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Testing, calibrating, advising.

**Title:**

Global Fire Resistance Assessment  
of Halspan® 60 **Prima** Doorsets  
60 Minutes Fire Resistance

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WF404746



**Prepared for:**

**Halspan Ltd.**

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### **Exova Warringtonfire – the new name for BM TRADA**

On December 1<sup>st</sup> 2015, Chiltern International Fire Limited (trading as BM TRADA) commenced trading under the name Exova Warringtonfire.

To coincide with this change, our Technical Reports, Test Reports, Product Assessments, company stationery and marketing collateral have been updated to reflect the Exova Warringtonfire branding.

The validity of all documents previously issued by Chiltern International Fire Limited including certificates, test reports and product assessments is unaffected by this change. A letter to this effect is available upon request by e-mailing [globalfire@exova.com](mailto:globalfire@exova.com)

### **About Exova Warringtonfire**

Exova Warringtonfire is part of the Exova Group one of the world's leading laboratory-based testing groups, trusted by organisations to test and advise on the safety, quality and performance of their products and operations. Headquartered in Edinburgh, UK, Exova operates 143 laboratories and offices in 32 countries and employs around 4,500 people throughout Europe, the Americas, the Middle East and Asia/Asia Pacific. With over 90 years' experience, Exova specialises in testing across a number of key sectors from health sciences to aerospace, transportation, oil and gas, fire and construction.

Be assured that whilst the name will change, your service provision and primary contacts have not. What will be available to you is a wider team of testing experts and an extended range of testing capabilities including structural steelwork testing, ventilation duct and damper testing, ASTM testing, water mist system testing and smoke toxicity testing and covering additionally both the rail and marine sectors.

If you have any questions, please do not hesitate to contact a member of the team and we will do our best to answer them. We appreciate your business to date and we look forward to working with you in the future.

Kind regards

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## 1 Introduction

This document constitutes a global assessment relating to Halspan® 60 **Prima**, fire resisting doorsets, for Halspan Ltd. The assessment uses established extrapolation and interpretation techniques in order to extend the scope of application by determining the limits for the design based on the tested constructions and performances obtained. The assessment is an evaluation of the potential fire resistance performance, if the elements were to be tested in accordance with BS 476-22:1987 and is only valid if presented in its entirety.

Much of the guidance that supports fire safety legislation in the UK is given in terms of performance in relation to British or European Standards which may take the form of test methods or agreed product standards.

Typically therefore a material, product or structure should:

- a) have a specification or design which has been shown by test to be capable of meeting the required performance; or,
- b) have been assessed from test evidence generated against appropriate standards, or by using relevant design guides, to be capable of meeting the required performance.

This approach is outlined as being acceptable in paragraphs 1 a) and b) of appendix A in Approved Document B Vol. 1 - Dwellinghouses (2006 edition incorporating 2010 and 2013 amendments) and Approved Document B Vol. 2 - Buildings other than dwellinghouses (2006 edition incorporating 2007, 2010 and 2013 amendments), the Passive Fire Protection Federation (PFPF) guidelines to undertaking assessments in lieu of fire tests and EGOLF Agreement EGA 10 Rev 2: 2014.

Test reports provide information on the performance of a specimen that was tested against the relevant standard and do not offer any extension to scope (e.g. leaf dimensions or hardware options). Assessments are written based on applicable primary test evidence and extend the scope of application of the tested design to provide for different design options and are written by person(s) with the necessary expertise in the performance of construction products under fire test conditions, as detailed in appendix A of Approved Document B Vol. 1 and Vol. 2.

This assessment has been written to the principles outlined in the PFPF guidelines to undertaking assessments in lieu of fire tests. 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 in lieu of fire tests for building control and other purposes.

The PFPF guidelines are produced by the UK Fire Test Study Group (FTSG) an association of the major fire testing laboratories in the UK and are published by the PFPF, the representative body for the passive fire protection industry in the UK.

## 2 General Description of Construction

The construction for door leaves of this design comprises a solid sheet of 54mm thick Halspan® 60 **Prima** three layered particleboard (nominal density 630kg/m<sup>3</sup> +/- 10%). Where specified, the leaves are lipped with hardwood.

### 3 Leaf Sizes

The approval for increased leaf dimensions is based on the tests listed in appendix C and takes into account the margin of over performance above 60 minutes integrity for the design and the characteristics exhibited during test. Data sheets specifying the maximum approved leaf sizes and graphs showing the permitted gradient between maximum height and width, are contained in appendix F.

Doorsets with reduced dimensions are deemed less onerous. Therefore, doors with dimensions less than those tested and stated in appendix F may be manufactured.

### 4 Configurations and Orientation

#### 4.1 Configurations

Based on the test evidence listed in appendix C, this assessment covers the following doorset configurations:

Abbreviation	Description
LSASD & ULSASD	Latched & unlatched single acting single doorset
DASD	Double acting single doorset
LSASD+OP & ULSASD+OP	Latched & unlatched single acting single doorset + overpanel
DASD + OP	Double acting single doorset + overpanel
LSADD & ULSADD	Latched & unlatched single acting double doorset
DADD	Double acting double doorset
LSADD+OP & ULSADD+OP	Latched & unlatched single acting double doorset + overpanel
DADD + OP	Double acting double doorset + overpanel

Unequal leaf double doorsets are covered by this assessment with no restriction on the smaller leaf dimension.

#### 4.2 Orientation

The primary fire resistance tests for this design were all 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 doorsets to this design may be hung to open either away from or towards the fire risk side of the doorset.

### 5 Leaf Size Adjustment

Halspan® 60 Prima door leaves may be altered as follows:

Element	Reduction
Leaf	The manufactured size of the leaf may be reduced in height or width without restriction
Lipping	The dimensions stated in section 9.1 may be reduced by 20% for fitting purposes

## 6 Overpanels

### 6.1 Solid

Overpanels of the same construction as the door leaves may be used either flush with the leaf heads or when separated by a transom. In either case the overpanel must be fully contained within the door frame (see following diagram).

If a transom is required to separate the leaf heads from the overpanel, it must be to the same specification as the door frame (see the note under the table in section 8.1).

Door frame joints must utilise one of the jointing methods specified in section 8.2.

Overpanels must be fixed by either:

- screwing through the rear of the frame with steel screws passing at least 30mm into the centre line of the overpanel. Fixings must be no more than 100mm from each corner and a maximum of 250mm centres in between, or,
- using 75mm long x 8mm diameter steel dowels fitted centrally in the frame reveal across the head of the overpanel no closer than 150mm from each corner of the overpanel and equispaced between at a maximum of 450mm centres. A minimum of four dowels must be used. A further 75mm long screw fixing is required to be inserted at an angle through the bottom corners of the overpanel into the door frame.

The intumescent seals specified for the jambs in appendix F, may be fitted in the overpanel edges or frame reveal, if required for the manufacturing process. Providing the intumescent seals are fitted to all edges of the overpanel, the frame to overpanel junction is permitted to have a maximum 2mm gap tolerance.

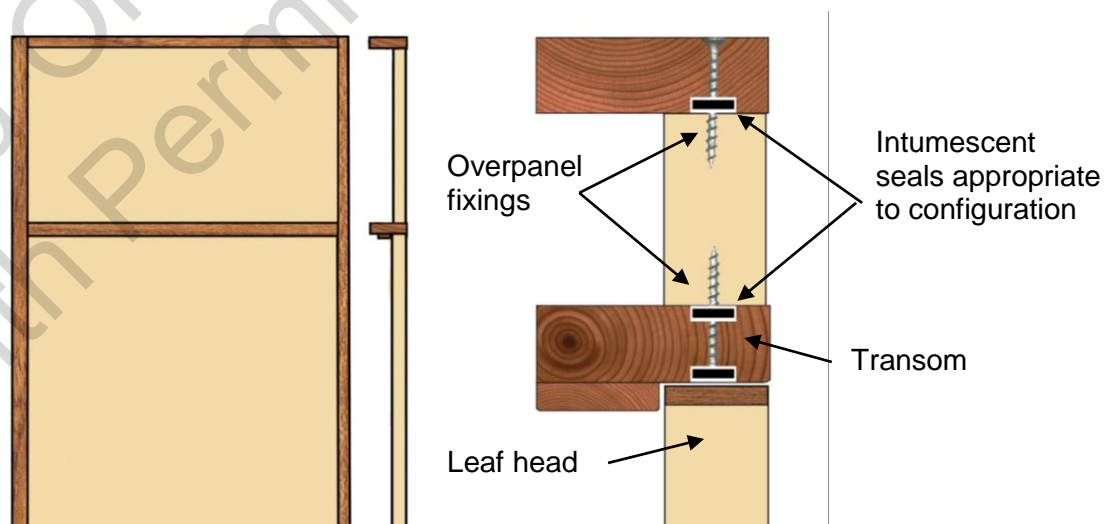
However, it is not mandatory to fit intumescent seals to the edges of the overpanel for a compliant doorset providing the frame to overpanel junction is tight with no gaps.

It is permitted to include a glazed aperture within the overpanel providing the glazing is within the parameters given in section 7.

Maximum overpanel heights are as follows.

- Single doorsets – 2000mm
- Double doorsets – 1500mm

The following diagram illustrates the principles described:



## 6.2 Fanlights

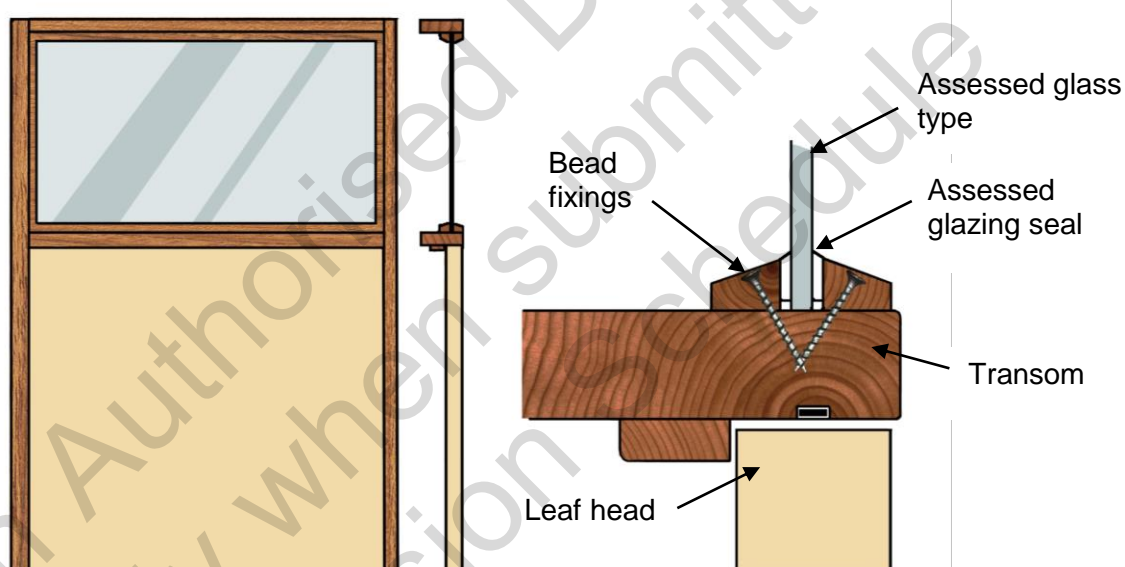
Timber frame doorsets including a transom may include a glazed fanlight. The timber frame and glazing beads must be hardwood with a minimum density of 640 kg/m<sup>3</sup>, whilst the frame section must be a minimum of 70mm x 44mm. Timber door frame and transom construction must comply with the specification contained in section 8.

The maximum assessed fanlight dimensions are detailed in the table below, subject to the following restriction:

The glass and glazing system must be able to demonstrate adequate performance when tested as a window or screen in accordance with BS 476-22:1987 or BS EN 1634-1, at the pane dimensions to be installed.

Configuration	Height (mm)	Width (mm)
Single & double doorsets	≤600	Overall door width

The following diagram illustrates the principles described:





## 7 Glazing

### 7.1 General

The testing conducted on Halspan® 60 **Prima** has demonstrated that the design is capable of tolerating relatively large glazed apertures, whilst providing a margin of over performance. Glazing is therefore acceptable within the following parameters.

The total maximum assessed glazed area for all configurations is 0.82m<sup>2</sup>.

The maximum assessed pane sizes for assessed glazing systems and assessed glass types are shown in sections 7.2 and 7.3. For any specific combination, the smaller pane area must take precedence.

### 7.2 Assessed Glazing Systems

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

Glazing System	Manufacturer	Maximum Pane Area (m <sup>2</sup> )
1. Fireglaze 60	Sealmaster Ltd	0.82
2. Therm-A-Glaze 60	Intumescent Seals Ltd	0.82
3. System 36/15	Lorient Polyproducts Ltd	0.50
4. System 90+	Lorient Polyproducts Ltd	0.50
5. System 63 (circular apertures only)	Lorient Polyproducts Ltd	0.50
6. Pyroglaze 60	Mann McGowan Ltd	0.50
7. Halspan 60	Halspan Ltd	0.50
8. Halspan Slimglaze 60	Halspan Ltd	0.50
9. ST105GT & 30x2 Liner	Sealed Tight Solutions Ltd	0.82

1. Pyroglaze 60 and Halspan 60 must be used with 60mm long steel screw fixings only
2. Halspan Slimglaze 60 must be installed as depicted in appendix B

### 7.3 Assessed Glass Products

Assessed glass types are as follows:

Glass Type <sup>1</sup>	Manufacturer	Maximum Pane Area (m <sup>2</sup> )
1. 6 & 7mm Pyroshield	Pilkington Group Ltd	0.82
2. 6 & 7mm Pyroshield 2	Pilkington Group Ltd	See section 7.7
3. 6mm Sureglaze Wired	Halspan Ltd	0.82



Glass Type	Manufacturer	Maximum Pane Area (m <sup>2</sup> )
4. 6mm Pyran S	Schott Glass Ltd	0.82
5. 6mm Pyrocet	Securiglass Co. Ltd	See note 2
6. 6mm Pyrostem	Pyroguard UK Ltd	0.60
7. 7mm Pyroguard FD60	Pyroguard UK Ltd	0.82
8. 10mm Pyrodur	Pilkington Group Ltd	0.82
9. 11mm Pyroguard	Pyroguard UK Ltd	0.52
10. 12mm Pyrobelite	AGC Flat Glass Europe	0.82
11. 13mm Pyrodur	Pilkington Group Ltd	0.82
12. 15mm Pyroguard EI 30	Pyroguard UK Ltd	0.82
13. 16mm Contraflam	Vetrotech Saint Gobain Ltd	0.82
14. 15mm Pyrostop	Pilkington Group Ltd	0.82
15. 16mm Pyrobel	AGC Flat Glass Europe	0.82
16. 25mm Pyrobel	AGC Flat Glass Europe	See section 7.6

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. Limited by glazing system. See section 7.5 for approved glazing system.

#### 7.4 Glazing Beads & Installation

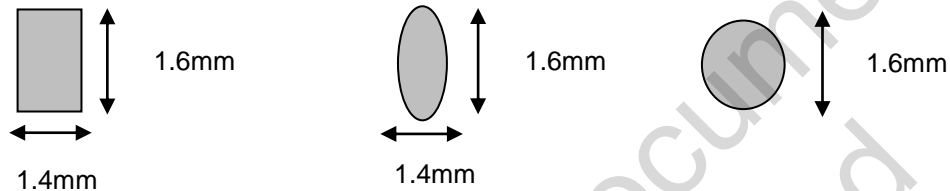
Glazing beads must be from hardwood <sup>1</sup> as specified in the following table:

Profile	Minimum Density (kg/m <sup>3</sup> )	Application	Maximum Aperture (m <sup>2</sup> )
Splayed	640	All proprietary systems detailed in 7.2 and appendix B	0.82
Square	640	Proprietary system 1 with aperture lined using 33 x 2mm Therm-A-Line in lieu of GL60 liner with glass types 1 – 3 as specified in 7.3 and appendix B	0.2
Square	640	Proprietary system 1 and 2 as specified in 7.2 and glass types 10-16 as specified in 7.3 and appendix B	0.82

1. Beech, *Fagus Sylvatica*, is not permitted for 60 minute applications.
2. A square bead profile may be used as an alternative to splayed beads subject to the restricted glass types and glazing systems above. See appendix B for square bead options. A 6–10mm thick square aperture liner is permitted with

square beads providing it is constructed from hardwood of minimum density 640 kg/m<sup>3</sup> and glued in position using a UF type adhesive.

3. Glazing beads must be retained in position with 60mm long x 2mm diameter steel pins or 60mm long No 8 screws, inserted at 35-40° to the vertical at no more than 50mm from each corner and at 150mm maximum centres.
4. Alternatively, pneumatically gun fired steel pins are acceptable providing the pins meet the following minimum dimensions, are a minimum of 60mm long, and with the 1.6mm dimension orientated perpendicularly to the glass wherever possible:



5. Glazed openings must not be less than 100mm from any door edge. Multiple apertures are acceptable within the permitted glazed area, with a minimum dimension of 80mm of Halspan® 60 **Prima** core between apertures. Alternatively, the dimension may be reduced to 38mm using the Halspan® 60 multipane glazing system and inserting solid 54mm x 38mm hardwood transoms/mullions dividing the apertures (see appendix B for details).
6. Aperture shape is not restricted, providing the glazing system and beads are compatible with that shape.
7. Timber for glazing beads must be straight grained joinery quality hardwood, free from knots, splits and checks.

## 7.5 Zeroplus Slimport Glazing System

Additional test data ref: Warres 117483 is suitable evidence to allow the use of two alternative glazing methods i.e. Zeroplus Slimport SP250 or SP450 for use with Pyrocelt glass only. Installation must be as per the test data. Zero Seal Systems Ltd must be contacted for details on glazing materials and installation.

## 7.6 Fully Insulating Glazing Option

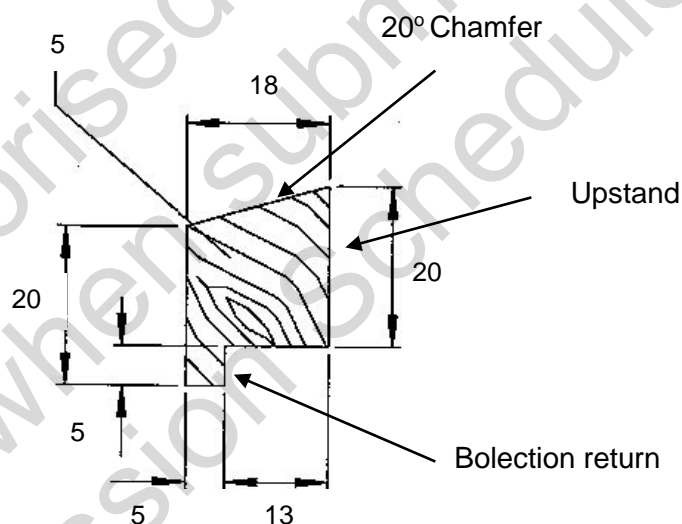
The testing conducted on Halspan® 60 **Prima** under ITB report No 636.7/09 has demonstrated that the design is capable of providing 60 minutes integrity and insulation performance when glazed with 25mm thick Pyrobel glass from AGC Flat Glass Ltd. The option for fully insulating glazing is therefore acceptable within the following parameters.

The maximum assessed glazed area for all configurations is 1.31m<sup>2</sup>. The glazing system must be one of the following tested proprietary systems (see appendix B for further details).

Glazing System	Manufacturer	Maximum Area (m <sup>2</sup> )
1. Fireglaze 60	Sealmaster Ltd	1.31
2. Therm-A-Glaze 60	Intumescent Seals Ltd	1.31

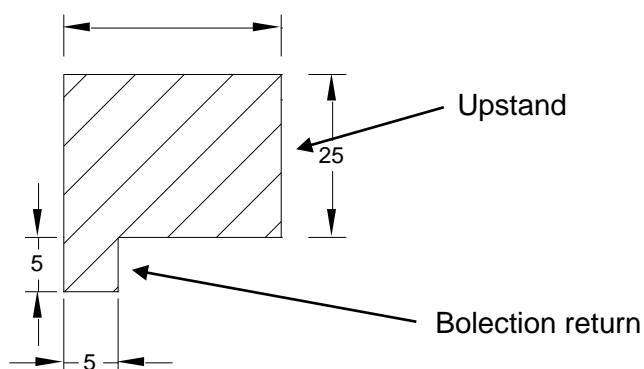
1. The glass type is to be 25mm thick Pyrobel manufactured by AGC Flat Glass Ltd

2. A 6–10mm thick square aperture liner is permitted for use providing it is constructed from hardwood of minimum density 640 kg/m<sup>3</sup> and glued in position using a PVA or UF type adhesive.
3. Glazing bead fixings must be retained in position with 70mm long No 8 screws, inserted at 30-35° to the vertical at no more than 50mm from each corner and at 150mm maximum centres.
4. Glazed openings must not be less than 100mm from any door edge. Multiple apertures are acceptable within the permitted glazed area, with a minimum dimension of 80mm of Halspan® 60 **Prima** core between apertures.
5. Aperture shape is not restricted, providing the glazing system and beads are compatible with that shape.
6. Timber for glazing beads must be straight grained joinery quality, free from knots, splits and checks.
7. The glass must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.
8. The permitted bead shapes are shown below.



#### Chamfered Bead

Suited to glass thickness



#### Square Bead

## 7.7 Pyroshield 2

The following table details the maximum pane sizes and approved glazing systems permitted for Pyroshield 2 in the Halspan® 60 **Prima** doorset design.

Glass Type	Glazing System (Section 7.2)	Maximum Pane Size <sup>1</sup> (height x width – mm)	Maximum Area (m <sup>2</sup> )
Pyroshield 2	2	1300 x 550	0.715
	4	1300 x 310	0.4

1. The heights and widths listed are the maximum single dimension allowable for an individual pane utilising the relevant glazing system; maximum dimensions may not be increased even if the other dimension for the pane is reduced.
2. Glazed openings must not be less than 100mm from any door edge. Multiple apertures are acceptable up to the maximum approved area, with a minimum dimension of 80mm between apertures. The aperture shape is not restricted, providing the intumescent material and beads are proven to be compatible with that shape.
3. Glazing bead fixings must be retained in position with 60mm long x 2mm diameter steel pins or 60mm long No 6-8 screws, inserted at 35-40° to the vertical at no more than 50mm from each corner and at 150mm maximum centres. Pneumatically fired pins are acceptable providing they meet the specification given above.
4. Timber for glazing beads must be straight grained joinery quality, free from knots, splits and checks.
5. False timber beads must not be applied across the glass face without specific test evidence to justify the system used.
6. Sectional drawings detailing the tested and approved proprietary glazing systems are contained in appendix B.

## 8 Door Frames

### 8.1 Door frame construction

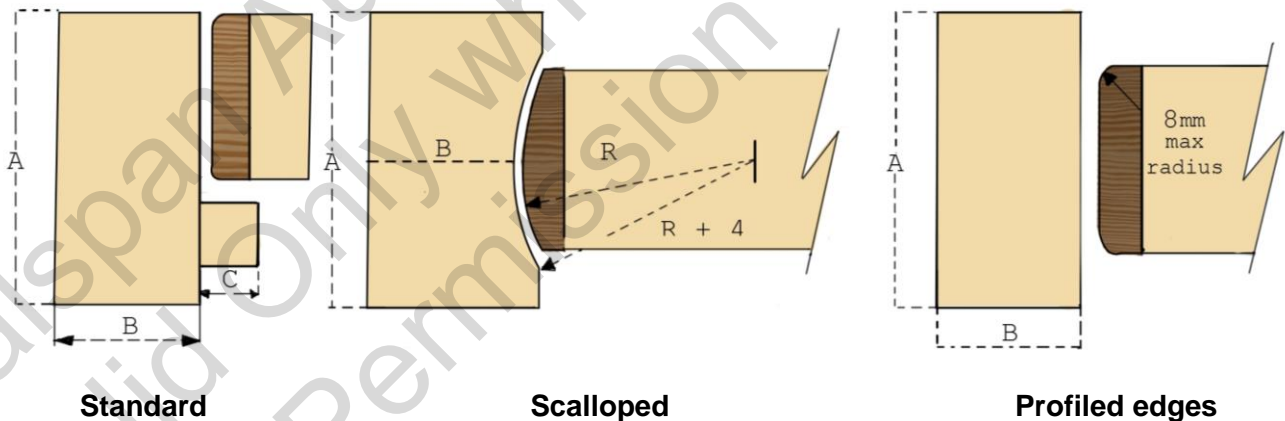
Timber based door frames for Halspan® 60 **Prima** must be constructed to meet the following specification (for steel door frame options see appendix A).

Material	Minimum Section Size (mm)	Minimum Density (kg/m <sup>3</sup> )	Permitted Configurations	Max Leaf Dimensions (mm)
Hardwood <sup>1</sup> (with reduced intumescent)	70 x 32 <sup>3</sup>	640	LSASD, ULSASD, DASD, LSADD, ULSADD, DADD	See relevant data sheet in appendix F
Hardwood <sup>1,2</sup>	70 x 32	530	LSASD & ULSASD	2100 (h) x 900 (w)
Hardwood <sup>1,2</sup>	70 x 44	530	All	All
Hardwood <sup>1,2</sup>	70 x 22	640	All	All
MDF <sup>2</sup>	70 x 30	700	All	2440 (h) width not restricted

1. The use of beech, *Fagus Sylvatica*, is not permitted for 60 minute applications
2. Not permitted for use with reduced intumescent specification
3. If the doorset features a transomed overpanel, the door frame must be hardwood with a minimum density of  $640\text{kg/m}^3$  and with a minimum section of  $70\text{mm} \times 32\text{mm}$ .
4. Timber for door frames must be straight grained joinery quality hardwood, free from knots splits and checks.
5. A 12mm deep planted or integral stop is adequate for single acting frames whilst double acting frames may be scalloped or square (see diagram below). However, a 14mm deep stop is required when using the Dorma ITS 96 concealed closer mounted in the leaf head – see section 14 for details.
6. Frame joints may be mortice and tenoned, mitred, half lapped or butted and with no gaps. All jointing methods require mechanical fixing with the appropriate size ring shank nails or screws.
7. Hinge fixings must be fit for purpose and if they penetrate through the rear of the frame, a sub frame of the same hardwood will be required. The entire screw length must be within a timber substrate.
8. The door frame (MDF or timber based) may be entirely clad in 2mm thick PVC sheeting for use with leaves either with or without 2mm thick PVC edge protectors (see section 10) and facing material (see section 11).

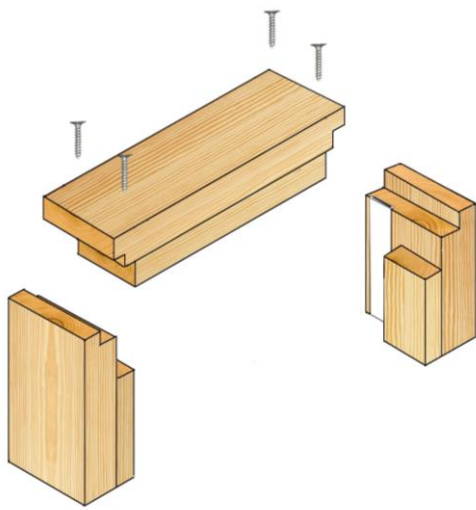
The following diagram depicts the assessed frame profiles and dimensions:

A = min 70mm  
R = radius from floor spring  
B = min 22 - 44mm (see table above)  
C = min 12mm  
8mm max radius to create a maximum 2mm edge profiling

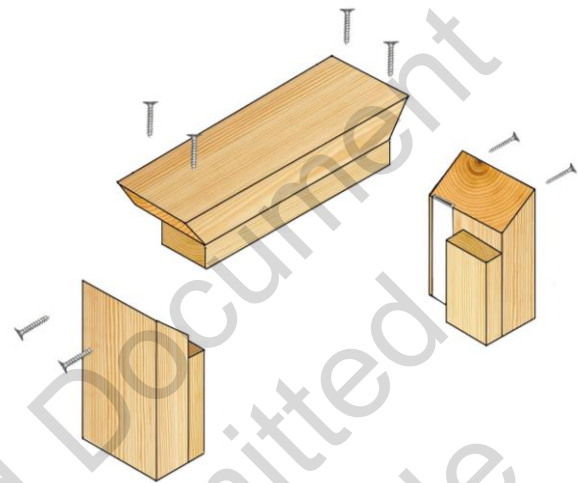


## 8.2 Door Frame Joints

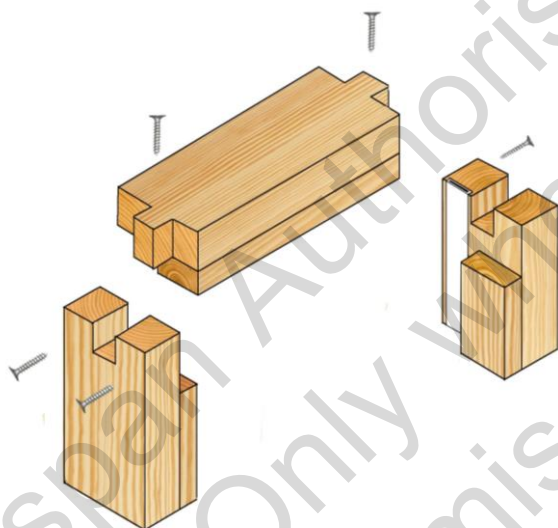
The following diagrams illustrate approved joints types.



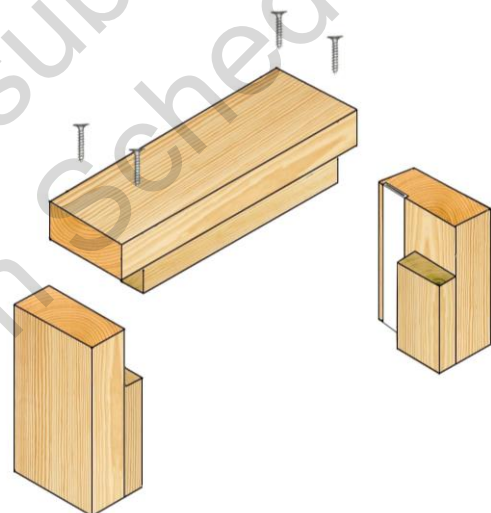
Half Lapped Joint



Mitre Joint



Mortice and Tenon Joint

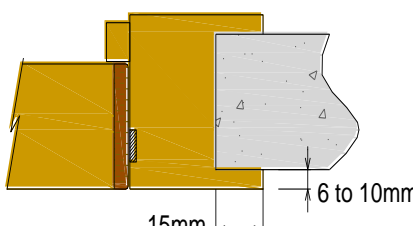
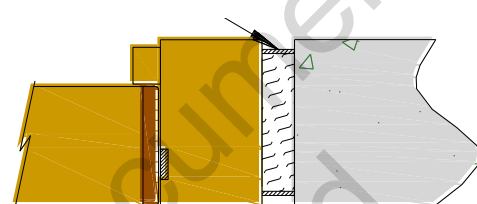
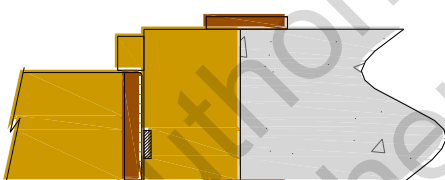
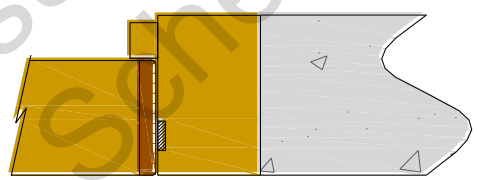
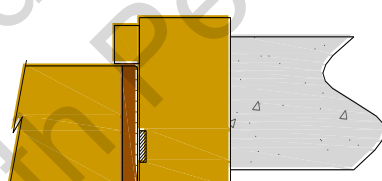
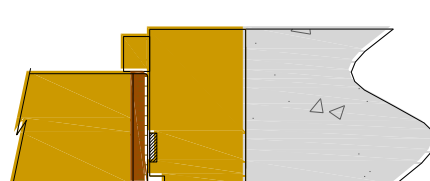


Butt Joint



### 8.3 Door frame installation

The following diagrams indicate acceptable and unacceptable frame installations:

Permitted Installations	
 <p>6-10mm is the maximum a frame is permitted to be proud of the structural surround when combined with a 15mm bolection return. Projecting frames outside these dimensions will require specific test evidence or assessment.</p>	<p>Max 10 x 10mm shadow gap with 2mm intumescent mastic capping or 10 x 4mm PVC encased intumescent seal</p>  <p>Shadow gaps are permitted as shown in the above diagram providing the frame to structural surround is infilled with timber of the same density as the frame or a non combustible material such as plasterboard. Other shadow gap dimensions will require specific test evidence or assessment.</p>
 <p>Architraves overlapping the frame to structural surround junction are always permitted where required but may be mandatory depending on the size of frame to surround junction gap and the fire stopping used. See section on Sealing to the Structural Surround.</p>	 <p>Depending on the size of the frame to surround junction gap and the fire stopping methods used, it may be permitted to install doorsets without architraves. See section on Sealing to the Structural Surround.</p>
Not Permitted Installations	
 <p>Projecting frames without bolection returns are not permitted without specific test evidence or assessment due to the potential for increased charring to the back of the frame.</p>	 <p>Quirks between the leaf and frame are not permitted without specific test evidence or assessment due to the potential for increased charring of the leaf to frame gap.</p>

The diagrams above are representative; actual installation must be as the text within this document specifies. See section 20 for sealing to structural opening.



## 9 Lipping Materials

### 9.1 Timber Lippings

Halspan® 60 **Prima** must be lipped in accordance with the following specification. The lipping specifications for steel frame doorsets are contained in appendix A.

Material	Size (mm)	Min Density (kg/m <sup>3</sup> )
Straight grained, joinery quality hardwood <sup>1</sup> , free from knots, splits and checks.	<ol style="list-style-type: none"> <li>1. Flat = 6 – 18 thick with a maximum of 2mm profiling permitted at corners of lipping (see section 8.1)</li> <li>2. Rounded = 8 – 18 thick with a radius matching the distance between leaf edge and floor pivot (see section 8.1)</li> <li>3. Rebated = 20 – 30 thick with a 13mm deep equal rebate</li> </ol>	640

1. The use of beech, *Fagus Sylvatica*, is not permitted for 60 minute applications.
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.
4. Single and double doorsets without overpanels only require lipping on the vertical edges but may be additionally lipped on the top and bottom edges if required.
5. Leaves to doorsets with flush overpanels must be lipped on the vertical edges and additionally at the bottom edge of the overpanel and top edge of the doors.
6. Double doorsets without flush overpanels may use square or rebated meeting edges.
7. Double doorsets with flush overpanels may use a rebated overpanel junction and rebated meeting edge junction concurrently.
8. A 2.5° chamfer is permitted to the lipping at the leading edge of leaves providing the door gaps meet the requirements of section 17.

### 9.2 PVC Lippings

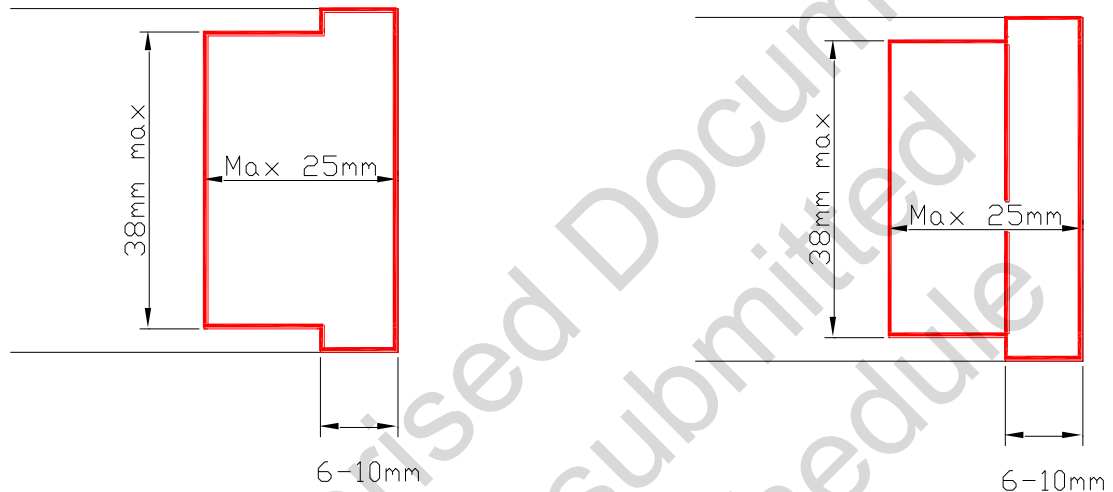
Halspan® 60 **Prima** may be lipped with PVC in accordance with the following specification.

Material	Size (mm)
PVC	2 thick

Can be fitted directly to the Halspan® 60 **Prima** core or onto hardwood lippings as per section 9.1

### 9.3 'T' Section Lippings

In certain circumstances, a 'T' section lipping may be required which will be bonded into a groove machined in the edge of the leaf. This option is acceptable providing the tongue is a maximum of 38mm wide and otherwise meets the specification given in section 9.1. The 'T' section lipping may be in two sections with the exposed lipping being within the range of 6 – 10mm thick. All glue lines must be as stated in section 13. See drawings below:



## 10 Edge Protectors

Fire resistance test RF02083 justifies the use of PVC 2mm thick edge protectors reference 'Type 1, 2, 3, and 4' (see appendix E for sketch details) on the vertical edges of the door leaves. The minimum intumescent specification given in appendix F must be maintained and the relevant glue lines specified in section 13 must be used. The edge protectors are suitable for use with leaves installed within both timber based and steel based frames. The PVC protectors may be used on double and single leaf doorsets alike.

The performances obtained and the leaf sizes tested in RF02083, when using the PVC edge protectors, will enable the use of these edge protectors on limited door leaf dimensions albeit on all configurations assessed in this report. The maximum leaf dimensions (whichever is the smaller between the appendix graphs and the table below) are therefore as follows:

Doorset Configuration	Maximum Height and Width	
	Type 1 and 3	Type 2 and 4
Single leaf doorsets	2090mm high x 853mm wide	2212 high x 902 wide
Double leaf doorsets	2040mm high x 828mm wide	2162 high x 877 wide

## 11 Leaf Facing Materials

### 11.1 General

The basic 54mm thick Halspan® 60 **Prima** leaf construction has integral facings and does not therefore require additional facing materials as standard.

### 11.2 Alternative Facing Materials

If MDF or plywood faced leaves are required for a particular end use application, the leaf construction and facing materials must meet one of the following specifications:

#### 11.2.1 Option 1

Reduce the Halspan® 60 **Prima** 54mm thick particleboard by sanding down to 48mm thick and bonding 3mm thick MDF (min density 730kg/m<sup>3</sup>) or 3mm thick plywood (min density 650kg/m<sup>3</sup>) onto each face. Facings may oversail or butt up to the lippings.

The facings must be bonded using urea or phenol formaldehyde type adhesives.

#### 11.2.2 Option 2

Reduce the Halspan® 30 **Prima** 44mm thick particleboard by sanding down to 42mm and bonding 6mm plywood (min density 650kg/m<sup>3</sup>) or 6mm MDF (min density 730kg/m<sup>3</sup>) skins onto each face, which must butt up to the applied lippings.

The facing must be bonded using urea or phenol formaldehyde type adhesives.

#### 11.2.3 Option 3

Using Halspan® 30 **Prima** 44mm thick particleboard and bonding 5mm thick WBP Far Eastern plywood (min density 650kg/m<sup>3</sup> and minimum grade BB/CC) onto each face which must butt up to the applied lippings.

The facing must be bonded using urea or phenol formaldehyde type adhesives

### 11.3 Grooves

Both sides of Halspan® 60 **Prima** door leaves may be grooved to the following specification. Grooves may coincide with the top and bottom of glazed apertures:

#### 11.3.1 Option A

Element	Details	
Max groove size (mm)	5 wide x 4 deep	
Proximity to door edges (mm)	Horizontal Grooves	≥ 150 from top and bottom
	Vertical Grooves	≥ 150 from sides
Groove spacing	Maximum 6 No. grooves divided between horizontal and vertical orientations as required	
Orientation	Vertical or horizontal	
Configuration	Latched and unlatched, single and double acting, single and double leaf doorsets	
Leaf size range	All	
Intumescent seal dimensions	All	

### 11.3.2 Option B

Element	Details	
Max groove size (mm)	15 wide x 8 deep in filled with hardwood timber (density $\geq 640\text{kg/m}^3$ ). The hardwood insert can be machined with a decorative 4mm deep x 5 wide groove or a 4 deep 'V' groove	
Adhesive	The hardwood insert must be tightly fitted and glued on all edges using a PVA adhesive	
Proximity to door edges (mm)	Horizontal Grooves	$\geq 150$ from top and bottom
	Vertical Grooves	$\geq 150$ from sides
Groove spacing (mm)	Maximum 8 No. grooves divided between horizontal and vertical orientations as required and spaced minimum 150mm apart	
Orientation	Vertical or horizontal	
Configuration	Latched and unlatched, single and double acting, single and double leaf doorsets	
Leaf size range	All	
Intumescent seal dimensions	All	

### 11.4 Decorative and Protective Facings

The following facing materials are permitted for this door design since they would degrade rapidly under test conditions without significant effect:

Facing Material	Maximum Permitted Thickness (mm)
Paint	0.5
Timber veneers	2
Plastic laminates	2
PVC	2
Cellulosic and non-metallic foils	0.4

1. Metallic facings are not permitted except for push plates and kick plates (see section 15.6)
2. The door leaf thickness may be reduced by a total maximum of 0.5mm for calibration purposes in order to accommodate the chosen finish
3. Other than PVC, materials must not return around leaf edges
4. Materials must not conceal intumescent strips
5. The PVC may be post-formed over the vertical and horizontal edges provided that the required intumescent specification detailed in appendix F is maintained. The maximum radius at the corners of the leaf for post formed doors is 8mm, see diagram in section 8.1 for details.

## 12 Intumescent Materials

The intumescent materials tested and assessed for this doorset design are as follows:

Application	Location	Product/Manufacturer
Edge seals	Fitted in the frame jambs or leaf edges	<ol style="list-style-type: none"> <li>1. PVC encased Therm-A-Seal – Intumescent Seals Ltd</li> <li>2. PVC encased Type SLS – Halspan Ltd</li> <li>3. PVC encased 500P – Mann McGowan Ltd</li> <li>4. PVC encased Palsuol 100 – Lorient Polyproducts Ltd/Mann McGowan Ltd</li> <li>5. PVC encased Type 617 – Lorient Polyproducts Ltd</li> <li>6. PVC encased Pyroplex – Pyroplex Ltd</li> <li>7. PVC encased STS 154FO – Sealed Tight Solutions Ltd</li> </ol>
Hinges	Underneath both hinge blades	<ol style="list-style-type: none"> <li>1. 1mm Interdens - Dufaylite Developments Ltd</li> <li>2. 1mm MAP paper - Lorient Polyproducts Ltd</li> <li>3. 1mm Pyrostrip 300 - Mann McGowan</li> <li>4. 1mm Therm-A-Strip - Intumescent Seals Ltd</li> <li>5. 1mm SLS-PAD-106 – Halspan Ltd</li> <li>6. 1mm STS Graphite – Sealed Tight Solutions Ltd</li> </ol>
Lock/latches	Under forend & keep	<ol style="list-style-type: none"> <li>1. 1mm Interdens - Dufaylite Developments Ltd</li> <li>2. 1mm MAP paper - Lorient Polyproducts Ltd</li> <li>3. 1mm Pyrostrip 300 - Mann McGowan</li> <li>4. 1mm Therm-A-Strip - Intumescent Seals Ltd</li> <li>5. 1mm STS Graphite – Sealed Tight Solutions Ltd</li> <li>6. 1mm SLS-PAD-106 – Halspan Ltd</li> </ol>
Top pivots & flush bolts	Lining all sides of the mortices including pivot housings and flush bolt keeps	<ol style="list-style-type: none"> <li>1. 2mm Interdens - Dufaylite Developments Ltd</li> <li>2. 2mm MAP paper - Lorient Polyproducts Ltd</li> <li>3. 2mm Therm-A-Strip - Intumescent Seals Ltd</li> <li>4. 2mm Therm-A-Flex - Intumescent Seals Ltd</li> <li>5. 1mm SLS-PAD-107 – Halspan Ltd</li> </ol>

The seal specification for each configuration is contained in appendix F

### 13 Adhesives

The following adhesives must be used in construction:

Element	Product/Manufacturer
MDF or Plywood facings	Urea formaldehyde (UF) Phenol Formaldehyde (PF)
Timber lippings	UF, PF, PVA, PVAC or PU
PVC lippings	Contact adhesive

### 14 Tested Hardware

The following hardware has been successfully incorporated in the tests on Halspan® 60 Prima doorsets:

Element	Manufacturer and Product Reference
Hinges	<ol style="list-style-type: none"> <li>100 x 30mm standard steel butt hinges</li> <li>101 x 30mm Fireblock stainless steel hinges</li> <li>Royde &amp; Tucker H105 lift off hinges</li> <li>Royde &amp; Tucker H101 lift off hinges</li> <li>Cairney Hardware SOSS type hinges</li> <li>114 x 30mm ASSA lift off type butt hinge ref: 3244</li> <li>101 x 30mm Halspan R60 butt hinge ref: BOM-HIN-200/1</li> </ol>
Closers	<ol style="list-style-type: none"> <li>Dorma TS83 face fixed overhead closer</li> <li>Geze TS200 VW face fixed overhead closer</li> <li>Halspan R60 Eco closer ref: CLR-AGN-101</li> <li>Halspan R60 power closer ref: CLR-BSS-101</li> <li>Cairney Hardware Ltd Mitron C2300 concealed overhead closer</li> <li>ITS 96 concealed overhead closer with tested proprietary intumescent system</li> <li>Dorma BTS75V floorsprings</li> </ol>
Locks/latches	<ol style="list-style-type: none"> <li>Standard tubular mortice latch</li> <li>Ferco multi point lock/latch</li> <li>Halspan R60 latch/lock ref: BOM-LCK-104</li> <li>Cairney Architectural Hardware Solutions – C4100 Shearmag lock</li> </ol>
Threshold seals	<ol style="list-style-type: none"> <li>Halspan threshold drop seal ref: SAC PA 08935 ref: SLS-DRP-100 range</li> <li>Norsound threshold drop seal ref: 810</li> </ol>

1. The GU Ferco 3 Deadbolt requires a 25 x 4mm thick intumescent strip in the closing edge frame reveal in lieu of the specification shown in appendix F and can only be used on single leaf doorsets of maximum leaf height 2231mm, and must be used in a hardwood (640kg/m<sup>3</sup>) door frame.
2. The Cairney Hardware Shearmag lock must be used in conjunction with a twin strip perimeter intumescent specification at the head of the door in conjunction with the Halspan intumescent protection pack fitted around the body of the lock
3. The Cairney Hardware Mitron C2300 concealed overhead closer must be used in conjunction with a twin strip perimeter intumescent specification at the head of the door in conjunction with the Halspan intumescent protection pack fitted around the body of the closer
4. The Dorma ITS 96 concealed overhead closer may be used with a single strip perimeter intumescent specification providing the strip is  $\geq 25 \times 4\text{mm}$  and centrally fitted. The closer may also be used with a twin strip perimeter intumescent specification at the head of the door providing the seals are  $\geq 15 \times 4\text{mm}$ . The closer must always be used in conjunction with the proprietary intumescent pack to be provided by the supplier of the closer. The door stop will need to be a minimum depth of 14mm to accommodate the closer.
5. Locksets with forends/keeps  $\geq 150\text{mm}$  high must either be used with a twin strip perimeter intumescent specification or if a single strip system is to be used an additional seal must be fitted to run along side the forend/keep.

## 15 Additional & Alternative Hardware

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 CE Mark:

- Latches & Locks: Test Standard EN 12209
- Single Axis Hinges: Test Standard EN 1935
- Controlled Door Closing Devices: Test Standard EN 1154
- Door Co-ordinators: Test Standard EN 1158
- Electro-Mechanically Operated Locks: Test Standard EN 14846

### 15.1 Latches & Locks

Latches and locks must either be as tested, or alternatively components with the following specification are acceptable:

Element	Specification
Maximum forend and strike plate dimensions:	235mm high by 25mm wide by 4mm thick
Maximum body dimensions:	18mm thick by 100mm wide by 165mm high.
Intumescent protection:	See section 12
Materials:	All parts essential to locking/latching action, including latch bolt, forend and strike to be steel or stainless steel
Position	1000 -1200mm from the threshold



## 15.2 Hinges

Leaves < 2400mm (h) must be hung on a minimum of 3 hinges. Leaves ≥ 2400mm (h) must be hung on 4 hinges. Hinges with the following specification are 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	
Hinge positions:	If 3 hinges are required:	Top	100 –180mm from leaf head to top of hinge
		2 <sup>nd</sup>	Minimum 200mm from top hinge or centrally fitted between top and bottom hinge. Additional hinges may be fitted equispaced between 2 <sup>nd</sup> and bottom.
		Bottom	150 - 250mm from the leaf foot to the bottom of the hinge
	If 4 hinges are required:	Top	100-180mm from the head to top of hinge
		2 <sup>nd</sup> & 3 <sup>rd</sup>	Equispaced between top and bottom or 2 <sup>nd</sup> hinge a minimum of 200mm from top hinge and 3 <sup>rd</sup> hinge equally spaced between 2 <sup>nd</sup> and bottom hinge. Additional hinges may be fitted with 3 <sup>rd</sup> and 4 <sup>th</sup> equispaced between 2 <sup>nd</sup> and bottom hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
Intumescent protection:		See section 12	

## 15.3 Automatic Closing

Automatic closing devices must be as tested or components that have demonstrated contribution to the required 60 minutes performance of this type of flush doorset design and intumescent specification (as in appendix F), at a similar leaf thickness and when tested to BS 476-22:1987 or BS EN 1634-1.

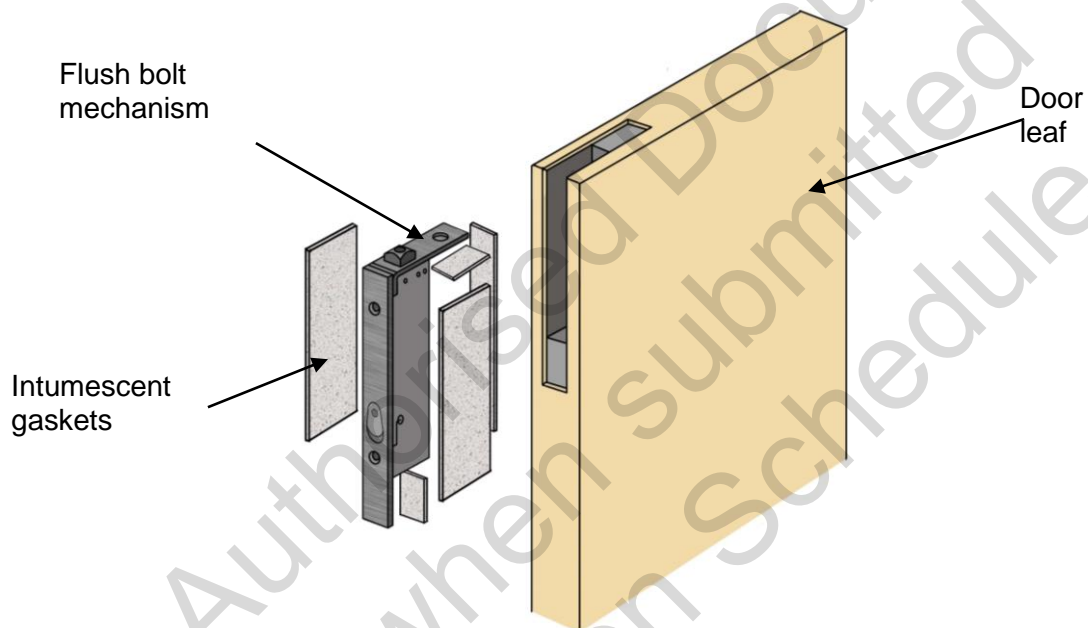
The top pivots and frame housing to floorspring assemblies must be protected with 1mm or 2mm thick intumescent gasket (as specified in section 12) or alternatively the manufacturers tested intumescent gaskets.

#### 15.4 Flush Bolts

Flush bolts may be incorporated centrally into the top and bottom of one meeting edge, providing the following maximum dimensions are not exceeded and the components are fitted opposite the edge fitted with intumescent strips:

- 200mm long x 20mm deep x 20mm wide.

Flush bolts must be steel and the mortice must be as tight to the mechanism as is compatible with its operation. All edges of the mortices, including keep plates, must be protected with intumescent gaskets as specified in section 11. Alternatively the hardware manufacturers tested gaskets may be used.



#### 15.5 Pull Handles

Steel, stainless steel or bronze handles may be surface-fixed or bolted through the door leaf, providing the length is limited to 1200 mm between the fixing points. If through fixed, there must be no more than 1mm clearance between the hole and stud.

#### 15.6 Push Plates & Kick Plates

Steel or stainless steel face-fixed hardware such as push plates and kick plates may be fitted to the doorsets and may be recessed to a maximum depth of 2mm on both sides of the door leaf. 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.

#### 15.7 Panic Hardware

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.

## 15.8 Door Selectors

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

## 15.9 Environmental Seals

Silicon based flame retardant acoustic, weather and dust seals (e.g. Halspan Triple Fin ref: SLS-TRI-100 range, Norsound 710, Lorient IS1212, IS1511, IS7025, IS7060) may be fitted to this doorset design with out 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.

### 15.10 Threshold Seals

The following types of automatic threshold drop seals may be recessed in to the bottom rail of leaves to this design with out compromising the performance:

Manufacturer	Product
Halspan	SLS-DRP-100 range
Lorient Polyproducts	IS8010si
Raven	RP8Si
Athmer	Schall-Ex Duo L-15
Norsound	810

### 15.11 Letter Boxes/Plates

Letter boxes/plates may be fitted providing the product has demonstrated contribution to the required integrity performance of this type of doorset design, when tested to BS 476-22:1987 or BS EN 1634-1, when installed in a timber based doorset of comparable thickness. Products may be fitted up to 1200mm from floor level and no closer than 100mm to any leaf edge.

## 15.12 Air Transfer Grilles

### 15.12.1 General

Air transfer grilles may be fitted providing the product has suitable test evidence to BS 476-22:1987 or BS EN 1634-1 that demonstrates a minimum 60 minutes integrity performance when installed within a timber based doorset of comparable thickness. Margins to the leaf edges will remain as detailed for glazing and the position of the unit will be dictated by the pressure regime tested in the proving evidence (normally below mid height). The area occupied by the air transfer grille must not exceed that proven by the supporting fire test for the specific type of grille being used, and must be deducted from the area of glazing, if both elements are fitted.

### 15.12.2 Pyroplex Air Transfer Grilles

Based on the available test evidence the following Pyroplex air transfer grilles have been considered acceptable for use with the Halspan® 60 **Prima** design.

The grilles must be fitted 100mm from the edge of the door leaf and 80mm apart if more than one grille is to be fitted. The area occupied by the air transfer grille must be deducted from the area of glazing, if both elements are fitted. The grilles may be fitted up to a maximum height of 2200mm from the threshold unless otherwise stated.

Part No.	Dimensions (mm)	Air Flow (sq. cm)	Compatible Faceplates
ATG 1500	150 x 150	153	FP1500
ATG 1503	150 x 300	307	FP1503
ATG 1300	300 x 300	614	FP1300
ATG 2251*	112 x 225	161	FP2251
ATG 2250*	225 x 225	323	FP2250

\*ATG 2251 and ATG 2250 must only be used above 1000mm height from the threshold of the door

The Pyroplex air transfer grilles must be installed in accordance with the manufacturer's installation details, which include a 6mm thick hardwood aperture liner and Pyroplex intumescent mastic applied around the perimeter of the grille. Full details can be obtained from Pyroplex Ltd.

### 15.13 Cable-Way

Based on the integrity performance of the doorset construction, with no burn through of the core material, we consider it acceptable to allow the provision for a concealed cable-way to facilitate electro-magnetic closing/latching mechanisms. The cable-way must be concealed in the following way:

1. A hole drilled centrally through the leaf of maximum 10mm diameter.
2. The cable for the electronic closing/latching mechanisms must be no more than 2mm smaller in diameter than the hole through the leaf.
3. The cable for the electronic closing/latching mechanism must be PVC encased
4. Cable ways are only permitted for use with latched, single leaf, single acting doorsets with maximum leaf dimensions of 2100mm (h) x 900mm (w).
5. The hole must be located below 1500mm from the threshold and must be spaced a minimum of 90mm from any apertures within the leaf e.g. glazing, air transfer grilles or letter plates etc.

This approval is subject to the hardware manufacturer having the appropriate test evidence for the product for use with this type of 60 minute construction. Test evidence generated in steel doorsets is not acceptable. Any tested intumescent gaskets for the lockset, closing mechanism, receiver plate, cable loops etc. must be replicated.

#### 15.14 Security Viewers

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.

#### 16 Classification of Timber

All timber must meet or exceed class J30 as specified in BS EN 942:2007, providing any defects are adequately repaired.

#### 17 Door Gaps

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

Location	Dimension
Door edge gaps	Representative of those tested but as a guideline, a minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud of each other or from the door frame by more than 1mm.
Threshold	10mm between bottom of leaf and top of floor covering <sup>1</sup>

<sup>1</sup> 10mm is the maximum tolerance for fire resistance integrity only. Where smoke control is required refer to section 22.

#### 18 Structural Opening

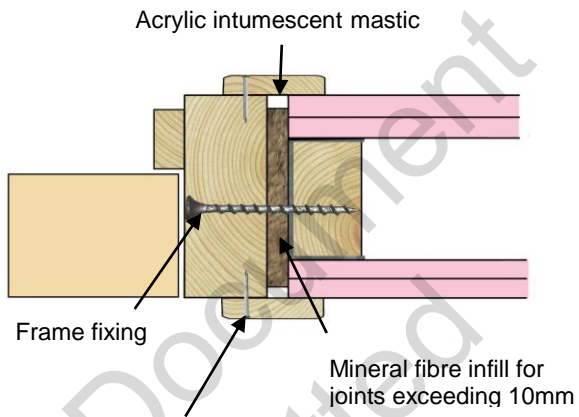
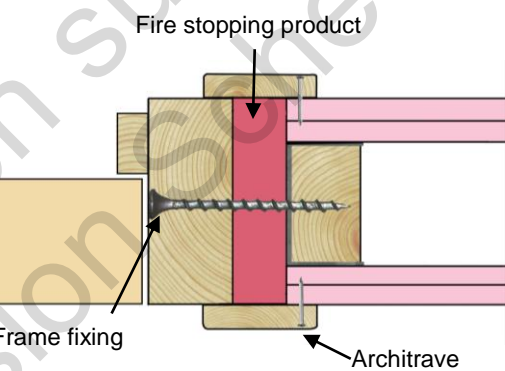
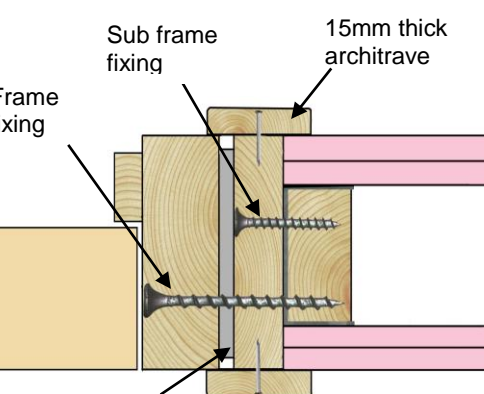
The supporting construction must provide the required level of fire resistance designated for the doorset design and be a suitable medium to permit adequate fixity.

#### 19 Fixings

The frame jambs are to be fixed to the supporting construction using steel fixings at 600mm maximum centres. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 40mm. It is not necessary to fix the frame head, although packers must be inserted.

## 20 Sealing to Structural Opening

The door frame to structural opening gap must be protected using one of the following methods:

<p>1. Gaps up to 10mm must be sealed on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476-22:1987 or BS EN 1634-1. Joint must be fitted with 15mm thick, architraves overlapping at least 15mm each side.</p>	 <p>Acrylic intumescent mastic</p> <p>Frame fixing</p> <p>Mineral fibre infill for joints exceeding 10mm</p> <p>Architrave for joints not filled with mineral wool and optional for filled joints</p>
<p>2. Gaps between 10mm and 20mm 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 476-22:1987 or BS EN 1634-1. Architraves are optional.</p>	 <p>Fire stopping product</p> <p>Frame fixing</p> <p>Architrave</p>
<p>3. Gaps up to 20mm filled with proprietary fire stopping product (e.g. expanding PU foam or preformed compressible intumescent foam). Products must be tested for this application to BS 476-22:1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.</p>	 <p>Sub frame fixing</p> <p>15mm thick architrave</p> <p>Frame fixing</p> <p>10mm of acrylic intumescent mastic or full depth PU foam</p>

Guidance for sealing the frame to structural opening gap is also given in BS 8216 "*Timber-based fire doors assemblies. Code of practice*", which may be referred to where appropriate.



## 21 Insulation

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

Type		Details
Partially insulating		Doorsets incorporating up to 20% of non-insulating or partially insulating glazing
Fully insulating	Timber frames	Unglazed doorsets or doorsets glazed with 25mm thick Pyrobel (see section 7.6)
	Steel frames back filled with mortar/concrete	Unglazed doorsets or doorsets glazed with 25mm thick Pyrobel (see section 7.6)

## 22 Smoke Control

### 22.1 General

If the doorset design is required to provide a smoke control function to comply with Building Regulations, in the absence of a suitable pressurisation system, the doorset must meet one of the following criteria:

- (a) have a leakage rate not exceeding  $3\text{m}^3/\text{m}/\text{hour}$  (head and jambs only) when tested at 25Pa under BS 476 *Fire tests on building materials and structures*, Section 31.1 - *Methods for measuring smoke penetration through doorsets and shutter assemblies, Method of measurement under ambient temperature conditions*; or
- (b) meet the additional classification requirement of Sa when tested to BS EN 1634-3: 2004 - *Fire resistance tests for door and shutter assemblies*, Part 3 – *Smoke control doors*.

Smoke seals or combined intumescent/smoke seals that are fitted to the door to achieve the performance requirements specified above, must have been tested in accordance with the associated test method. Providing the smoke seals, any interruptions, door gaps, and the type/configuration of the doorset are consistent with the detail tested, the doorset will comply with current smoke control legislation under Approved Document B; and a suffix 'S' or 'Sa', as appropriate, may be added to the designation. Any other components installed where smoke leakage may occur must also be taken into account.

**Note:** The incorrect specification and fitting of smoke seals may impair the operation of a doorset and therefore compromise the fire resistance performance. Advice should be sought from the seal manufacturers regarding the correct specification and installation of smoke seals or combined smoke and intumescent seals.

### 22.2 Further Considerations

Note that there is other guidance available, including BS 9999-2017 - *Code of practice for fire safety in the design, management and use of buildings*, which may impose different or additional requirements, such as consideration of the gap between door leaf and threshold.

Responsibility for the appropriate smoke sealing specification and performance of the doors should be agreed between the relevant parties (i.e. specifier, manufacturer, contractor) prior to commencing manufacture and/or installation.



Additional guidance on smoke sealing is given in BS 8214: 2008, “Code of practice for fire door assemblies” and BS 9999: 2017 “Code of practice for fire safety in the design, management and use of buildings” both of which advise that for effective ambient smoke sealing the threshold gap should either be controlled to a maximum of 3mm or a suitably fire performance tested threshold drop down seal fitted (eg one of the types described in section 15.10 or below)

The following Halspan products can be used for smoke control purposes:

- Halspan Triple Fin (ref: SLS-TRI-100/2) – fitted in the frame reveal against the upstand of the stop
- Halspan Trident Seal (ref: SLS-TRI-103/5)
- Halspan threshold drop seal (ref: SLS-DRP-100 range) – fitted in the bottom edge of the leaf
- Norsound 810 drop seal – fitted in the bottom edge of the leaf
- Norsound 710 perimeter seal – fitted in the frame reveal against the upstand of the doorstep
- Norsound 720 perimeter seal – fitted in the leaf edge or frame reveal
- STS 154FS combined perimeter intumescent and brush smoke seal – fitted as specified in the relevant data sheets in appendix F
- STS 154FL combined perimeter intumescent and acoustic/smoke seal – fitted as specified in the relevant data sheets in appendix F

**Note:** The incorrect specification and fitting of smoke seals may impair the operation of a fire resisting doorset assembly such that integrity is reduced, or in the extreme case completely diminished.

## 23 Conclusion

If the Halspan® 60 **Prima** doorset design, constructed in accordance with the specification documented in this global assessment, was to be tested in accordance with BS 476-22:1987, it is our opinion that it would provide a minimum of 60 minutes integrity and insulation (subject to section 21).

## 24 Declaration by the Applicant

1. We the undersigned confirm that we have read and comply with obligations placed on us by FTSG Resolution No 82: 2001.
2. We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which this assessment is being made.
3. We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.
4. We are not aware of any information that could adversely affect the conclusions of this assessment.
5. If we subsequently become aware of any such information we agree to ask the assessing authority to withdraw the assessment.

Signed ..... 

Name: ..... William S .....

For and on behalf of Halspan Ltd



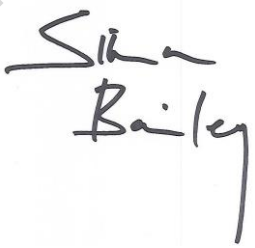

## 25 Limitations

The following limitations apply to this assessment:

1. This assessment addresses itself solely to the elements and subjects discussed and does not cover any other criteria. All other details not specifically referred to should remain as tested or assessed.
2. This assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available, Exova Warringtonfire reserves the right to withdraw the assessment unconditionally but not retrospectively.
3. This assessment has been carried out in accordance with Fire Test Study Group Resolution No 82: 2001.
4. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
5. This assessment relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions. 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.
6. This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with BS 476: Part 22: 1987, on the basis of the evidence referred to herein. We express no opinion as to whether that evidence, and/or this assessment, would be regarded by any Building Control authority as sufficient for that or any other purpose. This assessment is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

## 26 Validity

1. The assessment is initially valid until 8<sup>th</sup> August 2022, after which time it must be submitted to Exova Warringtonfire for technical review and revalidation.
2. This assessment report is not valid unless it incorporates the declaration given in Section 24 duly signed by the applicant.

<b>Signatures:</b>		
<b>Name:</b>	<b>S Bailey</b>	<b>R Newman</b>
<b>Title:</b>	Senior Product Assessor	Principal Technical Officer

**Note:** See Revisions table in appendix D for signatures for Revision N.

## Appendix A

### Halspan® 60 Prima Steel Frame Doorsets

#### 1. Introduction

This appendix contains information relating to Halspan® 60 **Prima** doorsets utilising steel door frames. The assessment uses the same extrapolation and interpretation techniques applied for the main assessment and is an evaluation of the potential fire resistance performance, if the elements were to be tested in accordance with BS 476-22:1987.

#### 2. General specification of construction

The door leaves for Halspan® 60 **Prima** steel framed doorsets are manufactured in accordance with the design as specified in section 2 of FEA/F96103 Revision M. All other aspects of the construction specification are identical to that detailed in the main assessment except where specifically discussed in the following paragraphs.

#### 3. Leaf sizes and configurations

The assessed leaf sizes and configurations are based on the constructions and performances obtained from the specimens tested in Warres 111201, RF01073 and RF01074. Data sheets specifying the maximum approved leaf sizes and graphs detailing the permitted gradient between height and width are contained in appendix F.

The maximum assessed overpanel height for steel framed doorsets is 500mm. Doorsets must use a flush overpanel to leaf head junction. Steel transomed assemblies are not permitted.

#### 4. Lippings

Steel framed Halspan® 60 **Prima** must be lipped on all edges in accordance with the following specification:

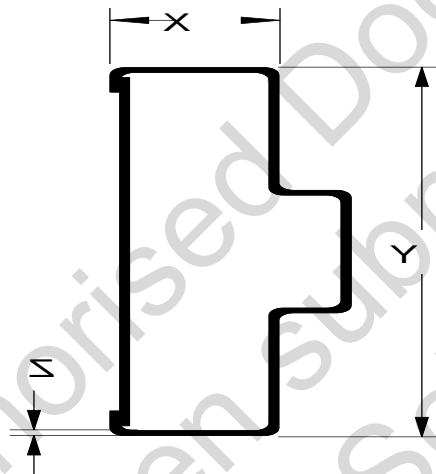
Material	Size (mm)	Minimum Density (kg/m <sup>3</sup> )
Straight grained, joinery quality hardwood, free from knots, splits and checks.	1. Flat = 6 – 13 thick with a maximum of 2mm profiling permitted at corners of lipping (see section 8.1)	640
	2. Rounded = 6 – 13 thick with a radius matching the distance between leaf edge and floor pivot (see section 8.1)	

## 5. Door frames

The tested frame specification for doorsets to this design comprised the following:

- Material: 1.5mm thick rolled mild steel
- Section: 151mm wide x 62mm thick excluding a 13mm deep x 48mm wide integral stop
- Head to jamb jointing detail

The door frames must be manufactured from mild steel as tested or alternatively stainless steel of the appropriate grade e.g. 304 or 316 may be used. The frame dimensions may be varied within the following parameters:



**X:** + or - 30%

**Y:** + or - 50% (providing the frame reveal dimensions are maintained)

**Z:** + 100 % and – 0%

Steel frames for doorsets without overpanels may be hollow or back filled with mortar or concrete. Plasterboard, mineral fibre, glass fibre, polyurethane expanding foam and ceramic wool must not be used

Steel frames for doorsets with flush overpanels must be back filled with mortar or concrete. Hollow frames, plasterboard, mineral fibre, glass fibre, polyurethane expanding foam and ceramic wool must not be used

Appendix F details the different leaf size scopes and intumescent specifications for hollow and backfilled frame constructions.

## 6. Fixings

Fixings must be of the appropriate type and length for the structural opening medium and must include a minimum of 1 fixing per 600mm of vertical edge, with a fixing no more than 350mm from the top and bottom corners and two across the head.

## 7. Sealing to Structural Opening

Gaps between door frames and structural openings must be protected with proprietary materials that have been successfully tested for this application.

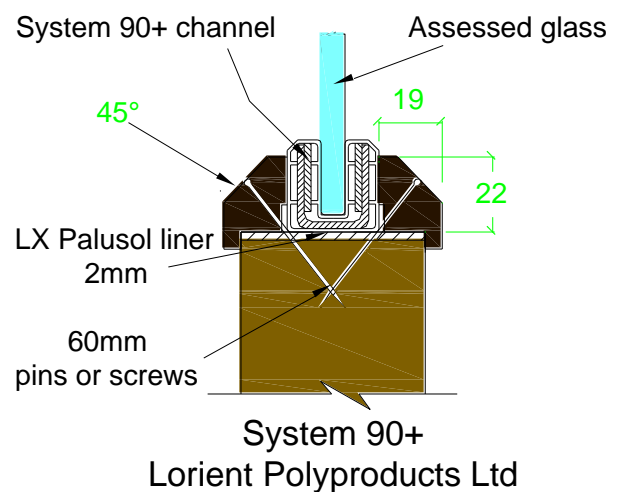
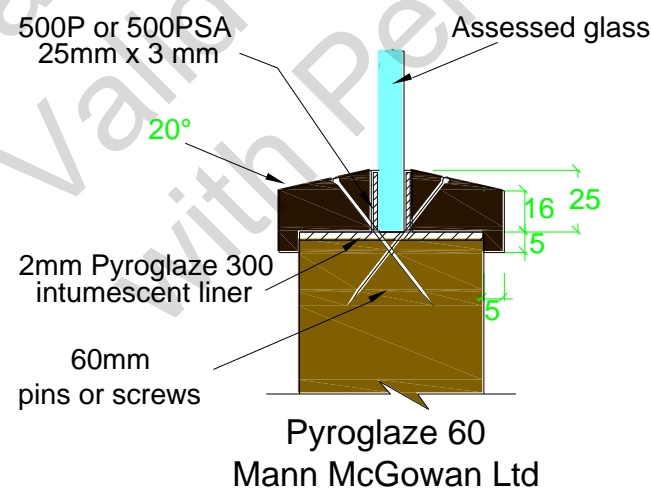
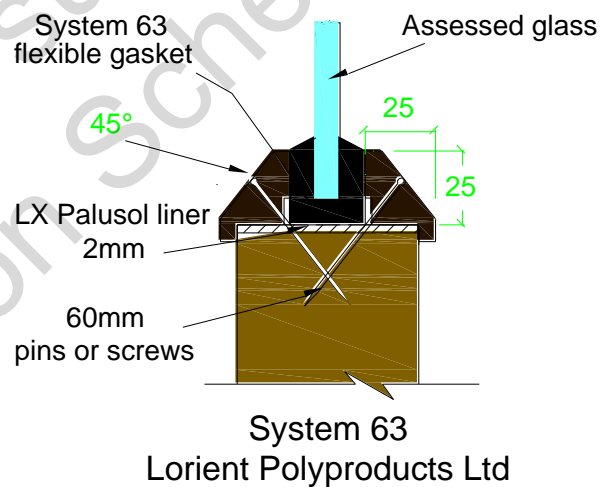
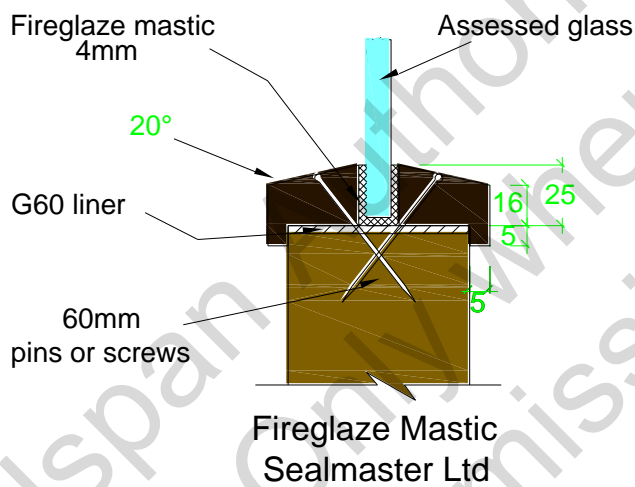
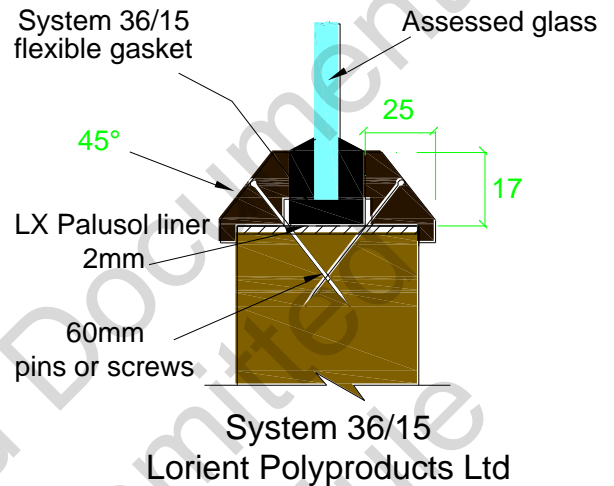
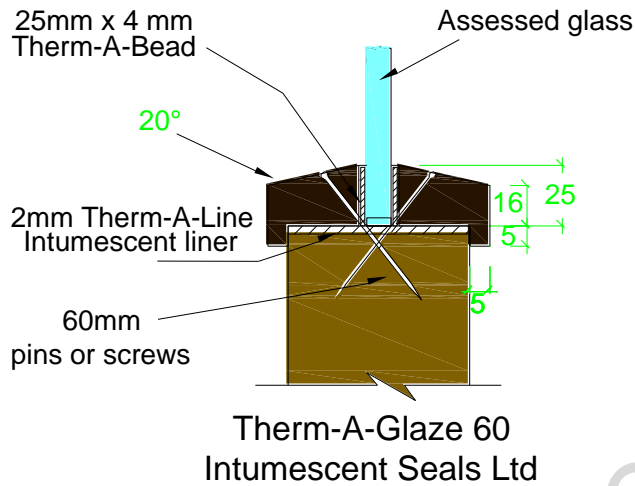
## 8. Structural openings

Halspan® 60 **Prima** steel framed doorsets may be fitted into the following types of structural opening:

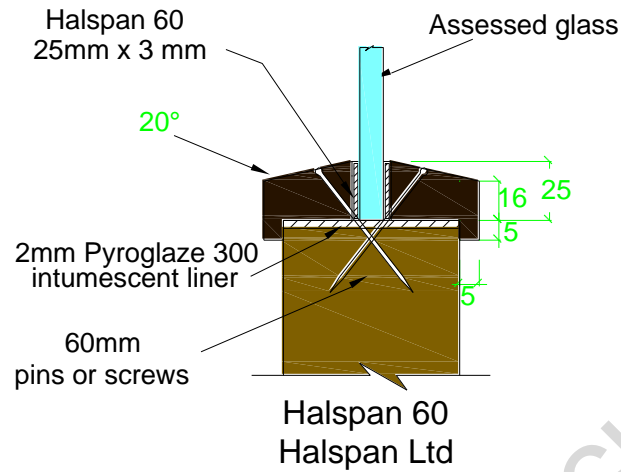
- Cast dense concrete
- Dense concrete blocks or brickwork
- Masonry
- Lightweight concrete
- Lightweight aerated concrete
- Timber stud partition
- Steel stud partition (apertures must be framed by steel studs, which have a minimum of 45 x 45mm softwood stiffeners to the vertical edges)

## Appendix B

### 60 Minute Glazing Systems

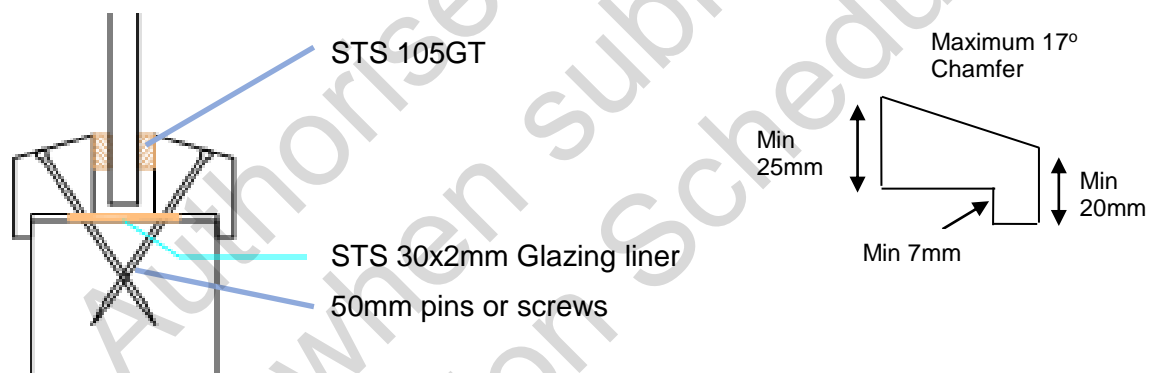




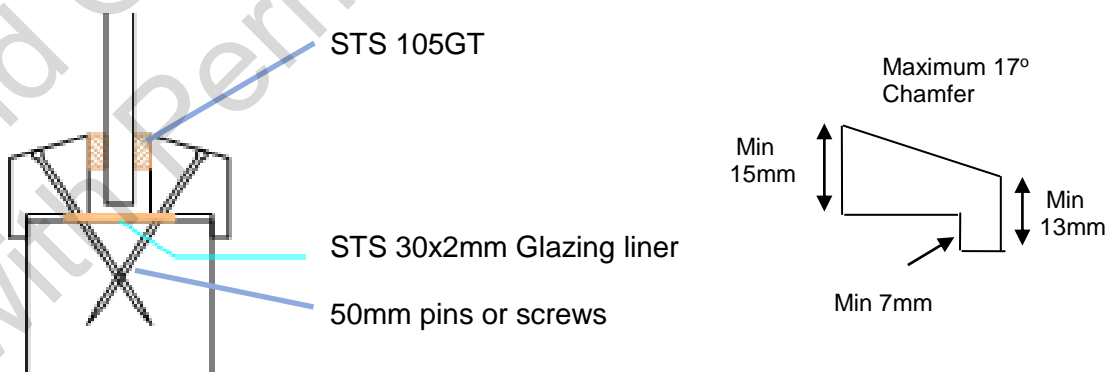


### Sealed Tight Solutions Glazing System ST105GT & 30x2 Liner

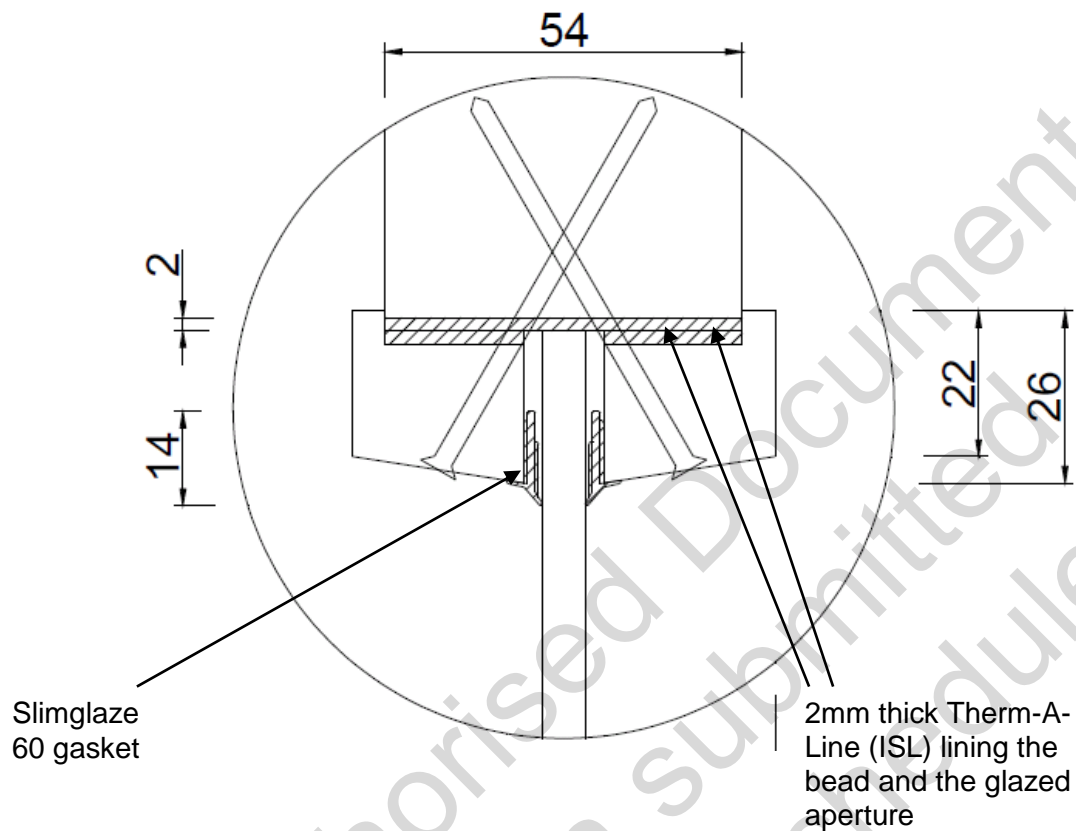
#### Option 1



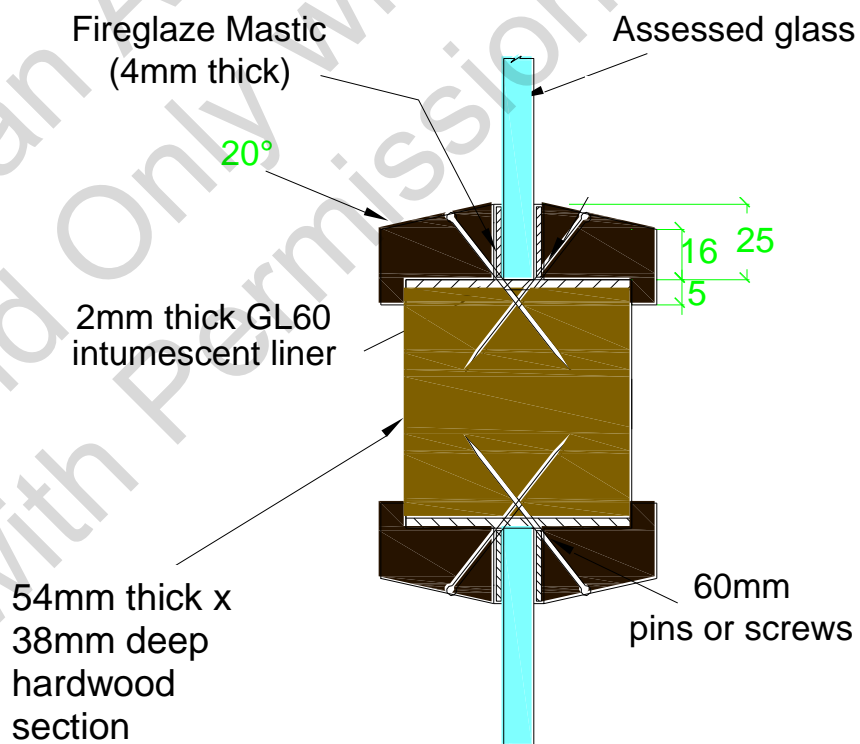
#### Option 2



### Halspan Slimglaze 60 System



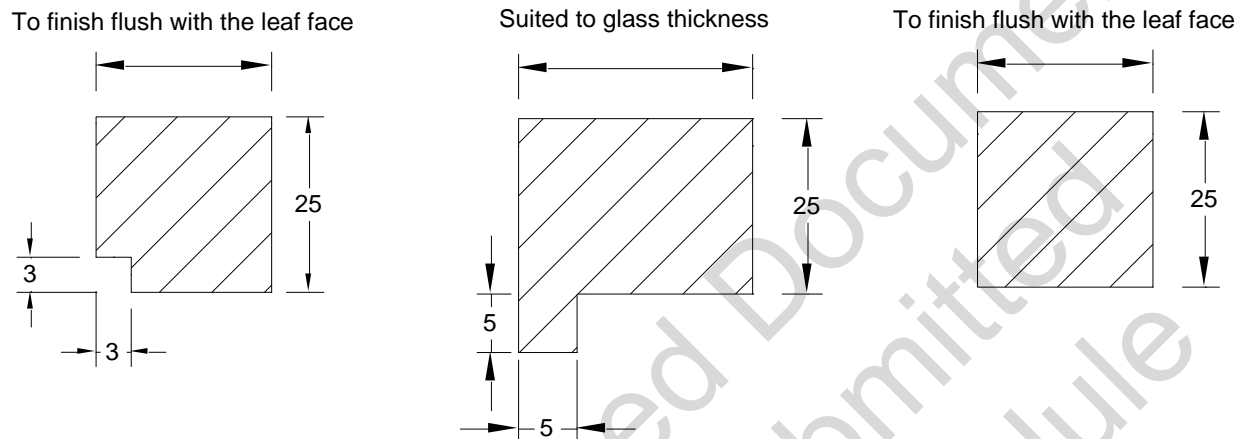
### Halspan® 60 Multipane glazing system



### Assessed Square Glazing Bead Profiles

The following square bead profiles may be used as an alternative to the splayed beads detailed above - refer to section 7 for glazing system and glass restrictions.

When utilising flush square beads, with or without quirks, the assessed aperture liner for the chosen glazing system may be concealed by trimming to a minimum of 40mm wide and recessing into the base of the glazing bead.



## Appendix C

### Performance Data

#### Primary Test Evidence

Test or Assessment	Configuration	Leaf Size (mm)	Test Standard	Performance (mins)*
RF96061 (bond up ply)	ULSADD	2040 830 52.5	BS 476-22:1987	55
RF96062 (bond up MDF)	DADD	2040 826 54	BS 476-22:1987	64
RF98051	ULSADD+OP	2150 900 54	BS 476-22:1987	64
Warres 111202 (hollow steel frames)	ULSADD	2042 826 54	BS 476-22:1987	69
RF00006A (glazing)	ULSASD	2100 900 54	BS 476-22:1987	60
RF01056 (glazing)	ULSASD	2040 825 54	BS 476-22:1987	61
RF01065 (PU glueline)	ULSADD	2040 826 54	BS 476-22:1987	66
RF01073 (backfilled steel frame)	ULSASD	2135 1105 54	BS 476-22:1987	78
RF01074 (backfilled steel frame)	ULSADD	2145 795 +300 59	BS 476-22:1987	76
RF02018 (Pyroplex)	DADD	2040 826 54	BS 476-22:1987	72

\* Integrity only

**Primary Test Evidence - continued**

<b>Test or Assessment</b>	<b>Configuration</b>	<b>Leaf Size (mm)</b>	<b>Test Standard</b>	<b>Performance (mins)</b>
RF02083 (Sureguard)	A: ULSADD B: ULSADD	2040 828/300 54	BS 476-22:1987	A: 60 B: 67
RF02125 (tall double doorsets, MDF frames and 500P)	ULSADD + OP	2700 + 250 825 54	BS 476-22:1987	59
RF03041	A: ULSADD  B: ULSASD	2135 826 + 300 54  2135 915 54	BS 476-22:1987	A: 61  B: 61
RF04074 (bond up ply)	LSASD	2040 923 54	BS 476-22:1987	67
RF06005	A: ULSASD B: ULSASD	2125 915 54	BS 476-22:1987	A: 75 B: 75
RF07032 (Type 617 intumescent seals)	A: ULSADD  B: ULSADD	2040 827/303 54  2040 827/304 54	BS 476-22:1987	A: 71  B: 60
RF07128 (Type 617 and 100P plus P.U foam fire stopping detail)	A: ULSASD  B: ULSASD	2441 1236 54  2441 1236 54	BS 476-22:1987	A: 72  B: 67
RF08035 (Halspan intumescent seals, plus additional hardware: closer and latch)	ULSADD	2054 910/413 54	BS 476-22:1987	64
PF15098 (STS 105GT & 30 x 2 liner glazing seals)	ULSADD	2300 1050/1050 54	BS 476-22:1987	55 <sup>1</sup> (perimeter)
PF15163 (STS intumescent seals,)	ULSADD	2280 950/950 54	BS 476-22:1987	51 <sup>2</sup> (glazing) 69 (perimeter)

## Supplementary Test Evidence

Test or Assessment	Configuration	Leaf Size (mm)	Test Standard	Performance (mins)
RF00069	A: ULSASD	2100 824 54	BS EN 1634-1:2000 & BS EN 1363-1:1999	A: 66
RF00006B (glazing)	Indicative panel	1000 x 700	Principles of: BS 476-22:1987	80
Warres 117483	Fixed indicative panel	990 990 54	Principles of: BS 476-22:1987	72
RF02081 (Optima and Pyrobel)	DADD	2700 824 54	BS 476-22:1987	49 (perimeter) 60 (glazing)
RF02098 (wireway / glazing)	Fixed indicative panel	2100 600 54	Principles of: BS 476-22:1987	62
Warres 170821 (Halspan intumescent, PVC lippings, Halspan hardware)	A: LSADD  B: ULSASD	2055 910/413 54 2040 926 54	BS EN 1634-1:2000 & BS EN 1363-1:1999	A: 58  B: 62
A07051 Rev B (Lorient Palusol and Type 617 seals)	Various	Various	BS 476-22:1987	30 and 60
RF08127 (additional hardware)	ULSADD + OP	2135 +400 OP 916 44	BS 476-22:1987	38
RF09010 (additional hardware, PVC lippings, Halspan drop down seal and triple fin smoke seal)	ULSASD	2045 904 46	BS 476-22:1987	56
RF09029 (Halspan intumescent mastic and PU foam fire stopping detail)	A: LSASD  B: LSASD	2132 912 78  2132 912 78	BS 476-22:1987	A: 114  B: 116



### Supplementary Test Evidence - continued

Test or Assessment	Configuration	Leaf Size (mm)	Test Standard	Performance (mins)
Warres 170821 (Halspan intumescent seals and additional hardware)	A: LSADD  B: ULSASD	2055 910/413 54  2040 926 54	BS EN 1634-1: 2000 & BS EN 1363-1: 1999	A: 58 (integrity failure at latch position) B: 62
Warres 191350 (Pyrostem)	Fixed sample	1495 926 54	Principles of BS 476-22:1987	62
RF10080 (Pyroguard FD60 glass)	LSASD	2038 925 54	BS 476-22:1987	58 (doorset) <sup>3</sup> 64 (glazed aperture)
RF10111 (recessed push plates/kick plates)	ULSADD	2800 928 44	BS EN: 1634-1: 2000 & BS EN: 1363-1: 1999	46
ITB test report No. 636.7/09 (25mm thick Pyrobel and larger doorset sizes)	ULSADD	2300 1100 54	BS EN: 1634-1: 2000 & BS EN: 1363-1: 1999	62 (integrity)  62 (insulation)
CFR1103171 (Prima Plus)	ULSADD	0329 826/300 54	BS 476-22:1987	60

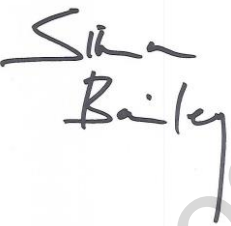

1. Initial failure in test PF15098 due to continuous flaming at the top hanging corner of the leaf. Failure of left glazing aperture at 58 minutes due to testing a non-standard 60 minute bead detail in left leaf. The right leaf glazing panel with a standard 60 minute glazing bead had not failed integrity when the test was terminated at 60 minutes. The performance of the right leaf glazed aperture has been used to justify the STS glazing system.
2. Initial failure in test PF15163 due to continuous flaming at edge of glazing aperture. No further failures until a cotton pad test failure at the top meeting edge at 69 minutes. This test is used to justify use of STS perimeter intumescent seals but not glazing seals.
3. Cotton Pad Test failure at top closing corner of the leaf. No integrity failure of the glazed aperture until 64 minutes.

## Appendix D

### Revisions

Revision	Exova Warringtonfire Reference	Date	Description
D		23.5.2000	5 year revalidation and update to include Halspan 60 steel/aluminium frame doorsets and all additional test evidence
E	Chilt/A01207	14.12.2001	5 year revalidation and update including additional test evidence
F	Chilt/A03031	18.6.2003	Incorporation of additional test data to justify the use of Sureguard edge protectors and sheet facing, increase the glazing options, allow the use of wireways and MDF frames and to appropriately amend the maximum leaf dimensions. Extra ironmongery items were also incorporated.
G	Chilt/ A05007	24.01.2005	Update to include new test data covering lippings, ironmongery, glazing, intumescent seals and framing.
H	Chilt/ A10028	19.07.2010	Update to include new test data covering hardware, glazing, intumescent seals and fire stopping details. The report has been technically reviewed and revalidated for a further 5 year period.
I	Chilt/ A10028	21.10.2010	Update to include grooves with hardwood inserts, reinstate security viewers, new sealing to structural opening section, recessed push/kick plates, 25mm thick Pyrobel glass added and larger doorset sizes assessed
J	Chilt/ A11177	5.10.2011	Update to include test evidence for Prima Plus design. Scope of application for Prima Plus design is contained in appendix G
K	Chilt/ A12065	9.05.2012	Update to include large leaf sizes based on test RF07128 and inclusion of Pilkington Pyroshield 2 scope
L	Chilt/ A12292	23.11.2012	Update to include Pyroguard FD60 glass based on test RF10080
M	WF387440	08.08.2017	Technical review and 5 year revalidation; update to Exova branding; inclusion of STS perimeter and glazing seal intumescents. Use of beech removed.

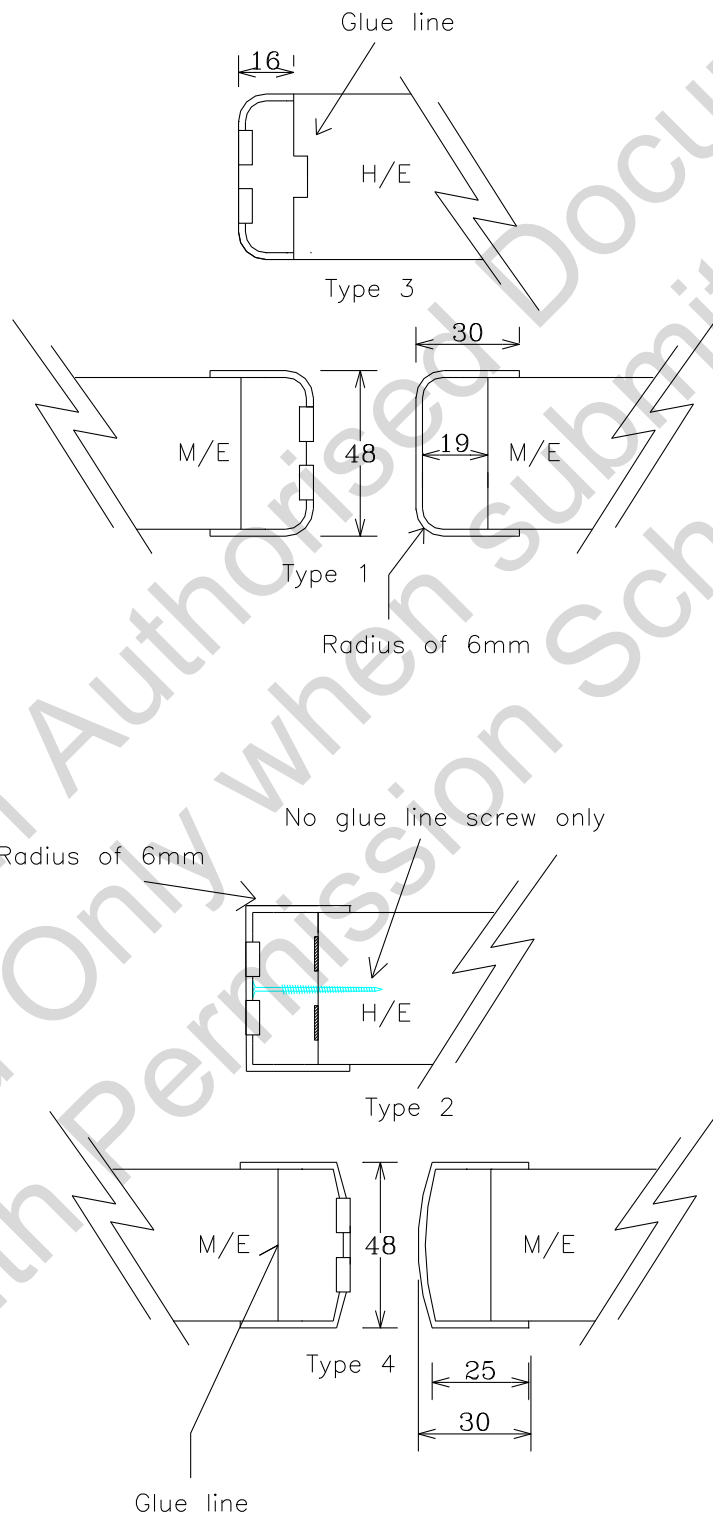
## Revisions continued

Revision	Exova Warringtonfire Reference	Date	Description
N	WF404746	12.09.2018	Amendment to correct Primary Data table and Data Sheet graph for Sealed Tight Solutions perimeter intumescent.
			  S Bailey Senior Product Assessor A M Winning Senior Product Assessor

Halspan Authorised Document  
Valid Only when submitted  
with Permission Schedule

## Appendix E

### PVC Edge Protectors



## **Appendix F**

### **Data Sheets for**

**Halspan® 60 Prima**

**60 Minute Fire Resisting Doorsets**

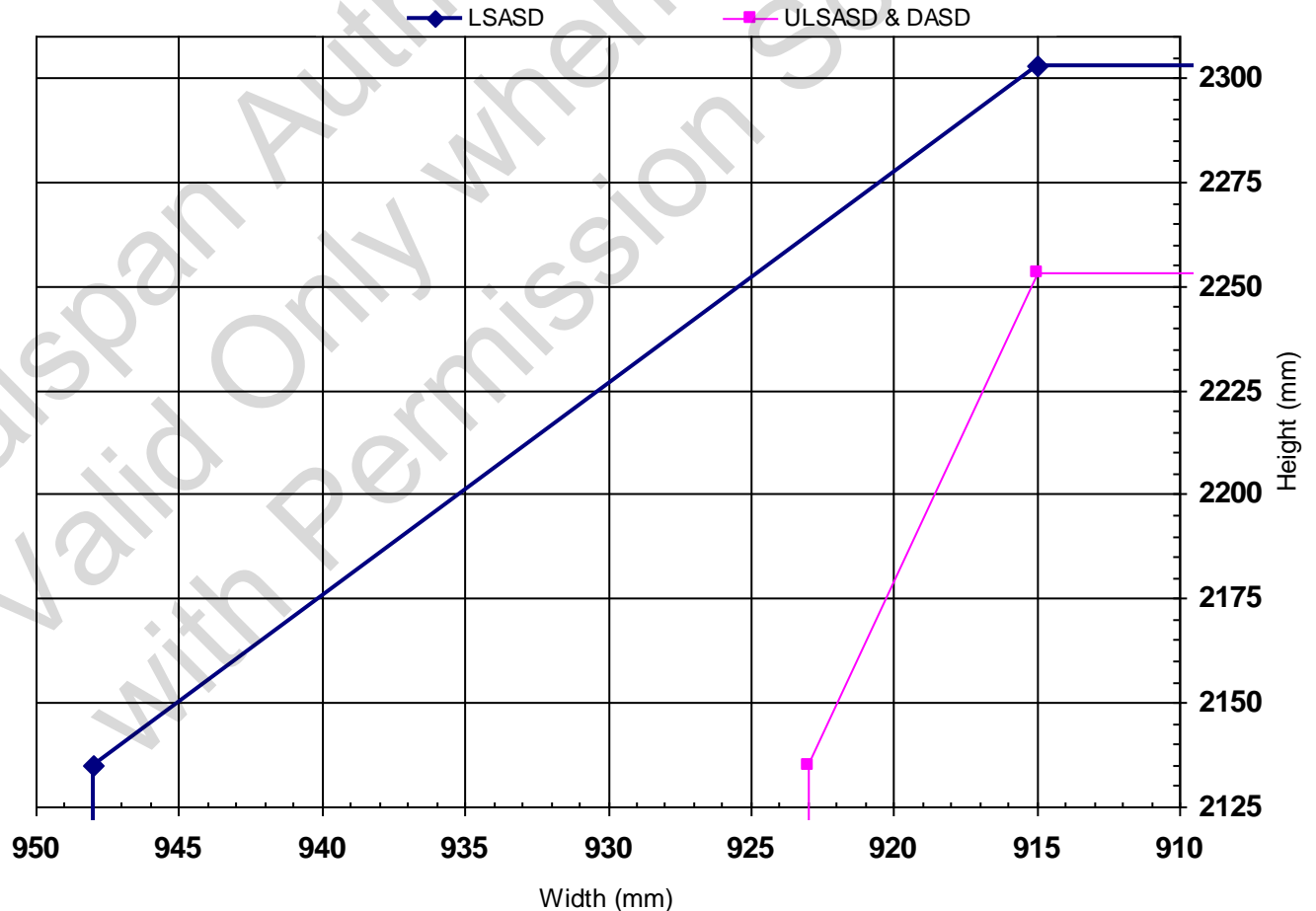
Halspan Authorised Document  
Valid Only when submitted  
with Permission Schedule

## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Single Doorsets – Reduced Intumescent

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSASD	From:	2135	x 948
		To:	2303	x 915
	ULSASD & DASD	From:	2135	x 923
		To:	2253	x 915
Maximum Overpanel height (mm)		Transomed	2000	
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
	Approved systems:		See section 7 and appendix B	
Frame specification (see section 8)	Material:		Hardwood	
	Min. Section (mm):		70 x 32	
	Min. Density(kg/m <sup>3</sup> ):		640	
Intumescent Materials: PVC encapsulated Palusol 100 or Type 617				
Head 1 No 20 x 4mm exposed and centrally fitted in the frame reveal.				
Jambs: 1 No 20 x 4mm exposed and centrally fitted in the frame reveal.				
Hardware Protection: see section 12				

Maximum Door Leaf Size



## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Double Doorsets – Reduced Intumescent

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSADD	From:	2135	x 858
		To:	2203	x 826
	ULSADD & DADD	From:	2135	x 833
		To:	2153	x 826
Maximum Overpanel height (mm)			1500	
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
	Approved systems:		See section 7 and appendix B	
Frame specification (see section 8 for details)	Material:		Hardwood	
	Min. Section (mm):		70 x 32	
	Min. Density(kg/m <sup>3</sup> ):		640	

#### Intumescent Materials: PVC Encapsulated Palusol 100 or Type 617

##### Head:

1No 25 x 4mm exposed and fitted centrally in the frame reveal.

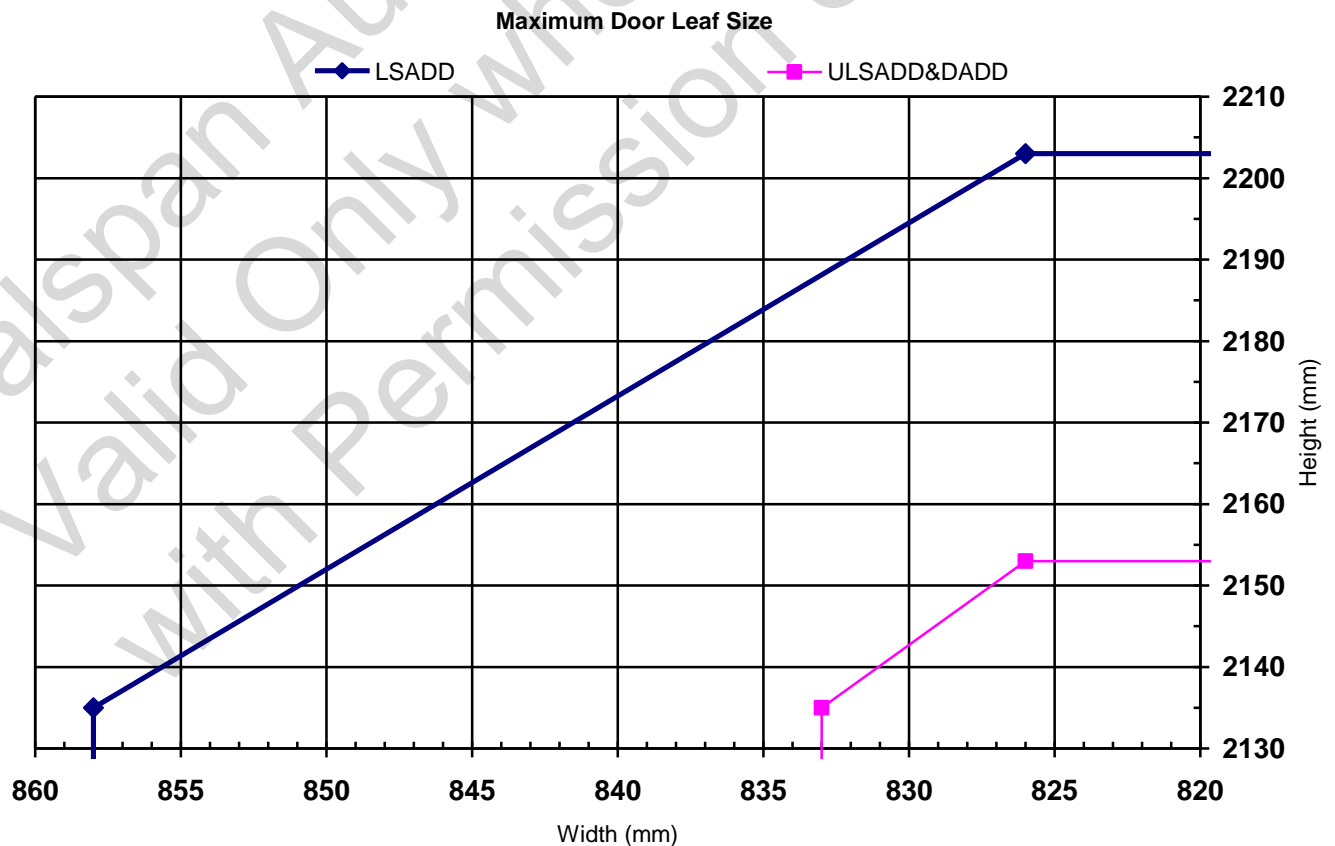
##### Meeting Edges:

**Square:** 1No 25 x 4mm exposed and fitted centrally in one leaf edge only.

**Rebated:** 1No 15 x 4mm exposed and fitted centrally in the rebate of both leaf edges.

**Jambs:** 1No 25 x 4mm exposed and fitted centrally in the frame reveal.

**Hardware Protection:** see section 12



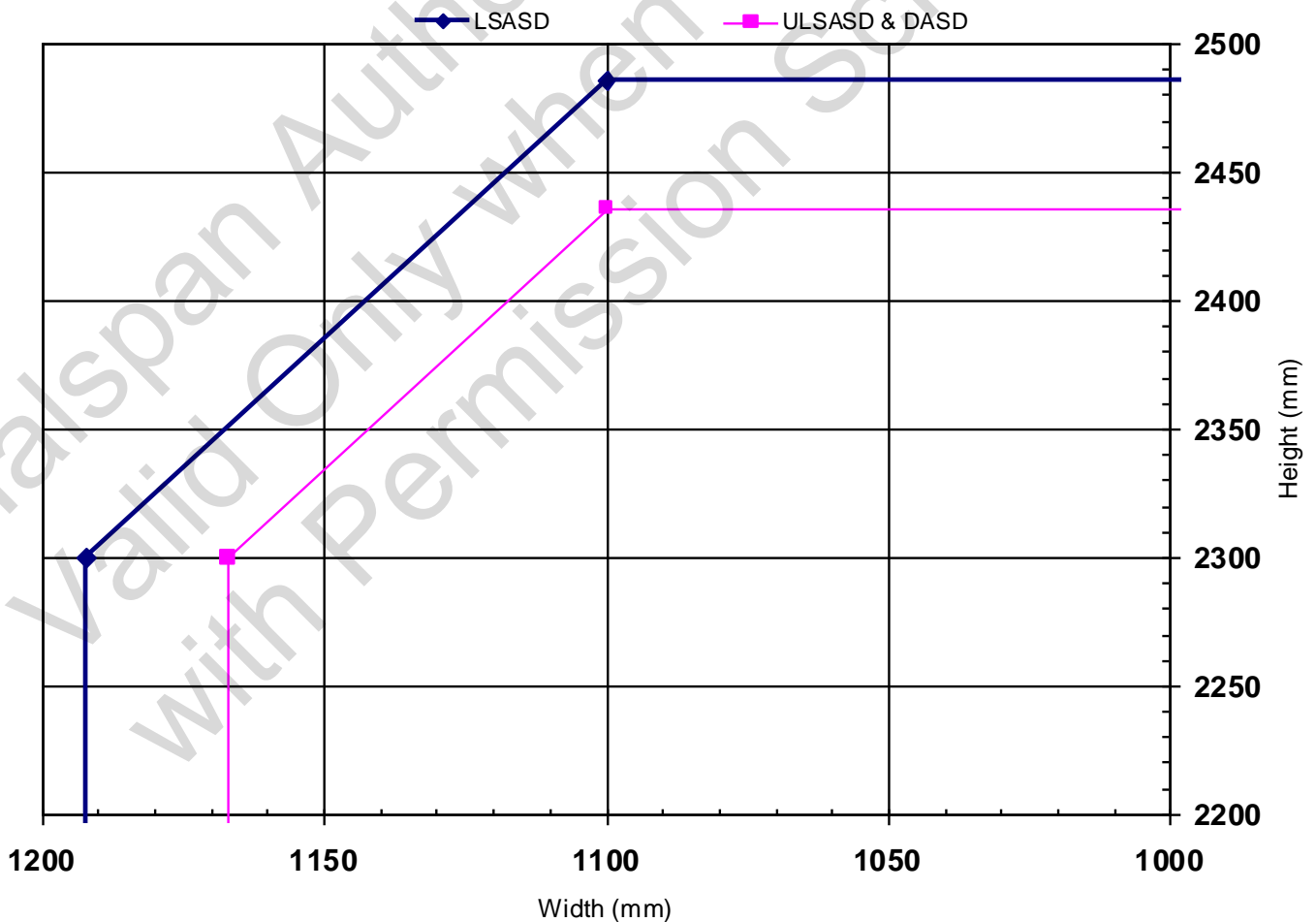


## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Single Doorsets

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSASD	From:	2300	x 1192
		To:	2486	x 1100
	ULSASD & DASD	From:	2300	x 1167
		To:	2436	x 1100
Maximum Overpanel height (mm)		Transomed	2000	
Glazing		Maximum Glazed Area:	0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
		Approved systems:	See section 7 and appendix B	
Frame specification (see section 8 for details)		Material:	Hardwood	MDF (≤ 2440 high)
		Min. Section (mm):	70 x 22	70 x 30
		Min. Density(kg/m <sup>3</sup> ):	640	700
<b>Intumescent Materials: PVC encapsulated 500P, Halspan® Type SLS</b>				
<b>Head</b> 2 No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf or frame head.				
<b>Jambs:</b> 2 No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf edge or frame reveal.				
<b>Hardware Protection:</b> see section 12				

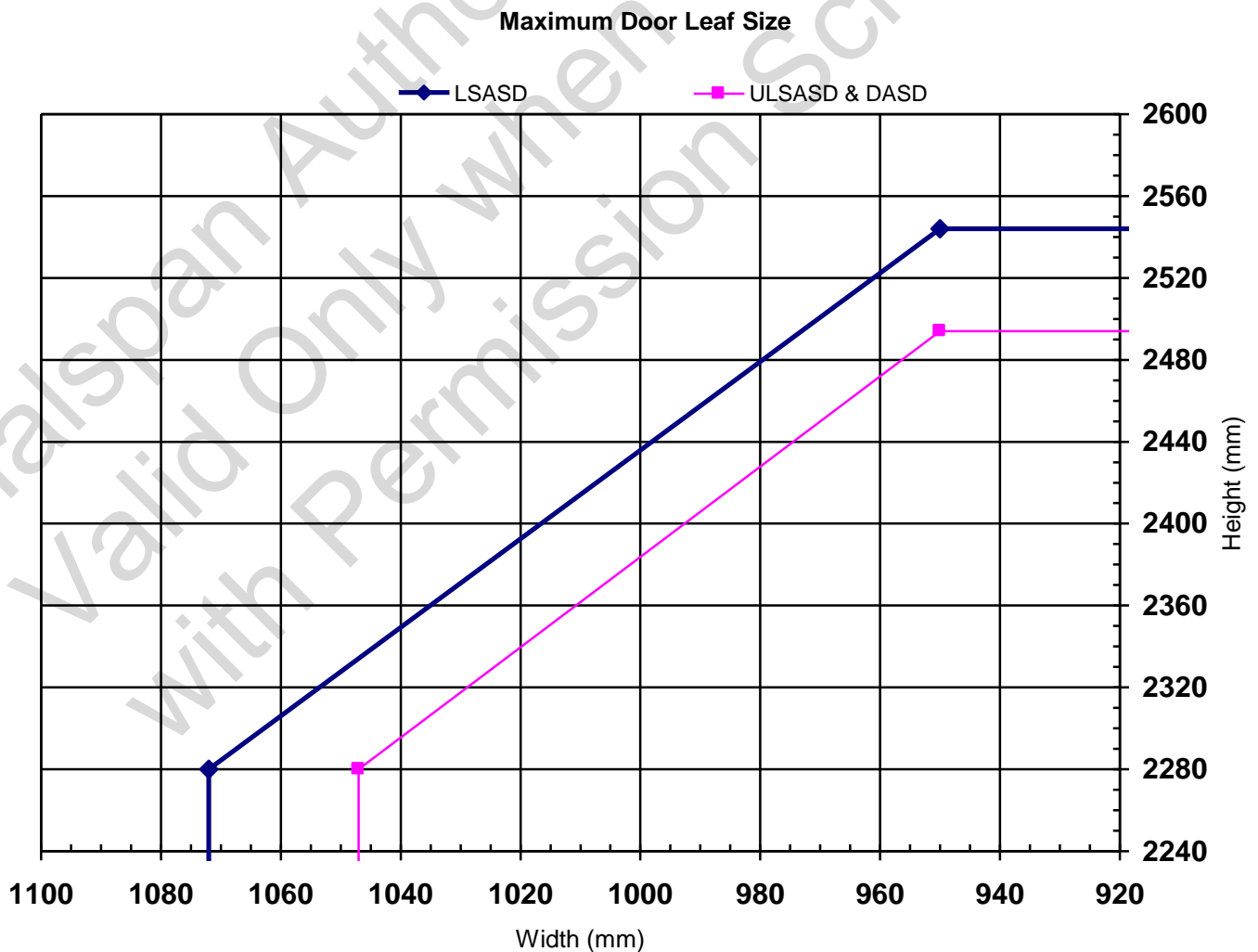
**Maximum Door Leaf Size**



## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Single Doorsets

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSASD	From:	2280	1072
		To:	2544	950
	ULSASD & DASD	From:	2280	1047
		To:	2494	950
Maximum Overpanel height (mm)		Transomed	2000	
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
	Approved systems:		See section 7 and appendix B	
Frame specification (see section 8 for details)	Material:		Hardwood	MDF (≤ 2440 high)
	Min. Section (mm):		70 x 22	70 x 30
	Min. Density(kg/m <sup>3</sup> ):		640	700
<b>Intumescent Materials: PVC encapsulated Sealed Tight Solutions STS 154FO and STS 154FS or STS 154FL</b>				
<b>Head</b> 2 No. STS 154FO 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf or frame head.				
<b>Jambs:</b> 2 No. STS 154FO 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf edge or frame reveal.				
<b>Hardware Protection:</b> see section 12				

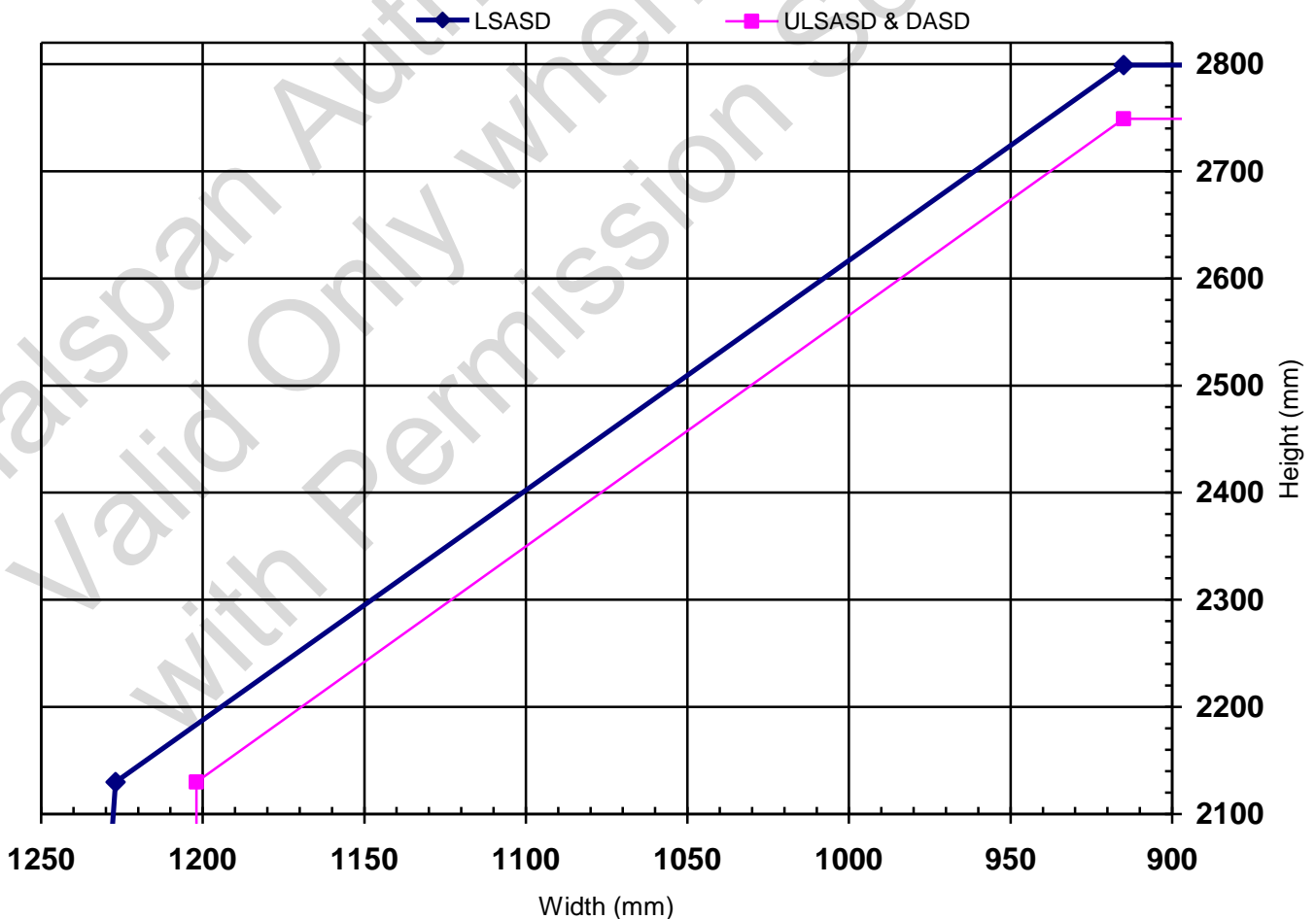


## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Single Doorsets

	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	From:	2130	x	1227
		To:	2799	x	915
	ULSASD & DASD	From:	2130	x	1202
		To:	2749	x	915
Maximum Overpanel height (mm)		Transomed	2000		
Glazing		Maximum Glazed Area:	0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)		
		Approved systems:	See section 7 and appendix B		
Frame specification (see section 8 for details)		Material:	Hardwood	MDF (≤ 2440 high)	
		Min. Section (mm):	70 x 22	70 x 30	
		Min. Density(kg/m <sup>3</sup> ):	640	700	
<b>Intumescent Materials: PVC encapsulated Palusol 100, Type 617, Pyroplex, 500P or Halspan® Type SLS</b>					
<b>Head</b> 2 No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf or frame head.					
<b>Jamb</b> s: 2 No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf edge or frame reveal.					
<b>Hardware Protection:</b> see section 12					

**Maximum Door Leaf Size**

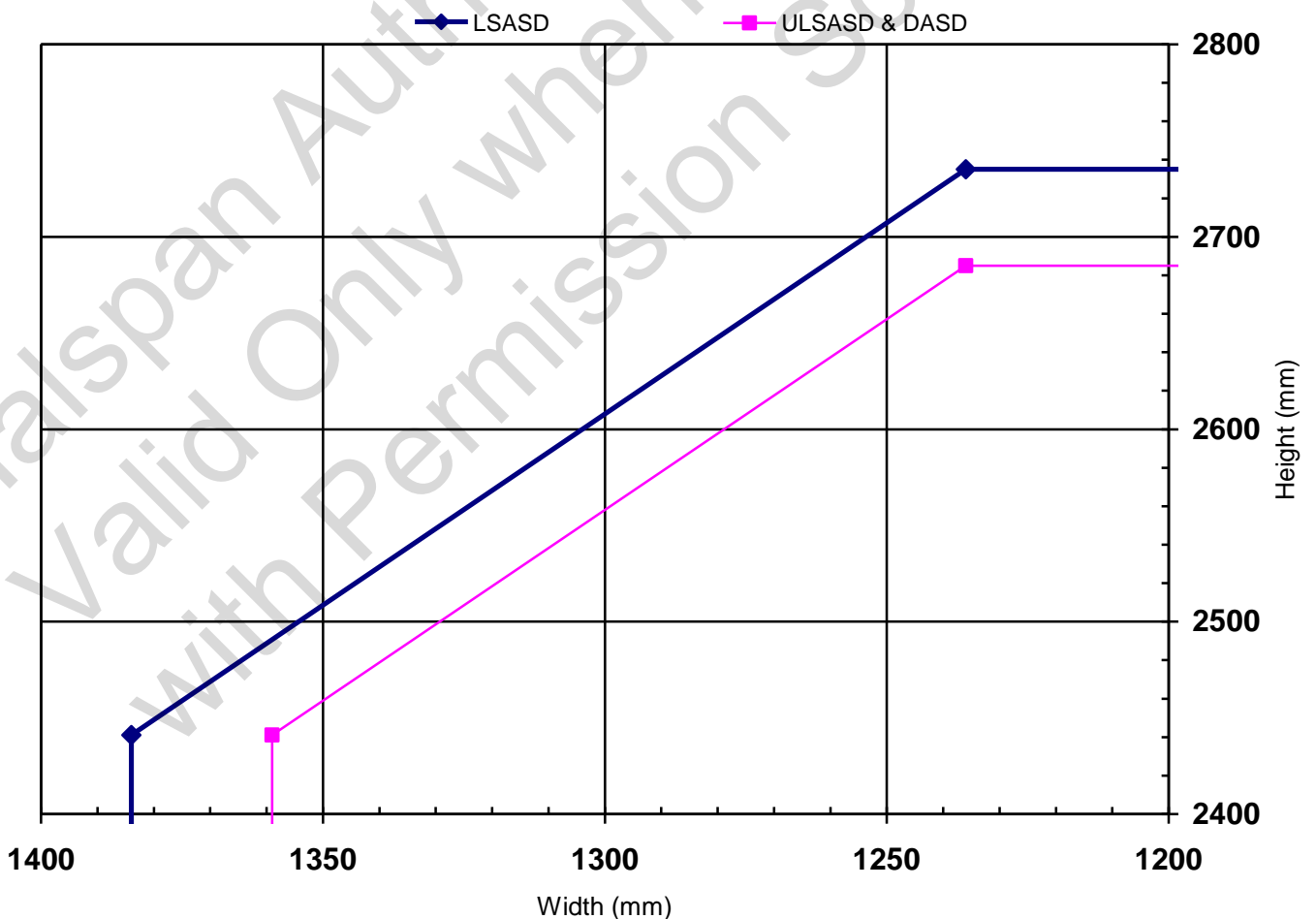


## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Single Doorsets – extended width

	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	From:	2441	x	1384
		To:	2735	x	1236
	ULSASD & DASD	From:	2441	x	1359
		To:	2685	x	1236
Maximum Overpanel height (mm)		Transomed	2000		
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)		
	Approved systems:		See section 7 and appendix B		
Frame specification (see section 8 for details)	Material:		Hardwood	MDF (≤ 2440 high)	
	Min. Section (mm):		70 x 22	70 x 30	
	Min. Density(kg/m <sup>3</sup> ):		640	700	
<b>Intumescent Materials: PVC encapsulated Type 617</b>					
<b>Head</b> 2 No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf or frame head.					
<b>Jambs:</b> 2 No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf edge or frame reveal.					
<b>Hardware Protection:</b> see section 12					

### Maximum Door Leaf Size

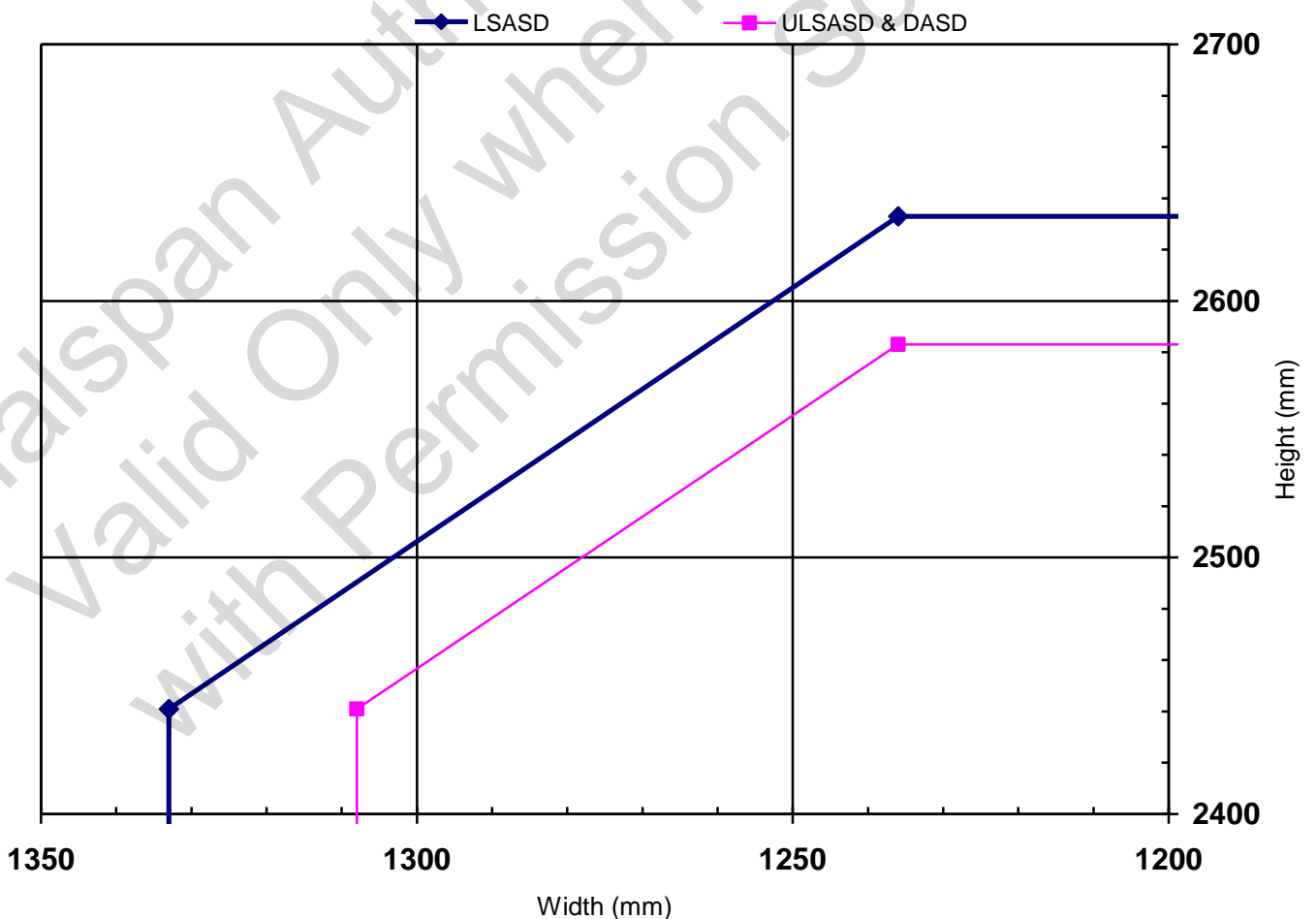


## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Single Doorsets – extended width

	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	From:	2441	x	1333
		To:	2633	x	1236
	ULSASD & DASD	From:	2441	x	1308
		To:	2583	x	1236
Maximum Overpanel height (mm)		Transomed	2000		
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)		
	Approved systems:		See section 7 and appendix B		
Frame specification (see section 8 for details)	Material:		Hardwood	MDF (≤ 2440 high)	
	Min. Section (mm):		70 x 22	70 x 30	
	Min. Density(kg/m <sup>3</sup> ):		640	700	
Intumescent Materials: PVC encapsulated Palusol 100					
Head 2 No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf or frame head.					
Jambs: 2 No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf edge or frame reveal.					
Hardware Protection: see section 12					

Maximum Door Leaf Size



## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Single Doorsets – Extended Height

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSASD	From:	2700	x 1000
		To:	3050	x 825
	ULSASD & DASD	From:	2700	x 975
		To:	3000	x 825
Maximum Overpanel height (mm)	Transomed		2000	
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
	Approved systems:		See section 7 and appendix B	
Frame specification (see section 8 for details)	Material:		Hardwood	
	Min. Section (mm):		70 x 22	
	Min. Density (kg/m <sup>3</sup> ):		640	

**Intumescent Materials:** PVC Encapsulated Palusol 100, Type 617, Therm-A-Seal, Pyroplex, 500P or Halspan® Type SLS

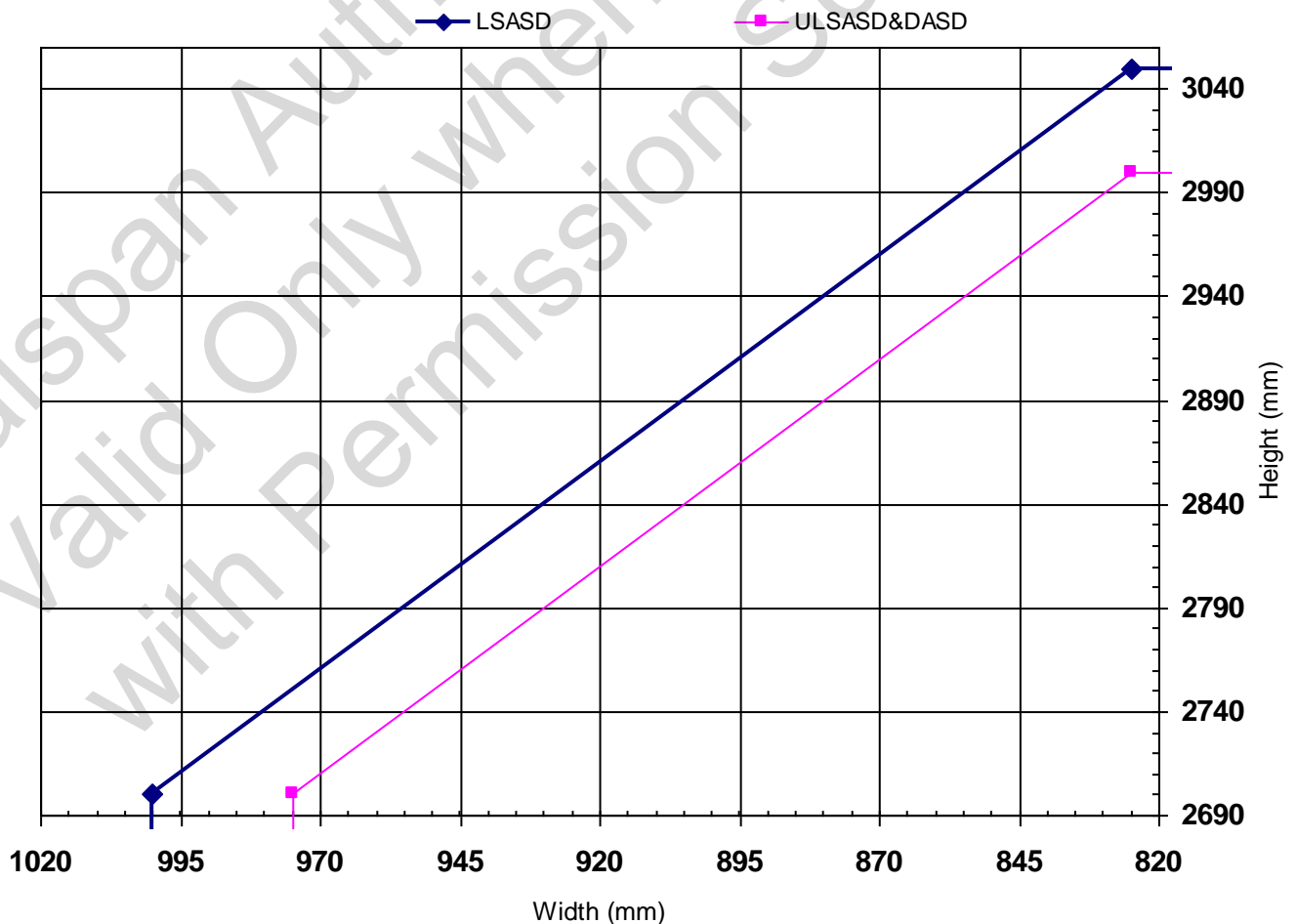
**Head:**

2No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf or frame head.

**Jamb:** 2No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf edge or frame reveal.

**Hardware Protection:** see section 12

#### Maximum Door Leaf Size



## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Single Doorsets + Overpanel (extended width)

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSASD+OP	From:	2130	x 1177
		To:	2699	x 915
	ULSASD+OP & DASD+OP	From:	2130	x 1152
		To:	2649	x 915
Maximum Overpanel height (mm)			2000	
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
	Approved systems:		See section 7 and appendix B	
Frame specification (see section 8 for details)	Material:		Hardwood	MDF (≤ 2440 high)
	Min. Section (mm):		70 x 22	70 x 30
	Min. Density(kg/m <sup>3</sup> ):		640	700

**Intumescent Materials:** PVC Encapsulated Palusol 100, Type 617, Therm-A-Seal, Pyroplex, 500P or Halspan® Type SLS

#### Head:

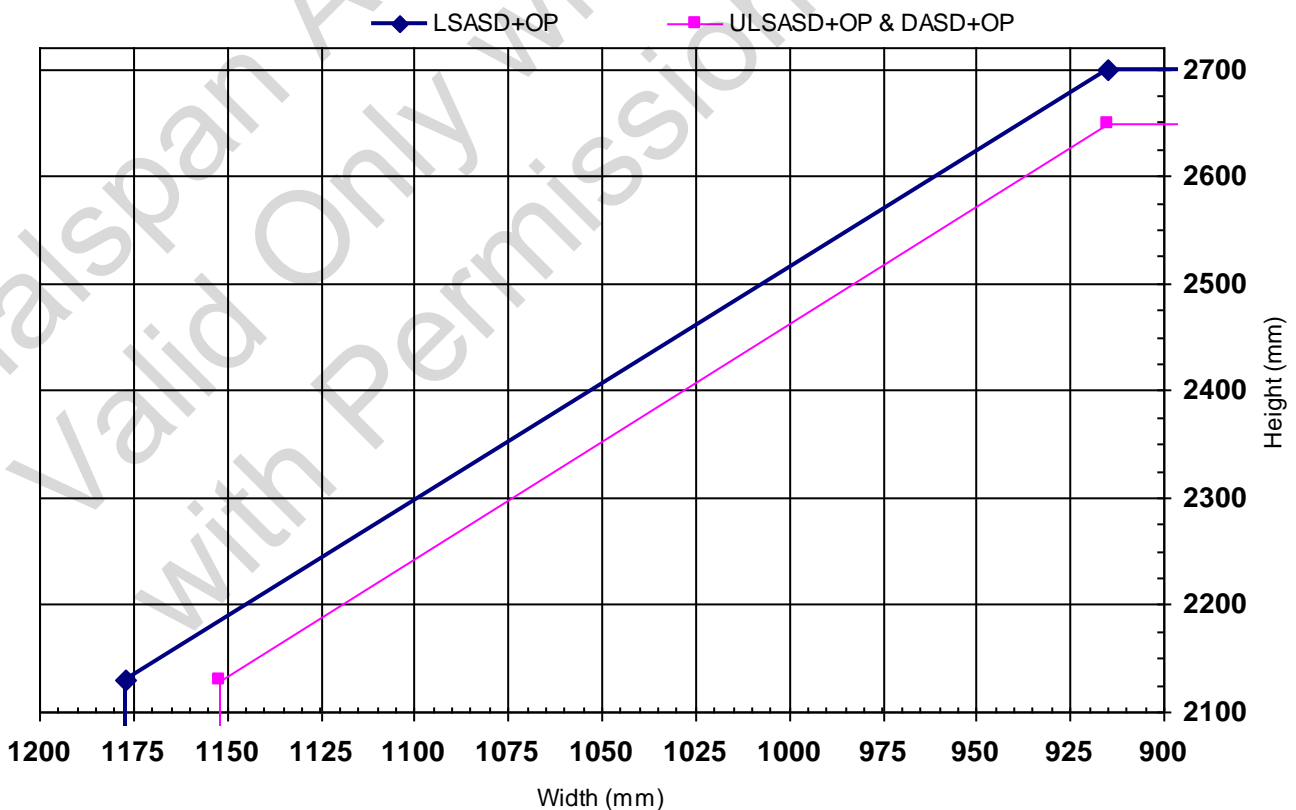
**Square:** 1No 38 x 4mm exposed and fitted centrally in the leaf or bottom of overpanel.

**Rebated:** 2 No 15 x 4mm exposed and fitted centrally with one in the rebate and one in the upstand of the overpanel plus 1No 10 x 4mm in the corner of the leaf head rebates.

**Jambs and Overpanel:** 2No 15 x 4mm exposed and fitted 5mm either side of the centreline the leaf edge or frame reveal.

**Hardware Protection:** see section 12

#### Maximum Door Leaf Size





## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Single Doorsets + Overpanel (extended height)

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSASD+OP	From:	2700	x 950
		To:	2950	x 825
	ULSASD+OP & DASD+OP	From:	2700	x 925
		To:	2900	x 825
Maximum Overpanel height (mm)			2000	
Glazing		Maximum Glazed Area:	0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
		Approved systems:	See section 7 and appendix B	
Frame specification (see section 8 for details)		Material:	Hardwood	
		Min. Section (mm):	70 x 22	
		Min. Density(kg/m <sup>3</sup> ):	640	

**Intumescent Materials:** PVC Encapsulated Palusol 100, Type 617, Therm-A-Seal, Pyroplex, 500P or Halspan® Type SLS

#### Head:

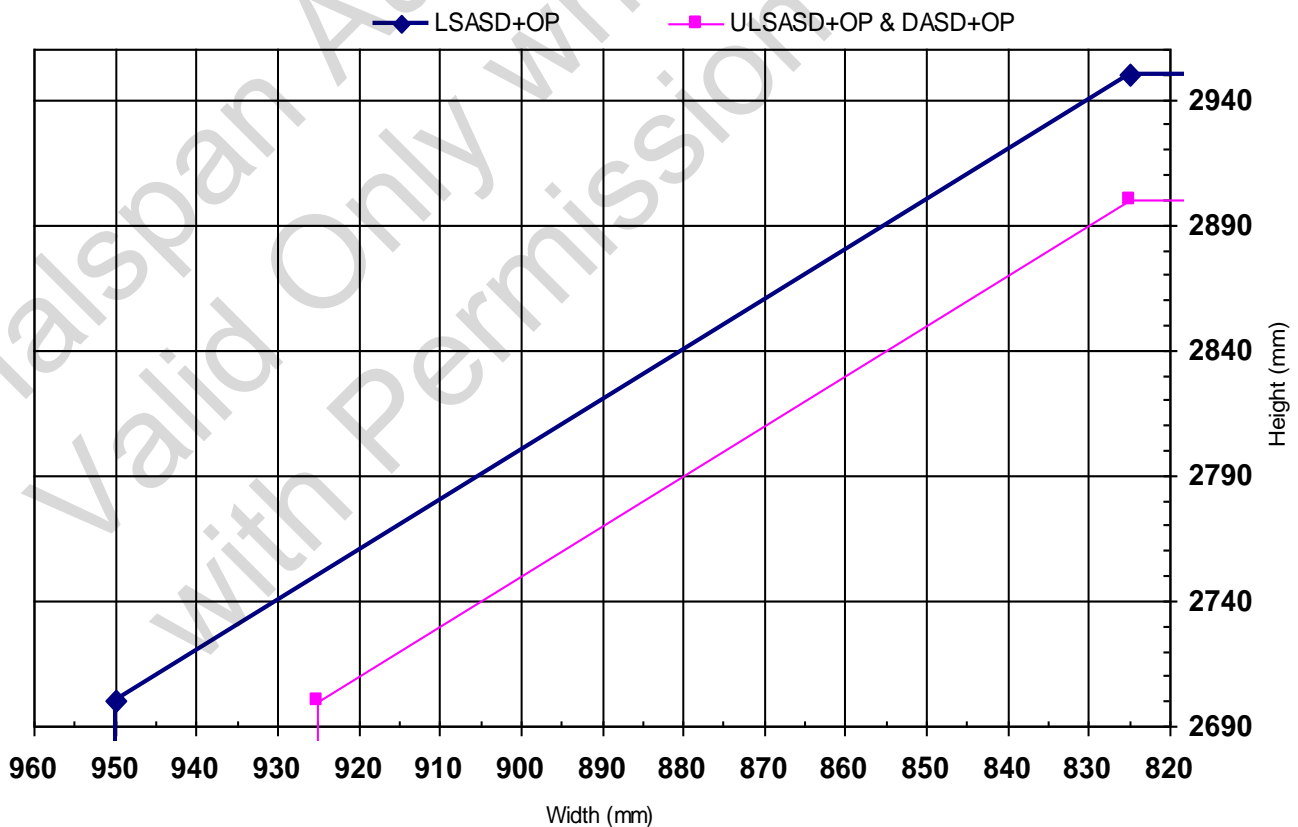
**Square:** 1No 38 x 4mm exposed and fitted centrally in the leaf or bottom of overpanel.

**Rebated:** 2 No 15 x 4mm exposed and fitted centrally with one in the rebate and one in the upstand of the overpanel plus 1No 10 x 4mm in the corner of the leaf head rebates.

**Jambs and Overpanel:** 2No 15 x 4mm exposed and fitted 5mm either side of the centreline the leaf edge or frame reveal.

**Hardware Protection:** see section 12

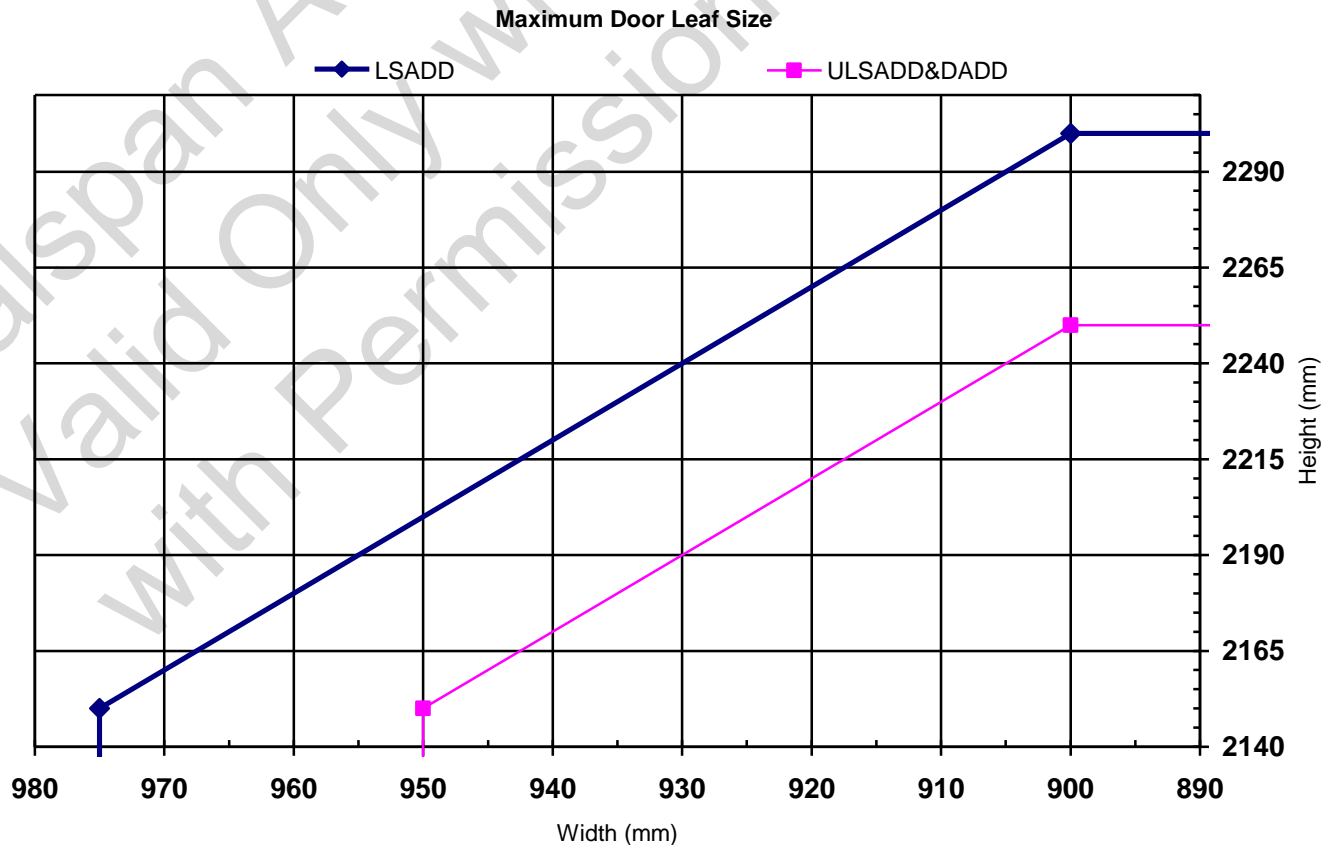
Maximum Door Leaf Size



## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Double Doorsets

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSADD	From:	2150	x 975
		To:	2300	x 900
	ULSADD & DADD	From:	2150	x 950
		To:	2250	x 900
Maximum Overpanel height (mm)		Transomed	1500	
Glazing		Maximum Glazed Area:	0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
		Approved systems:	See section 7 and appendix B	
Frame specification (see section 8 for details)		Material:	Hardwood	MDF (≤ 2440 high)
		Min. Section (mm):	70 x 22	70 x 30
		Min. Density(kg/m <sup>3</sup> ):	640	700
<b>Intumescent Materials: PVC Encapsulated Palusol 100, Type 617, Therm-A-Seal, Pyroplex, 500P or Halspan® Type SLS</b>				
<b>Head:</b>				
<b>Square:</b> 2No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf or frame head.				
<b>Meeting Edges:</b>				
<b>Square:</b> 2No 15 x 4mm exposed and fitted 5mm either side of the centreline in one leaf edge only.				
<b>Rebated:</b> 2 No 15 x 4mm exposed with each seal fitted centrally in the rebate of each leaf.				
<b>Jambs:</b> 2No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf edge or frame reveal.				
<b>Hardware Protection:</b> see section 12				



## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Double Doorsets

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSADD	From:	2280	x 1022
		To:	2444	x 950
	ULSADD & DADD	From:	2280	x 997
		To:	2394	x 950
Maximum Overpanel height (mm)		Transomed	1500	
Glazing		Maximum Glazed Area:	0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
		Approved systems:	See section 7 and appendix B	
Frame specification (see section 8 for details)		Material:	Hardwood	MDF (≤ 2440 high)
		Min. Section (mm):	70 x 22	70 x 30
		Min. Density(kg/m³):	640	700

#### Intumescent Materials: PVC Encapsulated Sealed Tight Solutions STS 154FO

##### Head:

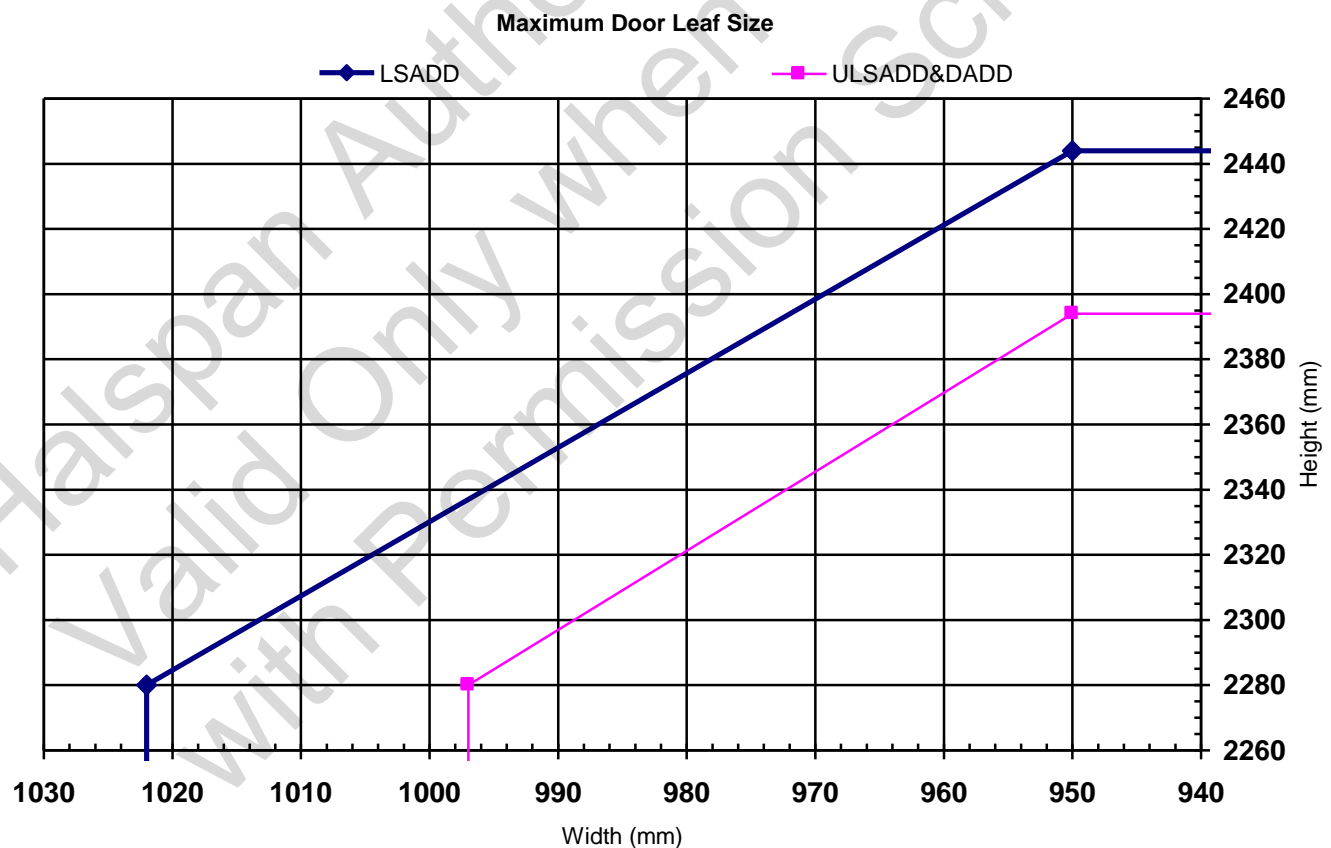
**Square:** 2No STS 154FO 15 x 4mm seals exposed and fitted 5mm either side of the centreline in the leaf or frame head.

##### Meeting Edges:

**Square:** 2No STS 154FO 15 x 4mm seals exposed and fitted 5mm either side of the centreline in one leaf edge only.

**Jambs:** 2No STS 154FO 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf edge or frame reveal.

**Hardware Protection:** see section 12



## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Double Doorsets – Extended Width

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSADD	From:	2300	x 1142
		To:	2386	x 1100
	ULSADD & DADD	From:	2300	x 1117
		To:	2336	x 1100
Maximum Overpanel height (mm)		Transomed	1500	
Glazing		Maximum Glazed Area:	0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
		Approved systems:	See section 7 and appendix B	
Frame specification (see section 8 for details)		Material:	Hardwood	MDF (≤ 2440 high)
		Min. Section (mm):	70 x 22	70 x 30
		Min. Density(kg/m <sup>3</sup> ):	640	700

#### Intumescent Materials: PVC Encapsulated 500P or Halspan® Type SLS

##### Head:

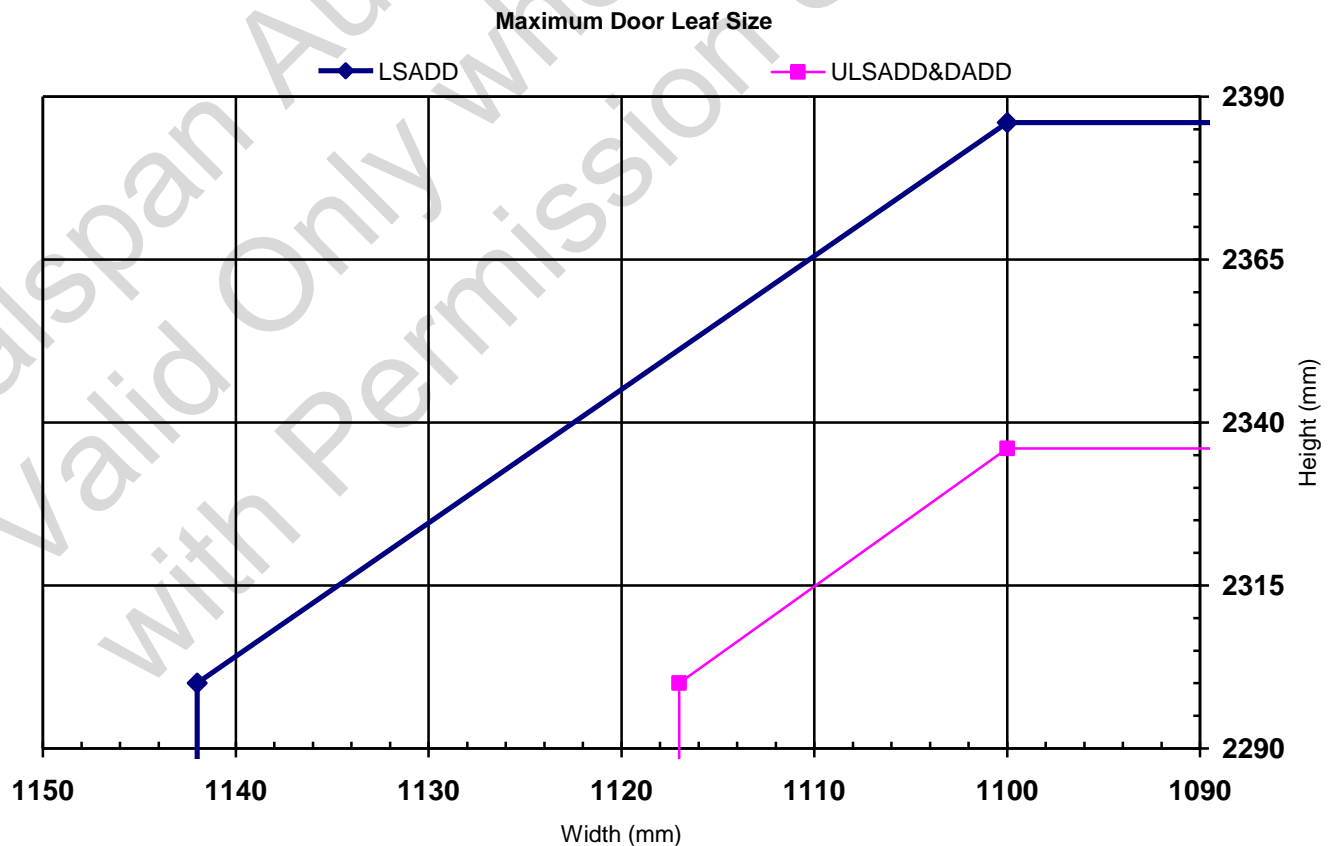
**Square:** 2No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf or frame head.

##### Meeting Edges:

**Square:** 2No 15 x 4mm exposed and fitted 5mm either side of the centreline in one leaf edge only.

**Jambs:** 2No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf edge or frame reveal.

**Hardware Protection:** see section 12



## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Double Doorsets – Extended Height

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSADD	From:	2700	x 900
		To:	2850	x 825
	ULSADD & DADD	From:	2700	x 875
		To:	2800	x 825
Maximum Overpanel height (mm)		Transomed	1500	
Glazing		Maximum Glazed Area:	0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
		Approved systems:	See section 7 and appendix B	
Frame specification (see section 8 for details)		Material:	Hardwood	
		Min. Section (mm):	70 x 22	
		Min. Density(kg/m <sup>3</sup> ):	640	

**Intumescent Materials:** PVC Encapsulated Palusol 100, Type 617, Therm-A-Seal, Pyroplex, 500P or Halspan® Type SLS

#### Head:

**Square:** 2No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf or frame head.

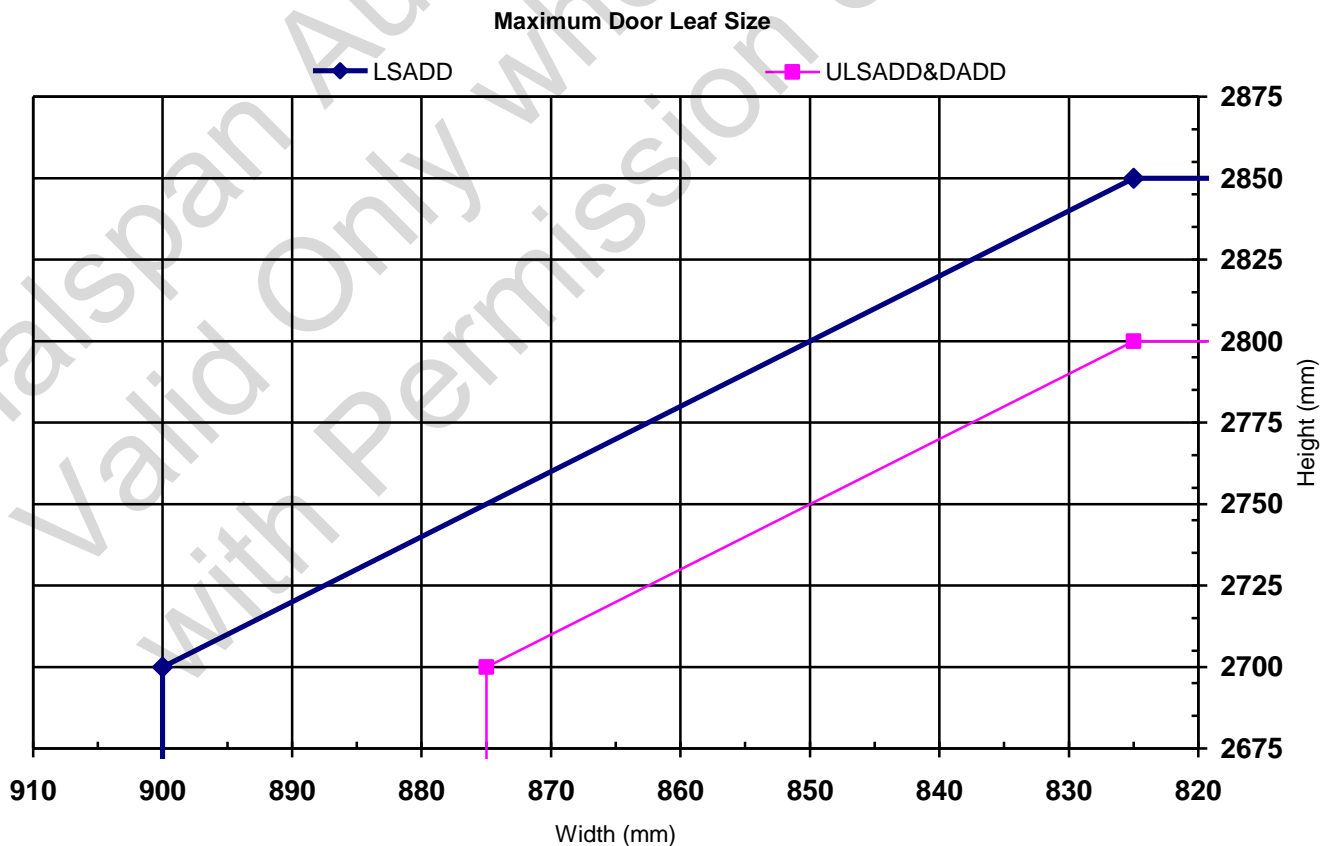
#### Meeting Edges:

**Square:** 2No 15 x 4mm exposed and fitted 5mm either side of the centreline in one leaf edge only.

**Rebated:** 2 No 15 x 4mm exposed with each seal fitted centrally in the rebate of each leaf.

**Jambs:** 2No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf edge or frame reveal.

**Hardware Protection:** see section 12



## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched & Unlatched Single Acting & Double Acting Double Doorsets+OP (extended width)

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSADD+OP	From:	2150	x 925
		To:	2200	x 900
	ULSADD+OP & DADD+OP	Max:	2150	x 900
Maximum Overpanel height (mm)			1500	
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
	Approved systems:		See section 7 and appendix B	
Frame specification (see section 8 for details)	Material:		Hardwood	MDF (≤ 2440 high)
	Min. Section (mm):		70 x 22	70 x 30
	Min. Density(kg/m <sup>3</sup> ):		640	700

**Intumescent Materials:** PVC Encapsulated Palusol 100, Type 617, Therm-A-Seal, Pyroplex, 500P or Halspan® Type SLS

#### Head:

**Square:** 1No 38 x 4mm exposed and fitted centrally in the leaf or bottom of overpanel.

**Rebated:** 2 No 15 x 4mm exposed and fitted centrally with one seal in the rebate and one seal in the upstand of the overpanel plus 1No 10 x 4mm in the corner of the leaf head rebates (maximum leaf height with rebates is 2200mm).

#### Meeting Edges:

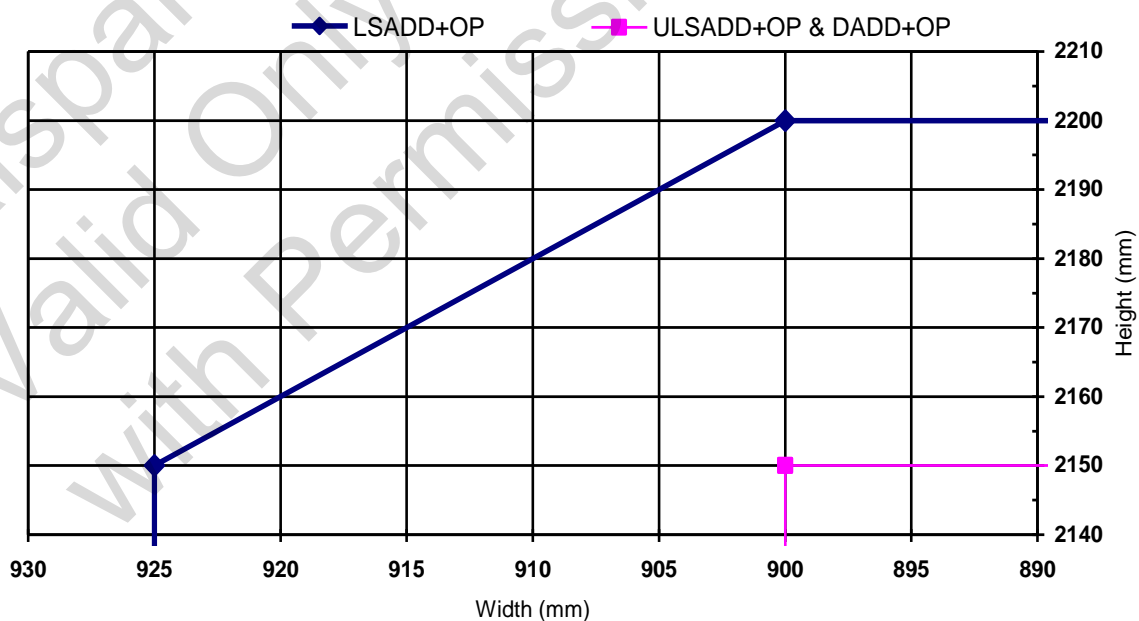
**Square:** 2No 15 x 4mm exposed and fitted 5mm either side of the centreline in one leaf edge, and 1No 10 x 4mm fitted centrally in the opposite leaf.

#### Jambs & Overpanel (overpanel intumescent is optional):

2No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf edge or frame reveal.

**Hardware Protection:** see section 12

Maximum Door Leaf Size



## Halspan® 60 Prima Doorsets – 60 Minutes Fire Resistance

### Latched & Unlatched Single Acting & Double Acting Double Doorsets+OP (extended height)

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSADD+OP	From:	2700	x 850
		To:	2750	x 825
	ULSADD+OP & DADD+OP	Max:	2700	x 825
Maximum Overpanel height (mm)			1500	
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
	Approved systems:		See section 7 and appendix B	
Frame specification (see section 8 for details)	Material:		Hardwood	
	Min. Section (mm):		70 x 22	
	Min. Density(kg/m <sup>3</sup> ):		640	

**Intumescent Materials:** PVC Encapsulated Palusol 100, Type 617, Therm-A-Seal, Pyroplex, 500P or Halspan® Type SLS

#### Head:

**Square:** 1No 38 x 4mm exposed and fitted centrally in the leaf or bottom of overpanel.

**Rebated:** 2 No 15 x 4mm exposed and fitted centrally with one seal in the rebate and one seal in the upstand of the overpanel plus 1No 10 x 4mm in the corner of the leaf head rebates (maximum leaf height with rebates is 2200mm).

#### Meeting Edges:

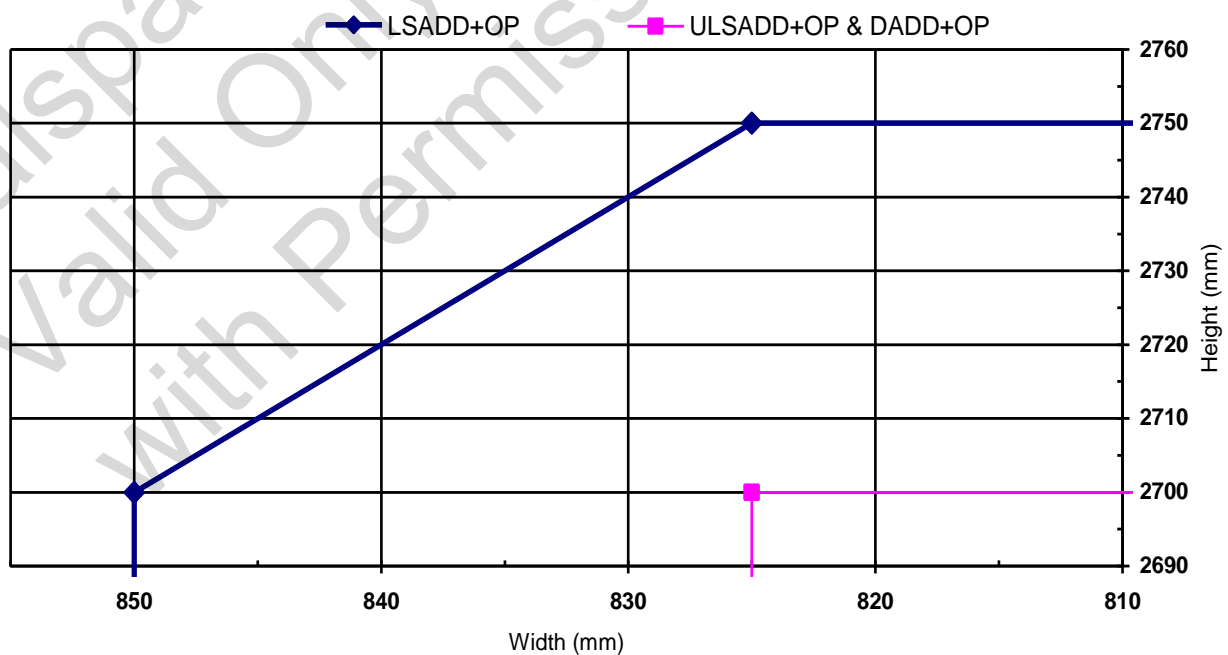
**Square:** 2No 15 x 4mm exposed and fitted 5mm either side of the centreline in one leaf edge, and 1No 10 x 4mm fitted centrally in the opposite leaf.

#### Jambs & Overpanel (overpanel intumescent is optional):

2No 15 x 4mm exposed and fitted 5mm either side of the centreline in the leaf edge or frame reveal.

**Hardware Protection:** see section 12

Maximum Door Leaf Size



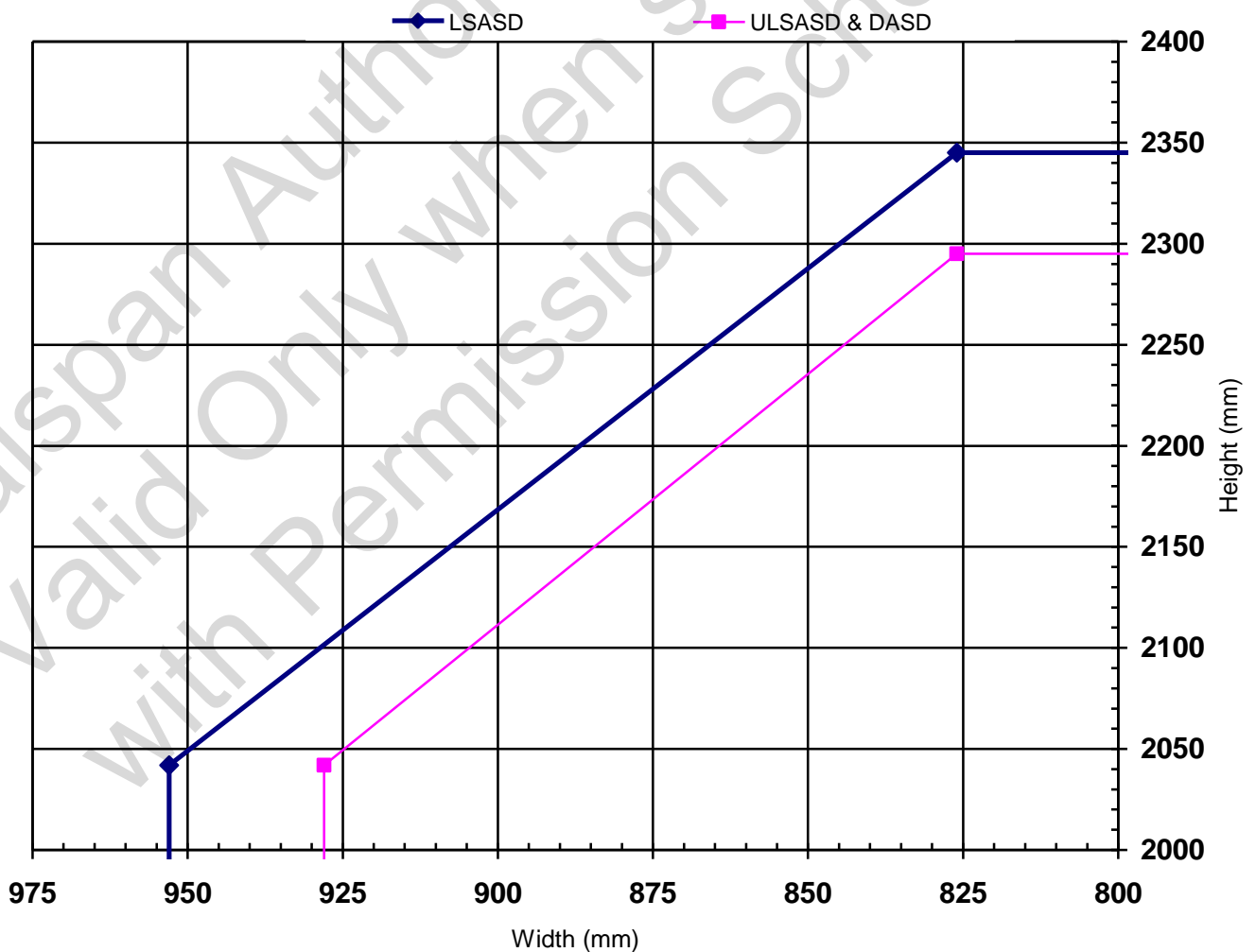


## Halspan® 60 Prima Hollow Steel Frame Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Single Doorsets

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSASD	From:	2042	x 953
		To:	2345	x 826
	ULSASD & DASD	From:	2042	x 928
		To:	2295	x 826
Maximum Overpanel height (mm)			na	
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
	Approved systems:		See section 7 and appendix B	
Frame specification	Material:		Mild or stainless steel – See Appendix A	
	Min. Section (mm):		see section 5 in appendix A	
<b>Intumescent Materials:</b>				
<b>Head: H60</b> (details in confidence on file at CIFL)				
<b>Jambs: H60</b> (details in confidence on file at CIFL)				
<b>Hardware Protection:</b> see section 12				

Maximum Door Leaf Size



## Halspan® 60 Prima Hollow Steel Frame Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Double Doorsets

	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSADD	From:	2042	x	903
		To:	2245	x	826
	ULSADD & DADD	From:	2042	x	888
		To:	2195	x	826
Maximum Overpanel height (mm)			na		
Glazing		Maximum Glazed Area:	0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)		
		Approved systems:	See section 7 and appendix B		
Frame specification		Material:	Mild or stainless steel – see Appendix A		
		Min. Section (mm):	see section 5 in appendix A		

#### Intumescent Materials: Therm-A-Seal

##### Head:

**H60** (details in confidence on file at CIFL).

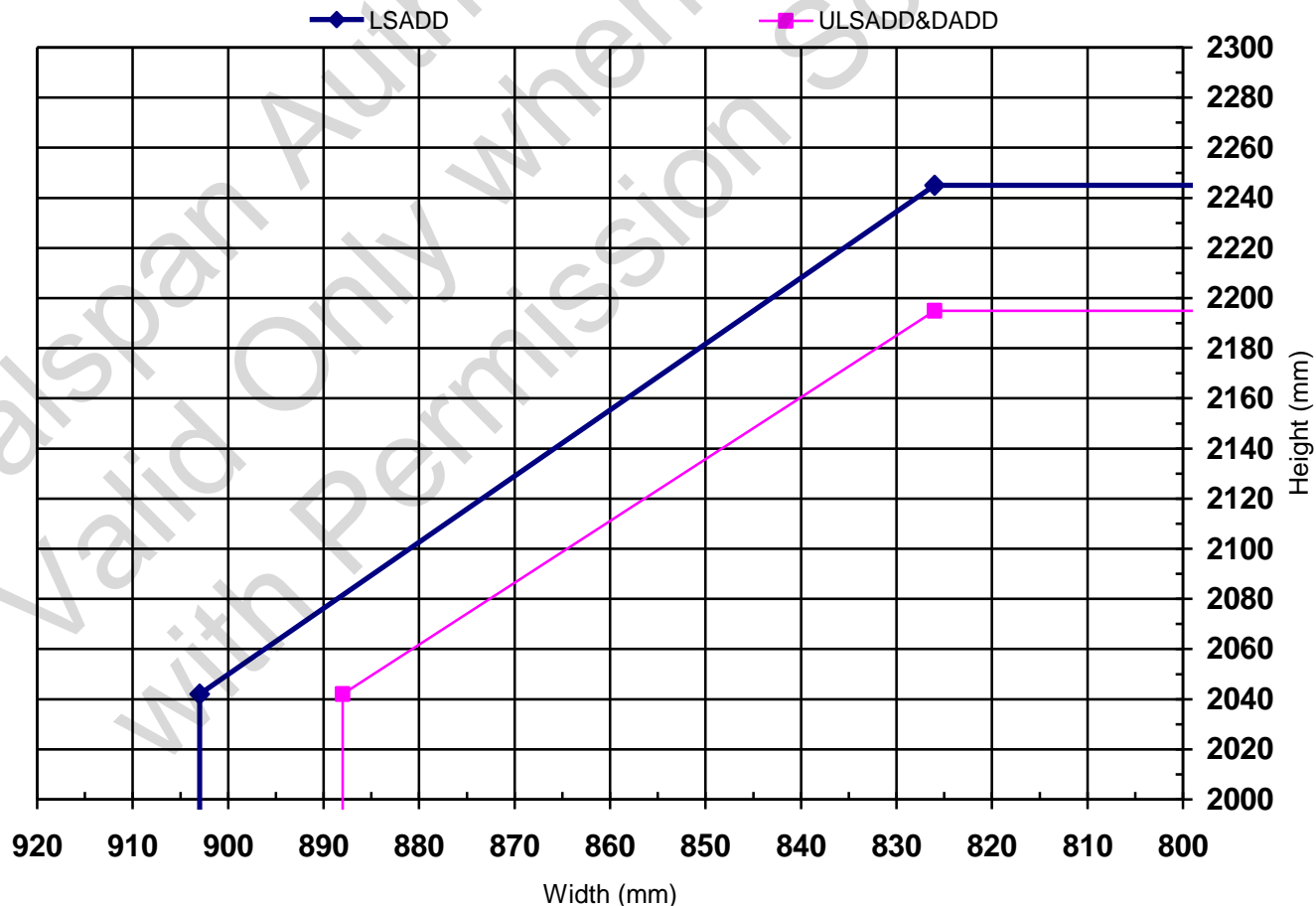
##### Meeting Edges:

**Square:** 2No 10 x 4mm exposed and fitted 5mm either side of the centreline in one leaf edge and 1No 10 x 4mm fitted centrally in the opposite leaf.

**Jambs: H60** (details in confidence on file at CIFL).

**Hardware Protection:** see section 12

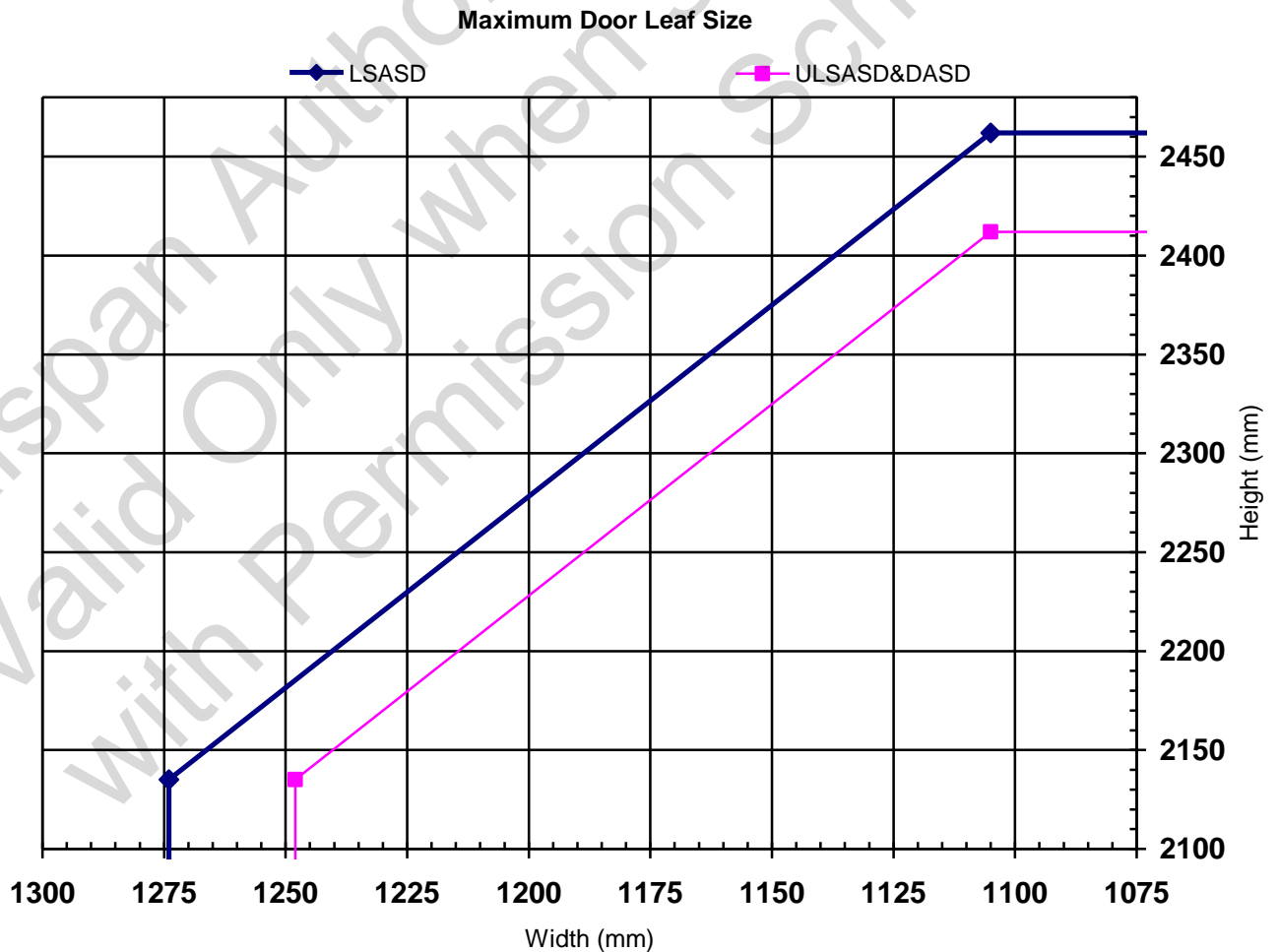
Maximum Door Leaf Size



## Halspan® 60 Prima Backfilled Steel Frame Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Single Doorsets

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSASD	From:	2135	x 1274
		To:	2462	x 1105
	ULSASD & DASD	From:	2135	x 1248
		To:	2412	x 1105
Maximum Overpanel height (mm)			na	
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
	Approved systems:		See section 7 and appendix B	
Frame specification	Material:		Mild or stainless steel – see Appendix A	
	Backfilling:		Concrete or mortar	
	Min. Section (mm):		see section 5 in appendix A	
<b>Intumescent Materials: Therm-A-Seal</b>				
<b>Head:</b>				
<b>Square:</b> 1No 38 x 4mm exposed and fitted centrally in the leaf or frame head.				
<b>Jamb:</b> 1No 38 x 4mm exposed and fitted centrally in the leaf edge or frame reveal.				
<b>Hardware Protection:</b> see section 12				



## Halspan® 60 Prima Backfilled Steel Frame Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Single Doorsets + Overpanel

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSASD+OP	From:	2135	x 875
		To:	2285	x 800
	ULSASD+OP & DASD+OP	From:	2135	x 850
		To:	2235	x 800
Maximum Overpanel height (mm)			500	
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
	Approved systems:		See section 7 and appendix B	
Frame specification	Material:		Mild or stainless steel – see Appendix A	
	Backfilling:		Concrete or mortar	
	Min. Section (mm):		see section 5 in appendix A	

#### Intumescent Materials: Therm-A-Seal

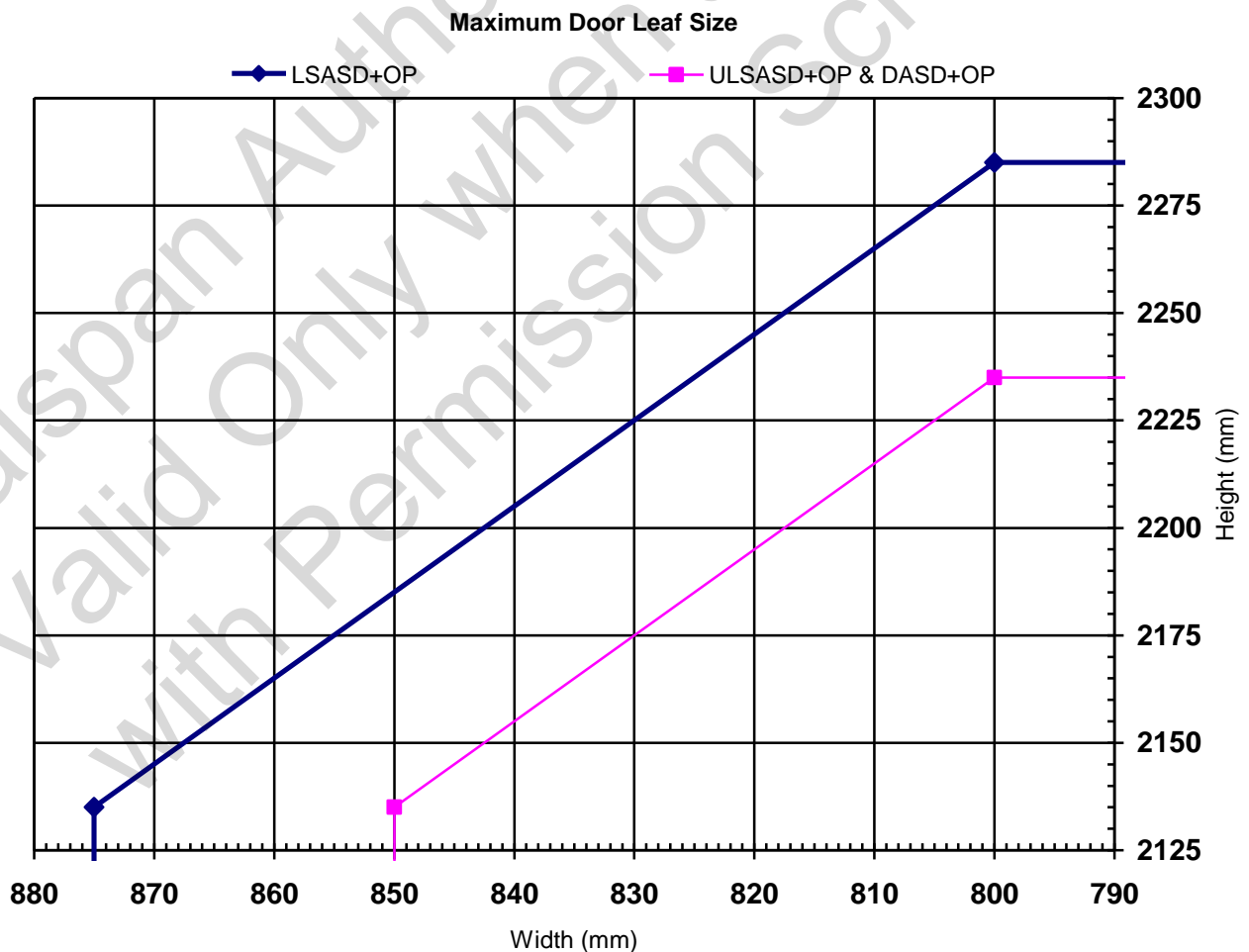
##### Head:

**Square:** 1No 38 x 4mm exposed and fitted centrally in the leaf or bottom of the overpanel.

**Rebated:** 2No 15 x 4mm exposed and fitted centrally with one seal in the rebate and one seal in the upstand of the overpanel plus 1No 10 x 4mm in the corner of the leaf head rebates.

**Jambs & Overpanel:** 1No 38 x 4mm exposed and fitted centrally in the leaf edge or frame reveal.

**Hardware Protection:** see section 12



## Halspan® 60 Prima Backfilled Steel Frame Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Double Doorsets

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSADD	From:	2135	x 945
		To:	2505	x 800
	ULSADD & DADD	From:	2135	x 920
		To:	2455	x 800
Maximum Overpanel height (mm)			na	
Glazing		Maximum Glazed Area:	0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
		Approved systems:	See section 7 and appendix B	
Frame specification		Material:	Mild or stainless steel – see Appendix A	
		Backfilling:	Concrete or mortar	
		Min. Section (mm):	see section 5 in appendix A	

#### Intumescent Materials: Therm-A-Seal

##### Head:

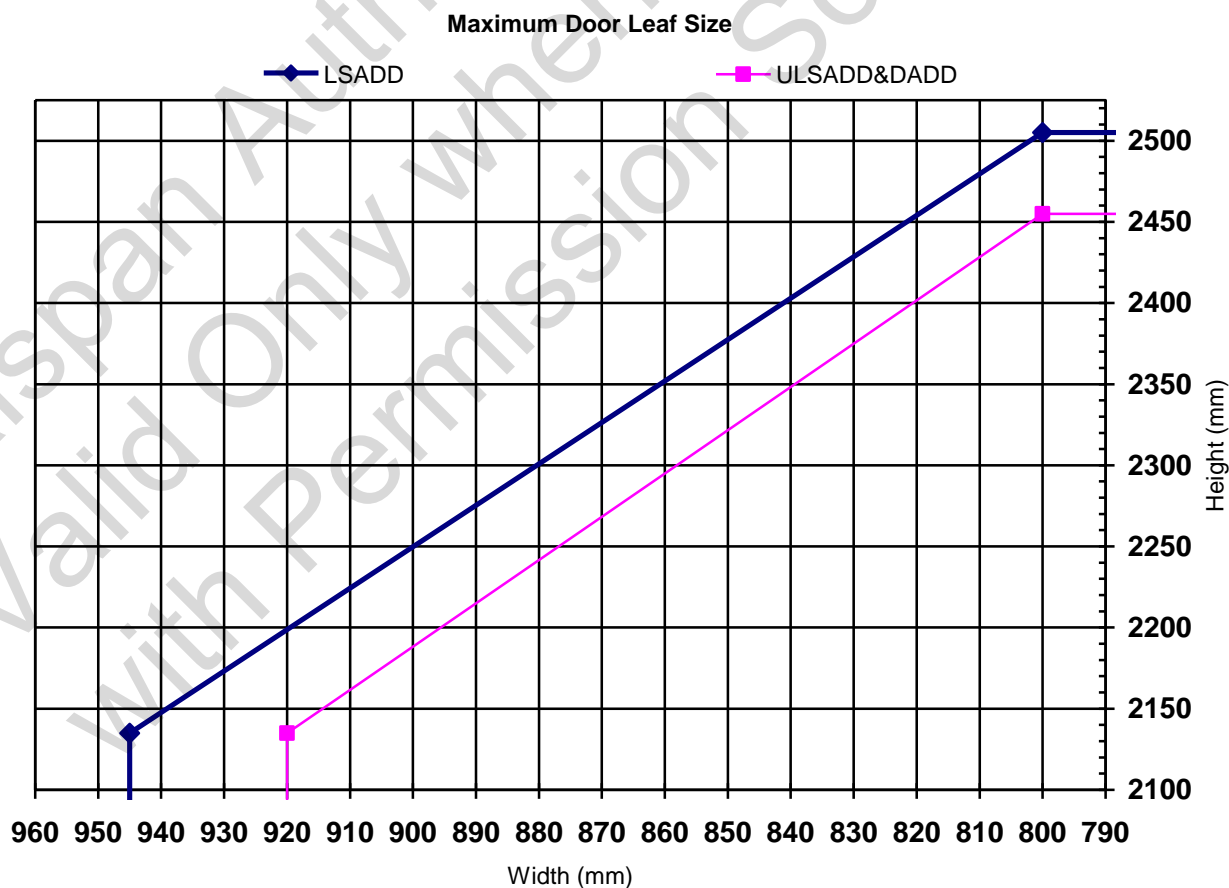
1No 38 x 4mm exposed and fitted centrally in the leaf or frame head.

##### Meeting Edges:

**Square:** 2No 10 x 4mm exposed and fitted 5mm either side of the centreline in one leaf edge and 1No 10 x 4mm fitted centrally in the opposite leaf.

**Jambs:** 1No 38 x 4mm exposed and fitted centrally in the leaf edge or frame reveal.

**Hardware Protection:** see section 12



## Halspan® 60 Prima Backfilled Steel Frame Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting & Double Acting Double Doorsets + Overpanel

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSADD+OP	From:	2135	x 825
		To:	2185	x 800
	ULSADD+OP & DADD+OP	Max:	2135	x 800
Maximum Overpanel height (mm)			500	
Glazing	Maximum Glazed Area:		0.82m <sup>2</sup> (see section 7 for details and see section 7.6 for 1.33m <sup>2</sup> option)	
	Approved systems:		See section 7 and appendix B	
Frame specification	Material:		Mild or stainless steel – see Appendix A	
	Backfilling:		Concrete or mortar	
	Min. Section (mm):		see section 5 in appendix A	

#### Intumescent Materials: Therm-A-Seal

##### Head:

**Square:** 1No 38 x 4mm exposed and fitted centrally in the leaf or bottom of the overpanel.

**Rebated:** 2No 15 x 4mm exposed and fitted centrally with one seal in the rebate and one seal in the upstand of the overpanel plus 1No 10 x 4mm in the corner of the leaf head rebates.

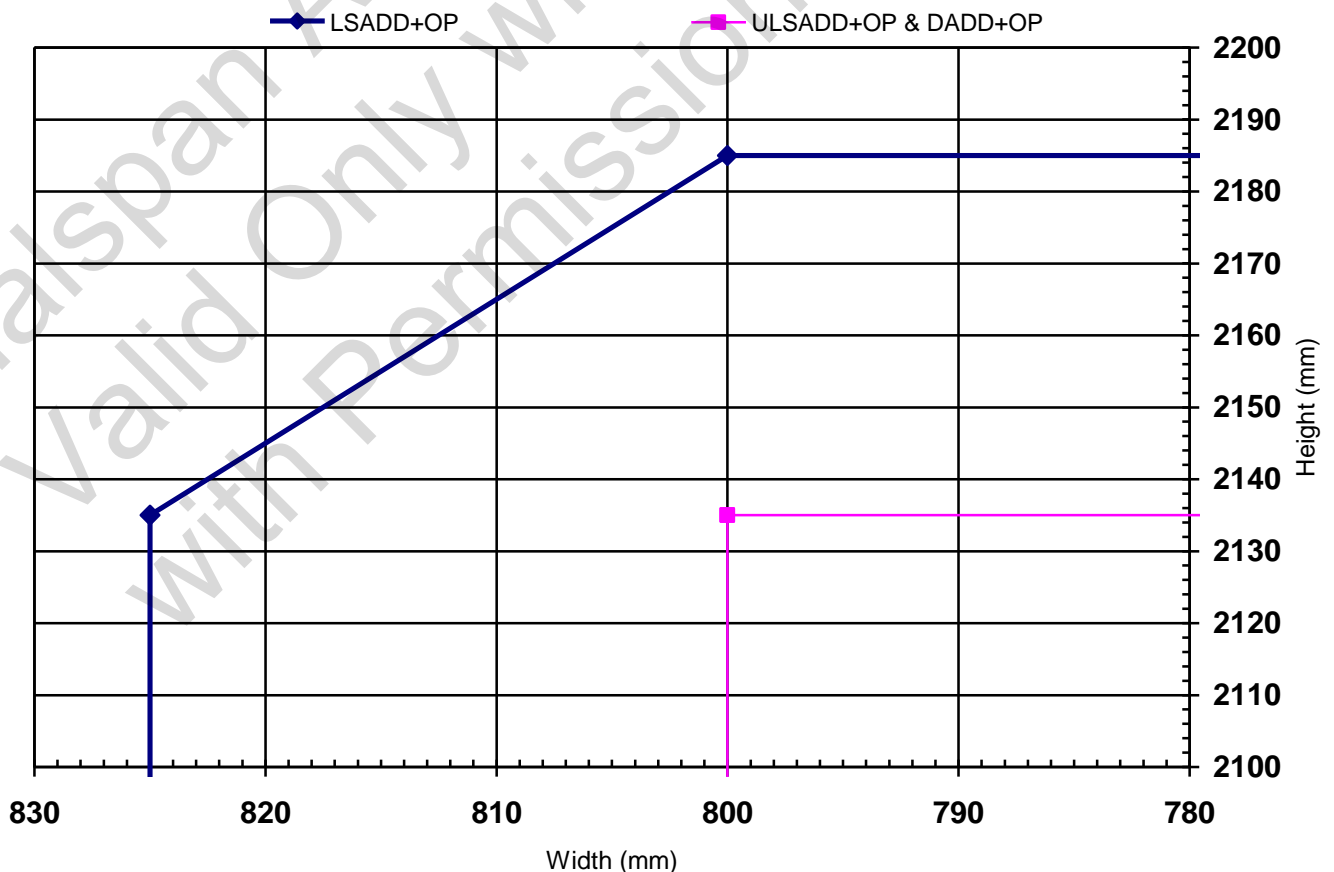
##### Meeting Edges:

**Square:** 2No 10 x 4mm exposed and fitted 5mm either side of the centreline in one leaf edge and 1No 10 x 4mm fitted centrally in the opposite leaf.

**Jambs & Overpanel:** 1No 38 x 4mm exposed and fitted centrally in the leaf/overpanel edge or frame reveal.

**Hardware Protection:** see section 12

Maximum Door Leaf Size



## Appendix G

### Halspan® 60 Prima Plus Doorsets

#### 1. Introduction

This appendix contains information relating to Halspan® 60 **Prima** Plus doorsets. The assessment uses the same extrapolation and interpretation techniques applied for the main assessment and is an evaluation of the potential fire resistance performance, if the elements were to be tested in accordance with BS 476-22:1987.

All construction details for the Prima Plus design are to remain as stated in the main body of the assessment, unless otherwise specified in the following sections.

#### 2. General Description of Construction

The construction for door leaves of this design comprises a solid sheet of 54mm thick Halspan® 60 **Prima** Plus three layered particleboard (nominal density 630kg/m<sup>3</sup> +/- 10%). The Halspan® **Prima** Plus design has no added urea formaldehyde. Where specified, the leaves are lipped with hardwood.

#### 3. Leaf Sizes

The approval for increased leaf dimensions is based on test CFR 1103171 and takes into account the margin of over performance above 60 minutes integrity for the design and the characteristics exhibited during test. Data sheets specifying the maximum approved leaf sizes and graphs showing the permitted gradient between maximum height and width are contained at the end of this appendix.

Doorsets with reduced dimensions are deemed to be less onerous. Therefore, doors with dimensions that are less than those given in the data sheets may be manufactured.

#### 4. Configurations

Based on the cited test evidence this assessment covers the following doorset configurations for the Prima Plus design:

Abbreviation	Description
LSASD & ULSASD	Latched & unlatched single acting single doorset
LSADD & ULSADD	Latched & unlatched single acting double doorset

Unequal leaf double doorsets are covered by this assessment with no restriction on the smaller leaf dimension.

#### 5. Leaf Size Adjustment

See section 5 of the main assessment



## 6. Overpanels

Only overpanels fitted with a transom are permitted for the Prima Plus design. See section 6 for construction details

## 7. Glazing

The maximum assessed glazed area for the Prima Plus design is 0.5m<sup>2</sup>. All other details for glazing given in section 7 of the main assessment must be followed.

## 8. Door Frames

All door frame options given in section 8 of the main assessment are permitted with the Prima Plus design except for steel.

## 9. Timber Lippings

Halspan® 60 Prima Plus must be lipped in accordance with the following specification.

Material	Size (mm)	Min Density (kg/m <sup>3</sup> )
Hardwood meeting or exceeding class J30 as specified in BS EN 942: 2007 (subject to adequate repair of any defects)	1. Flat = 6 – 18 thick with a maximum of 2mm profiling permitted at corners of lipping (see section 8.1 of main assessment) 2. Rebated = Not permitted	640

- Overpanels separated from the leaf heads with a transom do not need to be lipped.
- Prima Plus may only be lipped on the vertical edges of the leaves
- A 2.5° chamfer is permitted to the lipping at the leading edge of leaves providing the door gaps meet the requirements of section 17 in the main assessment.

## 10. PVC Lippings

Halspan® 60 **Prima** Plus may be lipped with PVC in accordance with the following specification.

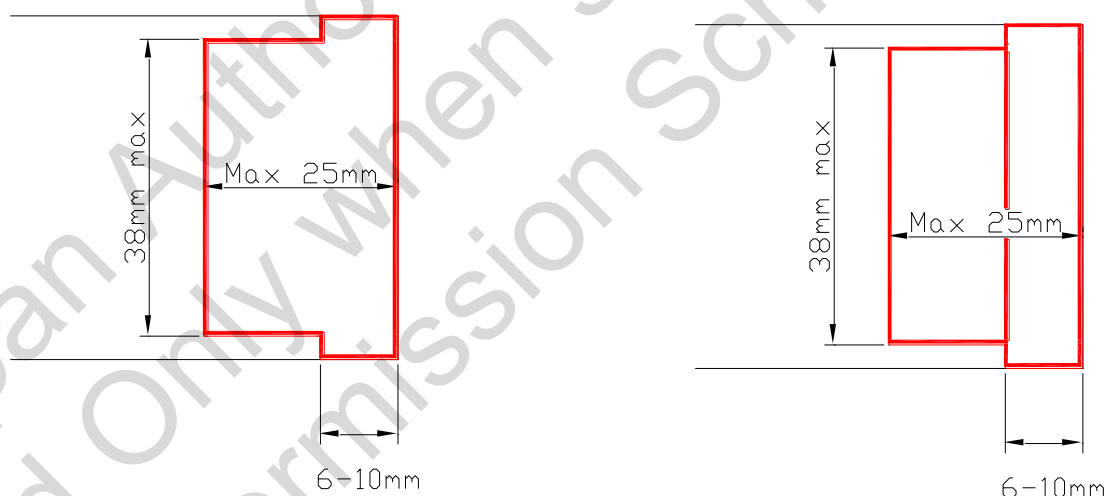
Material	Size (mm)	Min Density (kg/m <sup>3</sup> )
PVC	2 thick	-

1. Can be fitted direct to Halspan® 60 **Prima** Plus core on the vertical and horizontal edges
2. Can be fitted onto hardwood lippings at the vertical edges only as per section 9 of this appendix

## 11. T-Shaped Lippings

In certain circumstances, a 'T' section lipping may be required which will be bonded into a groove machined in the edge of the leaf. This option is acceptable providing the tongue is a maximum of 38mm wide and otherwise meets the specification given in section 9 of this appendix. The 'T' section lipping may be in two sections with the exposed lipping being within the range of 6 – 10mm thick. All glue lines must be as stated in section 15 of this appendix.

See drawings below:



## 12. Edge Protectors

The Prima Plus design may be fitted with the edge protectors as described in section 10 of the main assessment

### 13. Facings

The basic 54mm thick Halspan® 60 **Prima** Plus leaf construction has integral facings and does not therefore require additional facing materials as standard.

The following facing materials are permitted for this door design since they would degrade rapidly under test conditions without significant effect:

Facing Material	Maximum Permitted Thickness (mm)
Paint	0.5
Timber veneers	2
PVC	2
Plastic laminates	2
Decorative paper / non-metallic foil	0.4

1. Metallic facings are not permitted except for push plates and kick plates (see section 15.6 of the main assessment)
2. The door leaf thickness may be reduced by a total maximum of 0.5mm for calibration purposes in order to accommodate the chosen finish
3. Materials must not conceal intumescent strips
4. Other than PVC, the facing materials must not return around the edge of leaf
5. The PVC may be post-formed over the vertical and horizontal edges provided that the required intumescent specification detailed in the data sheets at the end of this appendix is maintained. The maximum radius at the corners of the leaf for post formed doors is 8mm, see diagram in section 8.1 of the main assessment for details.

#### 14. Intumescent Materials

Intumescent products can often exhibit significantly different characteristics, which could alter the performances obtained during test, and therefore they must not be considered interchangeable, irrespective of whether the product has been tested and the seal dimensions maintained. The intumescent materials tested and assessed for the Prima Plus doorset design are as follows:

Application	Location	Product/Manufacturer
Edge seals	Fitted in the frame jambs or leaf edges	1. PVC encased SLS-PLA-103 – Halspan Ltd
Hinges	Under both hinge blades	1. 1mm Interdens – Dufaylite Developments Ltd 2. 1mm MAP paper – Lorient Polyproducts Ltd 3. 1mm Pyrostrip 300 – Mann McGowan 4. 1mm Therm-A-Strip – Intumescent Seals Ltd 5. 1mm SLS-PAD-107 – Halspan Ltd
Lock/latches	Encasing the lock body and underneath the forend and strike plate	1. 1mm Interdens – Dufaylite Developments Ltd 2. 1mm MAP paper – Lorient Polyproducts Ltd 3. 1mm Pyrostrip 300 – Mann McGowan 4. 1mm Therm-A-Strip – Intumescent Seals Ltd 5. 1mm SLS-PAD-107 – Halspan Ltd
Flush bolts	Lining all sides of the mortices, including the keeps	1. 2mm Interdens – Dufaylite Developments Ltd 2. 2mm MAP paper – Lorient Polyproducts Ltd 3. 2mm Therm-A-Strip – Intumescent Seals Ltd 4. 2mm Therm-A-Flex – Intumescent Seals Ltd 5. 2mm SLS-PAD-107 – Halspan Ltd

The seal specification for each configuration is contained in the data sheets at the end of this appendix.

Concealed intumescent materials are not permitted for use with the Prima Plus door design.

#### 15. Adhesives

The following adhesives must be used in the construction:

Element	Product/Manufacturer
Timber lippings	UF, PF, PU, PVAC, PU based hotmelt
PVC lippings	Contact adhesive

#### 16. Hardware

The following hardware, tested on the Halspan® 60 **Prima** design, has been approved for use with the Halspan® 60 **Prima** Plus door design:

Element	Manufacturer and Product Reference
Hinges	<ol style="list-style-type: none"> <li>100 x 30mm standard steel butt hinges</li> <li>101 x 30mm Fireblock stainless steel hinges</li> <li>Royde &amp; Tucker H105 lift off hinges</li> <li>Royde &amp; Tucker H101 lift off hinges</li> <li>Cairney Hardware SOSS type hinges</li> <li>114 x 30mm ASSA lift off type butt hinge ref: 3244</li> <li>101 x 30mm Halspan R60 butt hinge ref: BOM-HIN-200/1</li> </ol>
Closers	<ol style="list-style-type: none"> <li>Dorma TS83 face fixed overhead closer</li> <li>Geze TS200 VW face fixed overhead closer</li> <li>Halspan R60 Eco closer ref: CLR-AGN-101</li> <li>Halspan R60 power closer ref: CLR-BSS-101</li> <li>Cairney Hardware Ltd Mitron C2300 concealed overhead closer</li> <li>ITS 96 concealed overhead closer with tested proprietary intumescent system</li> </ol>
Locks/latches	<ol style="list-style-type: none"> <li>Standard tubular mortice latch</li> <li>Firco multi point lock/latch</li> <li>Halspan R60 latch/lock ref: BOM-LCK-104</li> <li>Cairney Architectural Hardware Solutions – C4100 Shearmag lock</li> </ol>
Threshold seals	<ol style="list-style-type: none"> <li>Halspan threshold drop seal ref: SAC PA 08935 ref: SLS-DRP-100 range</li> <li>Norseal threshold drop seal ref: 810</li> </ol>

- The GU Ferco 3 Deadbolt requires a 25 x 4mm thick intumescent strip in the closing edge frame reveal in lieu of the specification shown in appendix F and can only be used on single leaf doorsets of maximum leaf height 2231mm, and must be used in a hardwood (640kg/m<sup>3</sup>) door frame.
- The Cairney Hardware Shearmag lock must be used in conjunction with a twin strip perimeter intumescent specification at the head of the door in conjunction with the Halspan intumescent protection pack fitted around the body of the lock
- The Cairney Hardware Mitron C2300 concealed overhead closer must be used in conjunction with a twin strip perimeter intumescent specification at the head of the door in conjunction with the Halspan intumescent protection pack fitted around the body of the closer
- The Dorma ITS 96 concealed overhead closer may be used with a single strip perimeter intumescent specification providing the strip is = to or > 25 x 4mm and centrally fitted. The closer may also be used with a twin strip perimeter intumescent specification at the head of the door providing the seals are = to or > than 15 x 4mm. The closer must always be used in conjunction with the proprietary intumescent pack to be provided by the supplier of the closer. The door stop will need to be a minimum depth of 14mm to accommodate the closer.
- Locksets with forends/keeps = to or >than 150mm high must either be used with a twin strip perimeter intumescent specification or if a single strip system is to be used an additional seal must be fitted to run along side the forend/keep.

## Alternative Hardware

The following additional and alternative hardware is permitted for use with the Halspan® 60 Prima Plus door design:

### Hinges

Leaves must be hung on a minimum of 3 hinges. Hinges with the following specification are 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	
Hinge positions:	If 3 hinges are required:	Top	100 –180mm from the head to top of hinge
		2 <sup>nd</sup>	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	100-180mm from the head to top of hinge
		2 <sup>nd</sup> & 3 <sup>rd</sup>	Equispaced between top and bottom or 2 <sup>nd</sup> hinge 200mm from top hinge and 3 <sup>rd</sup> hinge equally spaced between 2 <sup>nd</sup> and bottom hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
Intumescent protection:		See section 14 of this appendix	

## Latches and locks

Latches and locks must either be as tested, or alternatively components with the following specification are acceptable:

Element	Specification
Maximum forend and strike plate dimensions:	235mm high by 25mm wide by 4mm thick
Maximum body dimensions:	18mm thick by 100mm wide by 165mm high.
Intumescent protection:	See section 14 of this appendix
Materials:	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel

## Automatic closing

Automatic closing devices must be as tested or components that have demonstrated contribution to the required 60 minutes performance of this type of flush doorset design and intumescent specification, at a similar leaf thickness and when tested to BS 476-22:1987 or BS EN 1634-1.

**Note:** Pivots and floor spring assemblies are not approved for the Halspan® 60 Prima Plus door design.

All other items of additional and alternative hardware listed 15.4 to 15.14 in the main assessment are acceptable for use with the Halspan® 60 Prima Plus door design.

## 17. Classification of Timber

All timber must meet or exceed class J30 as specified in BS EN 942:2007, providing any defects are adequately repaired.

## 18. Door Gaps

See section 17 in the main assessment for required door gaps

## 19. Structural Opening

See section 18 in the main assessment for required structural opening

## 20. Fixings

See section 19 in the main assessment for required fixings

## 21. Sealing to Structural Opening

See section 20 in the main assessment for required sealing to structural opening

## 22. Insulation

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

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

## 23. Smoke Control

See section 22 of the main assessment for the smoke control requirement

## 24. Conclusion

If the Halspan<sup>®</sup> 60 **Prima** Plus doorset design, constructed in accordance with the specification documented in this appendix, were to be tested in accordance with BS 476-22:1987, it is our opinion that it would provide a minimum of 60 minutes integrity and insulation (subject to section 22 in this appendix).



## Halspan® 60 Prima Plus Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single and Double Acting Single Doorsets – Halspan® Type SLS

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSASD	From:	2039	x 901
		To:	2189	x 826
	ULSASD	From:	2039	x 876
		To:	2139	x 826
Maximum Overpanel height (mm)		Transomed	2000	
Glazing		Maximum Glazed Area:	0.5m <sup>2</sup> (see section 7 in main assessment for details)	
		Approved systems:	See section 7 and appendix B in main assessment	
Frame specification (see section 8 in main assessment)		Material:	Hardwood	MDF
		Min. Section (mm):	70 x 22	70 x 30
		Min. Density(kg/m³):	640	700

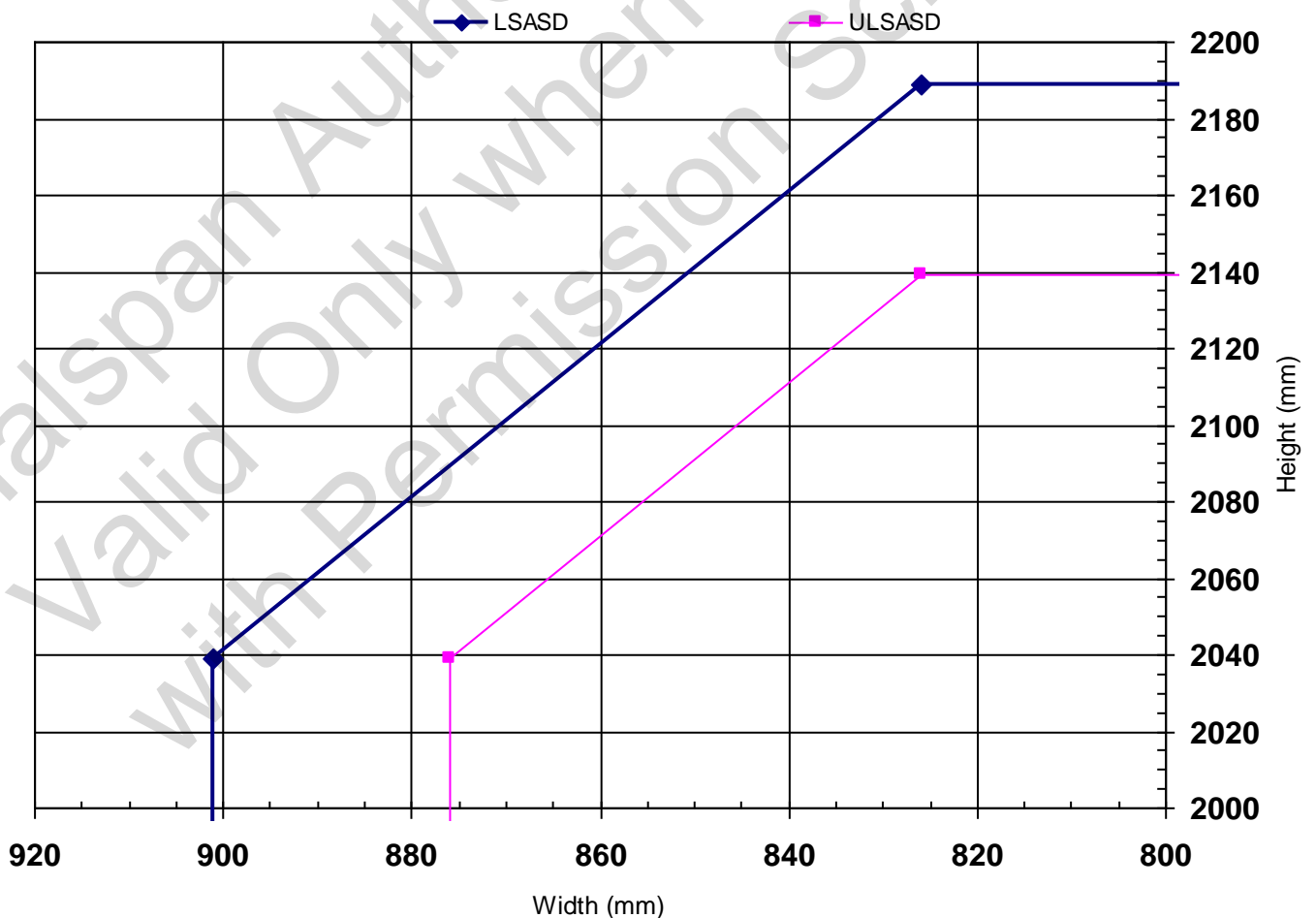
#### Intumescent Materials: Halspan® Type SLS

**Head** 2 No 15 x 4mm spaced 8mm apart and centrally fitted in the frame reveal or leaf edge

**Jambs**: 2 No 15 x 4mm spaced 8mm apart and centrally fitted in the frame reveal or leaf edge

**Hardware Protection**: see section 14 in this appendix

#### Maximum Door Leaf Size



## Halspan® 60 Prima Plus Doorsets – 60 Minutes Fire Resistance

### Latched and Unlatched Single Acting Double Doorsets – Halspan® Type SLS

	Configuration		Height (mm)		Width (mm)	
Leaf Sizes	LSADD	From:	2039	x	851	
		To:	2089	x	826	
	ULSADD	From:	2039	x	826	
		To:	2039	x	826	
Maximum Overpanel height (mm)		Transomed	1500			
Glazing		Maximum Glazed Area:	0.5m <sup>2</sup> (see section 7 in main assessment for details)			
		Approved systems:	See section 7 and appendix B in main assessment			
Frame specification (see section 8 in main assessment)		Material:	Hardwood		MDF	
		Min. Section (mm):	70 x 22		70 x 30	
		Min. Density(kg/m³):	640		700	
<b>Intumescent Materials: Halspan® Type SLS</b>						
<b>Head:</b> 2 No 15 x 4mm spaced 8mm apart and centrally fitted in the frame reveal or leaf edge						
<b>Meeting edges:</b> 2 No 15 x 4mm spaced 8mm apart and centrally fitted in one meeting edge only						
<b>Jambs:</b> 2 No 15 x 4mm spaced 8mm apart and centrally fitted in the frame reveal or leaf edge						
<b>Hardware Protection:</b> see section 14 in this appendix						

