8 WF414679

Test Report Reference WF414679			
Report sponsor	Halspan Ltd		
Test laboratory	Warringtonfire Testing and Certification Limited UKAS 1762		
Test date	09 Oct 2019		
Test standard	BS EN 1634-1:2014 + A1 2018		
Sampling information	The doorsets were sampled by a representative of BM TRADA Certification under contract reference PS19092 on 01/10/19.		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: LSADD – Latched, Single Acting Double Doorset		
Test results	Doorset A	Integrity:	32 minutes
		Insulation:	31 minutes
Reason for use	• Leaf size envelopes • Comparison of door cores • Glazing • Hardware		

A.1.9 CFR1910291_1 Revision 3

Test Report Reference CFR1910291_1 Revision 3			
Report sponsor	Halspan Ltd		
Test laboratory	Cambridge Fire Research UKAS 4319		
Test date	29 Oct 2019		
Test standard	BS EN 1634-1:2014 + A1: 2018		
Sampling information	The doorsets were sampled by a representative of BM TRADA Certification under contract reference PS191001 on 21/10/19 – 22/10/19.		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: LSASD – Latched, Single Acting Single Doorset with glazed aperture.		
Test results	Doorset A	Integrity:	38 minutes
		Insulation:	3 minutes
Reason for use	• Leaf size envelopes • Glazing requirements • Aluminium Thresholds • Hardware		

A.1.10 WF428611/R A

Test Report Reference WF428611/R A			
Report sponsor	Halspan Limited		
Test laboratory	Warringtonfire Testing and Certification Limited UKAS 0249		
Test date	05 Jun 2020		
Test standard	BS EN 1634-1: 2014 + A1: 2018		
Sampling information	The doorsets were sampled by a representative of IFC Certification on 14/05/20.		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: LSASD – Latched, Single Acting Single Doorset		
Test results	Doorset A	Integrity:	34 minutes
		Insulation:	5 minutes
Reason for use	• Hardware • Aluminium Thresholds • Timber Thresholds		

A.1.11 WF428611/R B

Test Report Reference WF428611/R B			
Report sponsor	Halspan Limited		
Test laboratory	Warringtonfire Testing and Certification Limited UKAS 0249		
Test date	05 Jun 2020		
Test standard	BS EN 1634-1: 2014 + A1: 2018		
Sampling information	The doorsets were sampled by a representative of IFC Certification on 14/05/20.		
Tested Orientation	Doorset B: Opening away from the heating condition.		
Specimen summary & tested configuration	Doorset B: ULSASD – Unlatched, Single Acting Single Doorset		
Test results	Doorset B	Integrity:	13 minutes
		Insulation:	13 minutes
Reason for use	- Hardware - Aluminium Thresholds - Timber Thresholds		
Failure mode	A cotton pad failure was recorded at 13 minutes local to the latch position. The intumescent arrangement and lockset has not been considered in conjunction with each other, no further failures were observed until passed 30 minutes.		

A.1.12 CFR2101121

Test Report Reference CFR2101121			
Report sponsor	Halspan Limited		
Test laboratory	Cambridge Fire Research UKAS 4319		
Test date	12 Jan 2021		
Test standard	BS EN 1634-1:2014 + A1:2018		
Sampling information	The doorsets were sampled by a representative of BM TRADA Certification under contract reference SC20206 on 06/01/21.		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: LSADD – Latched, Single Acting Double Doorset		
Test results	Doorset A	Integrity:	38 minutes
		Insulation:	38 minutes
Reason for use	- Leaf size envelopes - Comparison of door cores - Frame requirements - Hardware		

A.1.13 TR20231213-000610A

Test Report Reference TR20231213-000610A			
Report sponsor	Halspan Limited		
Test laboratory	United Kingdom Testing and Certification UKAS 21542		
Test date	09 Feb 2024		
Test standard	BS EN 1634-1:2014 + A1:2018		
Sampling information	The doorsets were sampled by a representative of BM TRADA Certification under contract reference SC24013T on 05/02/24.		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: ULSADD – Unlatched, Single Acting Double Doorset with glazed apertures		
Test results	Doorset A	Integrity:	37 minutes
		Insulation:	0 minutes
Reason for use	- Glazing requirements - Hardware		

A.1.14 TR20231213-000710A

Test Report Reference TR20231213-000710A			
Report sponsor	Halspan Limited		
Test laboratory	United Kingdom Testing and Certification UKAS 21542		
Test date	08 Feb 2024		
Test standard	BS EN 1634-1:2014 + A1:2018		
Sampling information	The doorsets were sampled by a representative of BM TRADA Certification under contract reference SC24011T on 31/01/24.		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: ULSADD – Unlatched, Single Acting Double Doorset		
Test results	Doorset A	Integrity:	23 minutes
		Insulation:	23 minutes
Reason for use	- Comparison of door cores - Hardware - Leaf size envelopes		
Failure mode	Top right corner of the fire stopping was blanked off. The fire stopping method is not being considered as part of this assessment. Further failure was deemed to have occurred at 45 minutes at the meeting stile. It is the opinion of Warringtonfire that if an alternate fire stopping method was used then the doorset would have achieved 30 minutes fire resistance performance due to the lack of further failures before 30 minutes test duration.		

A.1.15 TR20231213-000410A

Test Report Reference TR20231213-000410A			
Report sponsor	Halspan Limited		
Test laboratory	United Kingdom Testing and Certification UKAS 21542		
Test date	09 Feb 2024		
Test standard	BS EN 1634-1:2014 + A1:2018		
Sampling information	The doorsets were sampled by a representative of BM TRADA Certification under contract reference SC24014T on 02/02/24.		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: ULSADD – Unlatched, Single Acting Double Doorset		
Test results	Doorset A	Integrity:	55 minutes
		Insulation:	40 minutes
Reason for use	• Leaf size envelopes • Hardware		

A.1.16 TR20231213-000510A

Test Report Reference TR20231213-000510A			
Report sponsor	Halspan Limited		
Test laboratory	United Kingdom Testing and Certification UKAS 21542		
Test date	02 Feb 2024		
Test standard	BS EN 1634-1:2014 + A1:2018		
Sampling information	The doorset was sampled by a representative of BM TRADA Certification under contract reference SC24012T on 31/01/24.		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: ULSADD – Unlatched, Single Acting Double Doorset		
Test results	Doorset A	Integrity:	52 minutes
		Insulation:	52 minutes
Reason for use	• Leaf size envelopes • Comparison of door cores • Hardware		

A.1.17 WF429480 A

Test Report Reference WF429480 A			
Report sponsor	Halspan Ltd		
Test laboratory	Warringtonfire Testing and Certification Limited UKAS 1762		
Test date	25 Jun 2020		
Test standard	BS EN 1634-1:2014 + A1:2018		
Sampling information	The doorsets were sampled by a representative of BM TRADA Certification under contract reference SC20092 on 10/06/20.		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: LSASD – Latched, Single Acting Single Doorset		
Test results	Doorset A	Integrity:	31 minutes
		Insulation:	31 minutes
Reason for use	Hardware		

A.1.18 WF429950

Test Report Reference WF429950			
Report sponsor	Halspan Ltd		
Test laboratory	Warringtonfire Testing and Certification Limited UKAS 1762		
Test date	02 Jul 2020		
Test standard	BS EN 1634-1:2014 + A1:2018		
Sampling information	The doorsets were sampled by a representative of BM TRADA Certification under contract reference SC20093 on 16/06/20.		
Tested Orientation	Doorset A: Opening in towards heating condition.		
Specimen summary & tested configuration	Doorset A: LSASD –Latched, Single Acting Single Doorset with glazed sidescreens		
Test results	Doorset A	Integrity:	53 minutes
		Insulation:	24 minutes
Reason for use	- Leaf size envelopes - Aluminium Thresholds - Double Glazing - Modular framing - Hardware		

A.1.19 WF429951

Test Report Reference WF429951			
Report sponsor	Halspan Ltd		
Test laboratory	Warringtonfire Testing and Certification Limited UKAS 1762		
Test date	03 Jul 2020		
Test standard	BS EN 1634-1:2014 + A1:2018		
Sampling information	The doorsets were sampled by a representative of BM TRADA Certification under contract reference SC20093 on 16/06/20.		
Tested Orientation	Doorset A: Opening away from the heating condition.		
Specimen summary & tested configuration	Doorset A: LSASD –Latched, Single Acting Single Doorset with glazed sidescreens		
Test results	Doorset A	Integrity:	38 minutes
		Insulation:	12 minutes
Reason for use	• Leaf size envelopes • Aluminium Thresholds • Double Glazing • Modular framing • Hardware		