

**Title:**

Field of Application Report for  
Moralt Laminesse Firesmoke &  
Firesafe 44/54mm Doorsets

For:

30 Minutes Fire Resistance

**Report No:**

Chilt/A13058 Revision D

**WF Contract:**

421102

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**Prepared for:**

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## 1 Foreword

This field of application report has been commissioned by Moralt AG and relates to Laminesse Firesmoke & Firesafe 44/54mm, for 30 minute fire resisting performance doorset installations.

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

This field of application (scope) uses established empirical methods of extrapolation and experience of fire testing similar door assemblies, in order to extend the scope of application by determining the limits for the designs based on the tested constructions and performances obtained. The scope is an evaluation of the potential fire resistance performance, if the variations specified herein were to be tested in accordance with BS 476: Part 22: 1987 and therefore can neither be considered for a CE marking application nor can the conclusion be used to establish a formal classification against EN13501-2.

This field of application has been written using appropriate test evidence generated at a UKAS or European accredited laboratory to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturers stated door design and is summarised in section 3.

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

This field of application has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the Passive Fire Protection Forum (PFPF) guidelines to undertaking assessments. The aim of the PFPF guidelines is to give confidence to end-users that assessments that exist in the UK are of a satisfactory standard to be used for building control and other purposes.

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 Proposal

It is proposed to consider the fire resistance performance of the doorset designs described in the technical specification in section 4 of this report, for 30 minutes fire resistance, if the doorsets, were to be tested to the requirements of BS 476: Part 22: 1987, *Fire tests on building materials and structures – Part 22: Method for determination of the fire resistance of non-load bearing elements of construction*.

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

### 3 Test Data

The test evidence summarised below has been generated to support the fire resistance performance of the Laminesse Firesmoke & Firesafe 44/54mm doorset designs that are the subject of this assessment.

#### 3.1 Test report RF07028

This test was conducted on an unlatched, double leaf, single acting doorset, with glazing. Test is presented as primary data for the Laminesse Firesmoke & Firesafe 44mm, 30 minute fire resisting doorset design.

<b>Test Date</b>	4 <sup>th</sup> November 2014
<b>Identification of test body:</b>	Chiltern international Fire, now trading as Warringtonfire Testing and Certification. UKAS 1762
<b>Test Sponsor:</b>	Moralt AG
<b>Summary of test construction</b> (mm)	<p><b>Specimen:</b> Laminesse FireSafe 44mm blank, 2mm thick plywood facings, with 9mm thick hardwood lippings on all edges.</p> <p><b>Leaf Size:</b> 2300 (h) x 1050/1050 (w) x 43.5 (t).</p> <p><b>Glazing:</b> Left Leaf: 6mm thick Pyroshield in aperture size 1200(h) x 200(w), protected with Intumescent Seals Ltd Therm-A-Strip glazing system in hardwood beads. Right Leaf: 6mm thick Pyroshield in aperture size 600(h) x 600(w), protected with Intumescent Seals Ltd Therm-A-Strip glazing system in hardwood beads.</p> <p><b>Hardware:</b> 4No Royde &amp; Tucker H101 lift off type hinges and a Dorma TS73V overhead closer were fitted to each leaf, with a Legge 'life' tubular latch with a 58 high forend and aluminium handleset.</p> <p><b>Door frame:</b> European Redwood 32 thick of nominal density 510kg/m<sup>3</sup>.with Redwood architraves.</p> <p><b>Leaf Edge Intumescent Seals:</b> Intumescent Seals Ltd Therm-A-Seal were fitted in the frame jambs and leaf edges.</p>
<b>Test Standard:</b>	BS 476: Part 22: 1987
<b>Test Results</b> (minutes) Tested opening in toward the furnace	<p>Integrity: 33</p> <p>Insulation: 33 (In accordance with the note to clause 7.6.1.1. of BS 476: 1987 the glazing was not evaluated for insulation)</p>

### 3.2 Test report RF08125

This test was conducted on an unlatched, double leaf, single acting doorset. Test is presented as supporting data for the Laminesse Firesmoke & Firesafe 44mm, 30 minute fire resisting doorset design when installed in MDF door frames.

<b>Test Date</b>	16 <sup>th</sup> October 2014
<b>Identification of test body:</b>	Chiltern international Fire, now trading as Warringtonfire Testing and Certification. UKAS 1762
<b>Test Sponsor:</b>	Chiltern international Fire
<b>Summary of test construction (mm)</b>	<p><b>Specimen:</b> Particleboard 44mm thick blank with 8mm thick hardwood lippings on vertical edges only.</p> <p><b>Leaf Size:</b> 2442 (h) x 915/915 (w) x 44 (t)</p> <p><b>Hardware:</b> 4No Royde &amp; Tucker H105 lift off type hinges and a Dorma TS71 overhead closer were fitted to each leaf, with a Euro spec tubular latch with a 57 high forend and aluminium handleset.</p> <p><b>Door frame:</b> MDF 30 thick of nominal density 750kg/m<sup>3</sup> with MDF architraves.</p> <p><b>Leaf Edge Intumescent Seals:</b> Pyroplex Ltd Certifire certificate CF355 were fitted in the frame jambs and leaf meeting edges.</p>
<b>Test Standard:</b>	BS 476: Part 22: 1987
<b>Test Results (minutes)</b>	Integrity: 49, Insulation: 49 Tested opening in toward the furnace

### 3.3 Test report BTC15415F

This test was conducted on an unlatched, double leaf, single acting doorset with flush overpanel mounted in a Komfire 100 aluminium door frame. Test is presented as primary data for the Laminesse Firesmoke & Firesafe 44mm, 30 minute fire resisting doorset design with 6mm thick facings and Lorient Polyproducts Ltd Type 617 seals.

<b>Test Date</b>	30 <sup>th</sup> August 2007
<b>Identification of test body:</b>	Building Test Centre, British Gypsum Ltd, East Leake, Loughborough, LE12 6NP. UKAS 0296
<b>Test Sponsor:</b>	Moralt AG
<b>Summary of test construction (mm)</b>	<p><b>Specimen:</b> Laminesse FireSafe 44mm blank with 8mm thick hardwood lippings on all edges, 4mm thick chipboard facings.</p> <p><b>Leaf Size:</b> 2398 (h) x 897/900 (w) x 44(t) with 200 (h) overpanel with rebated head detail</p> <p><b>Hardware:</b> 3No Komfire 100mm high lift off type hinges ref: 582 and a Dorma TS68 overhead closer, no latch was installed.</p> <p><b>Door frame:</b> Komfire 100 aluminium door frame.</p> <p><b>Leaf Edge Intumescent Seals:</b> Lorient Polyproducts Ltd Type 617 were fitted in the frame jambs and leaf edges.</p>
<b>Test Standard:</b>	BS 476: Part 22: 1987
<b>Test Results (minutes)</b>	Integrity: 49, Insulation: 49 Tested opening in toward the furnace

### 3.4 Test report FEP14102

Test RF14102 was conducted on 2no unlatched, double leaf, single acting doorsets, only specimen B is relevant to this report. Test is presented as supporting data for the Laminesse Firesmoke & Firesafe 44/54mm, 30 minute fire resisting doorset design installed within James Latham timber based WoodEx 30 door frames.

<b>Test Date</b>	8 <sup>th</sup> July 2014
<b>Identification of test body:</b>	Chiltern International Fire, now trading as Warringtonfire Testing and Certification. UKAS 1762
<b>Test Sponsor:</b>	James Latham, Unit 2, Swallow Park, Fenway Road, Hemel Hempstead, Hertfordshire, HP2 7QU
<b>Summary of test construction</b> (mm)	<p><b>Specimen B:</b> Graduated Density chipboard 44 thick blank with 8mm thick hardwood lippings on all edges.</p> <p><b>Leaf Size:</b> 2040 (h) x 826/303 (w) x 44 (t).</p> <p><b>Hardware:</b> 3No Royde &amp; Tucker lift off butt type hinges ref: H101 and a Geze UK TS2000V overhead closer were fitted to each leaf, with a Zoo tubular latch with a 62 high forend and aluminium handleset and steel flush bolts fitted in the meeting edge.</p> <p><b>Door frame:</b> Latham WoodEx Engineered European Redwood 30 thick of nominal density 510kg/m<sup>3</sup>.with Redwood architraves.</p> <p><b>Leaf Edge Intumescent Seals:</b> Lorient Polyproducts Ltd Type 617 were fitted in the frame jambs and leaf edges, with a Norsound NOR710 environmental seals fitted against the door stop.</p>
<b>Test Standard:</b>	BS 476: Part 22: 1987
<b>Test Results</b> (minutes)	Integrity: 30; Insulation: 30 Tested opening in toward the furnace

**Note:**

Test FEP/F14102 was devised to investigate the influence of the WoodEx engineered timber as a door frame material for use with previously tested and approved door designs. The test is therefore suitable as supporting data for the hardwood WoodEx products with the Laminesse Firesmoke & Firesafe doorset designs.

### 3.5 Test report WF382394

Test WF382394 was conducted on 2No. unlatched, single leaf doorsets, only specimen B is relevant to this report. Test is presented as supporting data for the Laminesse Firesmoke & Firesafe 44/54mm, 30 minute fire resisting doorset design installed with various items of hardware.

<b>Test Date</b>	8 <sup>th</sup> July 2014
<b>Identification of test body:</b>	Exova Warringtonfire, now trading as Warringtonfire Testing and Certification. UKAS 1762
<b>Test Sponsor:</b>	James Latham, Unit 2, Swallow Park, Fenway Road, Hemel Hempstead, Hertfordshire, HP2 7QU
<b>Summary of test construction</b> (mm)	<p><b>Specimen B:</b> Laminesse Firesmoke &amp; Firesafe 54 thick blank with 8mm thick hardwood lippings on all edges and with 6mm thick MDF facings.</p> <p><b>Leaf Size:</b> 2250 (h) x 1000 (w) x 54 (t).</p> <p><b>Hardware:</b> 3No. Simonswerk Tectus concealed hinges ref: TE5273.SSE FD60 and a Dorma ITS96 concealed closer with ITS slide arm and channel guide, with a Glutz multipoint latch with a 1788 high forend and aluminium handleset and security Euro cylinder.</p> <p><b>Door frame:</b> Hardwood 38 thick of nominal density 650kg/m<sup>3</sup>.with MDF architraves.</p> <p><b>Leaf Edge Intumescent Seals:</b> Pyroplex Ltd Rigid Box Seals ref: 6700 and 30141 were fitted in the frame jambs.</p>
<b>Test Standard:</b>	BS 476: Part 22: 1987
<b>Test Results</b> (minutes)	Integrity: 69; Insulation: 69 Tested opening in toward the furnace

### 3.6 Test report FEP/F14256

This test was conducted on an unlatched, single leaf, single acting doorset. Test is presented as primary data for the Laminesse Firesmoke & Firesafe 44mm, 30 minute fire resisting doorset design with 6mm thick facings and Pyroplex Ltd intumescent seals. Specimen B within test RF14256 totalled 44mm thick; therefore the leaf core may be reduced in thickness from the tested dimension within the primary test data - Chilt/RF07028 to achieve a leaf, a minimum of 44mm thick overall, including these 6mm thick facings.

<b>Test Date</b>	10 <sup>th</sup> November 2014
<b>Identification of test body:</b>	BMTRADA, now trading as Warringtonfire Testing and Certification. UKAS 1762
<b>Test Sponsor:</b>	Moralt AG
<b>Summary of test construction (mm)</b>	<p><b>Specimen B:</b> Laminesse FireSafe 44mm blank with 8mm thick hardwood lippings on all edges, and 4mm deep grooves in 6mm thick MDF facings.</p> <p><b>Leaf Size:</b> Specimen B: 2135 (h) x 926 (w) x 44(t)</p> <p><b>Hardware:</b> 3No Eclipse bearing butt type hinges and a Rutland TS3204 overhead closer, Euro spec latch with a 235 high forend and steel Glutz handleset.</p> <p><b>Door frame:</b> Tulipwood 32 thick of nominal density 510kg/m<sup>3</sup>.with MDF architraves.</p> <p><b>Leaf Edge Intumescent Seals:</b> Pyroplex Ltd Rigid Box Seals ref: FO8700 were fitted in the frame reveals.</p>
<b>Test Standard:</b>	BS 476: Part 22: 1987
<b>Test Results (minutes) Tested opening in toward the furnace</b>	Specimen B
	Integrity: 49 Insulation: 49



### 3.7 Test report WF172705 Issue 2

This test was conducted on 2No unlatched, single leaf, glazed single acting doorsets. Test is presented as primary data for the Laminesse Firesmoke & Firesafe 44mm, 30 minute fire resisting doorset design with Lorient Polyproducts Ltd intumescent seals.

<b>Test Date</b>	23 <sup>rd</sup> June 2008	
<b>Identification of test body:</b>	Bodycote Warringtonfire, now trading as Warringtonfire Testing and Certification. UKAS 0249	
<b>Test Sponsor:</b>	Moralt AG	
<b>Summary of test construction</b> (mm)	<p><b>Leaf Sizes:</b> Specimen A: 2320 (h) x 1020 (w) x 44(t) Specimen B: 2120 (h) x 970 (w) x 44(t).</p> <p><b>Both Specimens A&amp;B:</b> Laminesse FireSafe 44mm blank with 10mm thick hardwood lippings on all edges, and 4mm deep grooves in 6mm thick plywood facings.</p> <p><b>Glazing:</b> Both Leaves: 6mm thick Schott Pyran S, protected with Lorient Polyproducts Ltd Flexible Figure 1 (FF1) glazing system in hardwood beads 22(h) x 22(w) with a 5 x 5 bolection return. Specimen A aperture size 1800(h) x 800(w), specimen B aperture size 1600(h) x 700(w). Right Leaf: 6mm thick Pyroshield in aperture size 600(h) x 600(w), protected with Intumescent Seals Ltd Therm-A-Strip glazing system in hardwood beads.</p> <p><b>Hardware:</b> 3No Royde &amp; Tucker H102 lift off type hinges and a Dorma TS71 overhead closer.</p> <p><b>Door frame:</b> Generic softwood 32 thick of nominal density 510kg/m<sup>3</sup>.with MDF architraves.</p> <p><b>Leaf Edge Intumescent Seals:</b> Pyroplex Ltd Rigid Box Seals ref: FO8700 were fitted in the frame reveals.</p>	
<b>Test Standard:</b>	EN1634-1: 2000 and EN1363-1: 1999	
<b>Test Results</b> (minutes) Tested opening in toward the furnace	Specimen A	Specimen B
	<p><b>Integrity:</b> Continuous Flaming: 33 Gap Gauges: 37 Cotton Pad: 16 <b>Insulation: 2</b></p>	<p><b>Integrity:</b> Continuous Flaming: 31 Gap Gauges: 37 Cotton Pad: 18 <b>Insulation: 2</b></p>

The fully glazed designs tested herein are not required to provide insulation performance. Therefore, when considering the test results, the integrity value is determined based on the time to failure of the gap gauges or sustained flaming criteria, whichever fails first.

### 3.8 Field of Application Report Chilt/A11129 Revision E

The referenced assessment, the essential details of which are summarised below, is to be used to support the fire resistance performance of the Laminesse FireSmoke & FireSafe 44/54mm doorsets, for 30 minute fire resisting performance when installed encapsulated in CS Group Acrovyn.

<b>Validity period</b>	From:	15 <sup>th</sup> April 2019
	To:	15 <sup>th</sup> April 2024
<b>Identification of assessing body</b>	Warringtonfire Testing and Certification.	
<b>Assessment Sponsor</b>	Construction Specialties Ltd, 1010 Westcott Venture Park, Westcott, Aylesbury, Buckinghamshire, HP18 0XB	
<b>Summary of Tested Products</b>	<p>The assessment covers the fire resistance of timber based doorsets fitted with PVC edge guards and/or lipped and faced with Acrovyn.</p> <p>This document evaluates a number of fire resistance tests on various timber based doorsets fitted with PVC edge guards and/or lipped and faced with Acrovyn.</p> <p>It extends the scope of application for the use of PVC edge guards and Acrovyn encapsulation to door types which must have been tested with Lorient Polyproducts Type 617 leaf edge seals.</p>	
<b>Test Standard</b>	BS 476: Part 22: 1987	

## 4 General Description of Construction

Full details of the tested and assessed leaf construction are held on file, in confidence, at Warringtonfire.

This assessment considers the following design variations:

1. FireSmoke – 6mm MDF facings
2. FireSmoke – 6mm Chipboard facings
3. FireSafe – 3 – 4mm Ply veneer facings.

The scope of this assessment applies to all 3 design variants unless there is a specific exclusion.

### 4.1 Leaf Thickness

The construction of the Laminesse FireSmoke & FireSafe 44mm utilises a 31 – 32mm (in total) thick core resulting in the overall 44mm thick leaf. It is permitted to increase the core thickness to 42mm (in total) which will result in a 54mm thick leaf.

Either core thickness may be used without restriction, unless specifically excepted in the following sections. Where reference is made to Laminesse 'FireSmoke & FireSafe 44mm', the 54mm leaf may also be utilised.

The 54mm thick variant also permits alternative hardware which is not acceptable in the 44mm thick variant, see section 15.3, and the addition of an acoustic panel, see section 12.5 and an increased leaf size, see relevant data sheet in Appendix C.

## 5 Leaf Sizes

The approval for increased leaf dimensions is based on the tests listed in section 3 and takes into account the margin of over performance above 30 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 C.

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

## 6 Configuration and Orientation

### 6.1 Configuration

Based on the test evidence listed in section 3, this assessment covers the following doorset configurations.

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

**Note:** Timber framed doorsets may utilise either flush or transomed overpanels, whilst aluminium framed doorsets may only utilise flush overpanels. See appendix D for details for Aluminium framed doorsets.

Unequal leaf double doorsets are covered by this assessment with no restriction on the smaller leaf dimension, however the second leaf dimension should be equal to or less than the main leaf.

### 6.2 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.

## 7 Leaf Size Adjustment

Laminesse Firesafe & Firesmoke 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 11.1 may be reduced by 20% for site fitting purposes

## 8 Overpanels

### 8.1 Solid

The timber frame must be softwood or hardwood with a minimum density of 510 kg/m<sup>3</sup>, whilst the frame section for the transom must be a minimum of 70mm x 32mm. Timber door frame and transom construction must comply with the specification contained in section 10.

Overpanels of the same construction as the door leaves may be used, with or without a transom, subject to the table below.

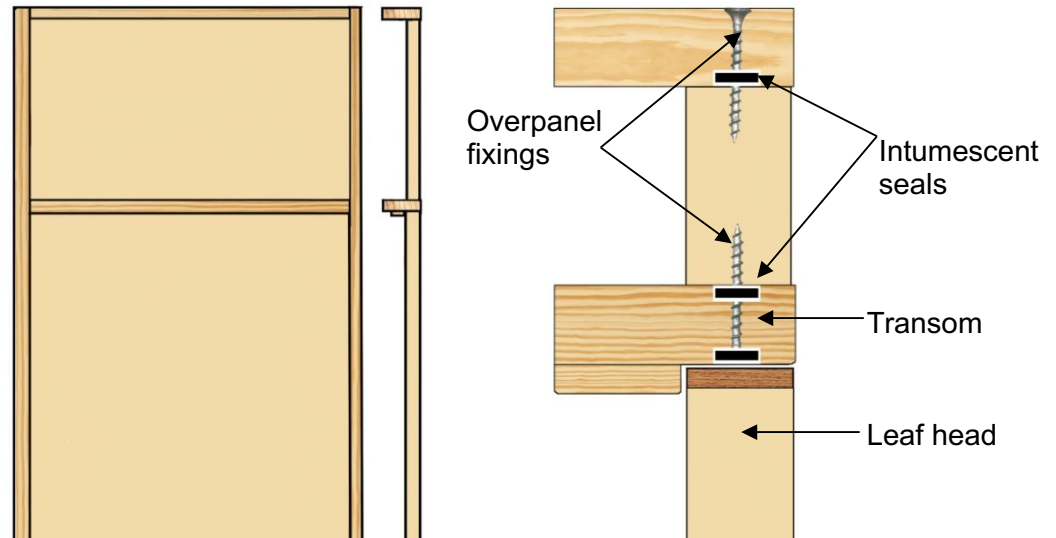
Configuration	Overpanel Installation	Max Overpanel Height (mm)
Single doorsets	Transomed	2000
	Flush	500
Double Doorsets	Transomed	1500
	Flush	Not Permitted

In either case the overpanel must be fully contained within the door frame (see following diagram). Timber door frame and transom construction must comply with the specification contained in section 10.

Overpanels must be fixed by 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.

The intumescent jamb seals specified in appendix C must be fitted to all edges of the door frame or overpanel.

**Note:** Aluminium framed doorsets must not use transomed overpanels; see appendix D.



## 8.2 Glazed Fanlights

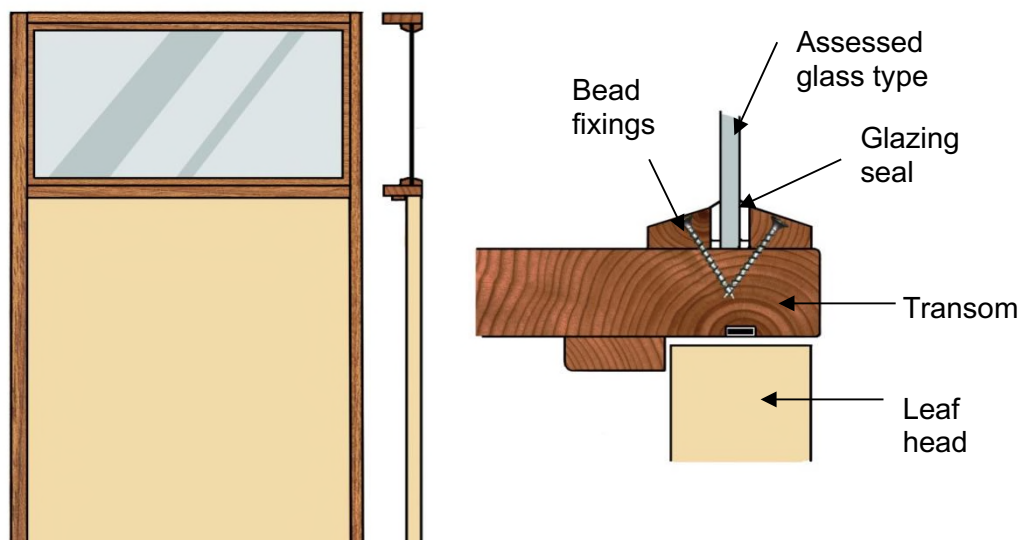
Timber frame doorsets including a transom may include a glazed fanlight. The timber frame and glazing beads must be hardwood with a minimum density of 640 kg/m<sup>3</sup>, whilst the frame section for the transom must be a minimum of 70mm x 44mm. Timber door frame and transom construction must comply with the specification contained in section 10.

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

- The glazing system and glass must be able to demonstrate adequate performance when tested as a window or screen in accordance with BS 476: Part 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

Aluminium and MDF framed doorsets are not assessed for glazed fanlights.



**Note:** Drawing is representative of doorset construction only, actual construction must be as the text within this document specifies.

## 9 Glazing

### 9.1 General

The testing conducted on Laminesse FireSmoke and FireSafe 44mm has demonstrated that the design is capable of tolerating glazed apertures, whilst providing a margin of over performance. Glazing is therefore acceptable within the following parameters.

### 9.2 Assessed Glazing Systems

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

Glazing System	Manufacturer	Maximum Area (m <sup>2</sup> )
1. Fireglaze 30	Sealmaster Ltd	0.72
2. Therm-A-Strip	Intumescent Seals Ltd	0.72
3. Firestrip 30	Hodgsons Sealants Ltd	0.72
4. Flexible Figure 1	Lorient Polyproducts Ltd	0.72
5. System 36Plus	Lorient Polyproducts Ltd	0.72
6. Pyroglaze 30	Mann McGowan Ltd	0.72
7. 8193	Pyroplex Ltd	0.72
8. 30049	Pyroplex Ltd	0.72

### 9.3 Assessed Glass Products

Assessed glass types are as follows.

Glass Type	Manufacturer	Thickness (mm)	Maximum Area (m <sup>2</sup> )
1. Pyroshield	Pilkington UK Ltd	6 & 7	0.72
2. Pyroshield II	Pilkington UK Ltd	6 & 7	0.72
3. Pyran S	Schott Glass Ltd	6	0.72
4. Firelite glass (see note 2)	Southern Ceramic Supplies	6	0.5
5. Pyrostem	Pyroguard UK Ltd	6	0.72
6. Pyroswiss (see note 3)	Vetrotech Saint Gobain	6	0.72
7. Pyroguard EW30 (see note 4)	Pyroguard UK Ltd	7	0.72
8. Pyrobelite 7	AGC Glass UK Ltd	7	0.72
9. Pyrodur 30-104	Pilkington UK Ltd	7	0.72
10. Pyrodur 60-10	Pilkington UK Ltd	10	0.72
11. Pyroguard EW Maxi	Pyroguard UK Ltd	11	0.72
12. Pyrobelite 12	AGC Glass UK Ltd	12	0.72
13. Pyranova 15-S2.0	Schott UK Ltd	15	0.72
14. Pyroguard EI 30	Pyroguard UK Ltd	15	0.72
15. Pyrostop 30-10	Pilkington UK Ltd	15	0.72
16. Pyrobel 16	AGC Glass UK Ltd	16	0.72

**Notes:**

1. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances
2. In accordance with the requirements of Approved Document N: Glazing – safety in relation to impact, opening and cleaning, panes of Firelite glass are limited to a smaller dimension not exceeding 250mm in height or width and an area not exceeding 0.5m<sup>2</sup> (see Approved Document N for details)
3. Based on test RF02110 6mm Pyroswiss manufactured by Vetrotech may only be used with glazing system 3 (Firestrip 30) listed in section 9.2
4. CGI Ltd Pyroguard EW30 and EW Maxi is available in clear or wired options
5. Glass types 13 – 16 are fully insulating for 30 minutes in terms of the criteria set out in BS 476: Part 20: 1987.

**9.4 Glazing Beads & Installation**

Glazing beads must be as specified in the following table.

Material	Profile	Permitted Glazing System (section 9.2)	Permitted Glass Type (section 9.3)	Minimum Density (kg/m <sup>3</sup> )
Hardwood	Chamfer	1 – 8	1 – 16	640
	Square	2	1 – 5	640
		1 – 8	7 – 16	640

Sectional drawings detailing the tested and approved proprietary glazing systems are contained in appendix A.

**Notes:**

1. A square bead profile may be used as an alternative to the splayed beads required for the proprietary systems, subject to the restricted glass types and glazing systems specified in the table above (see appendix A for square bead profile options)
2. Glazing beads must be retained in position with 50mm long steel pins or 50mm long No. 6 – 8 screws, inserted at 35 – 40° to the plane of the glass (or perpendicular to the bead splay) at no more than 50mm from each corner and at 150mm maximum centres.
3. The following minimum pin specification is permitted and is considered suitable for gun (pneumatically) fired applications:
  - 3.1 Option 1 – Round, Oval and Rectangular shaped pins:
    - Minimum Standard Wire Gauge (SWG) 16
    - Minimum cross section area of 2.03mm<sup>2</sup>
    - Minimum linear dimension 1.6mm in any direction

Round pin diameter (mm) = minimum 1.6mm

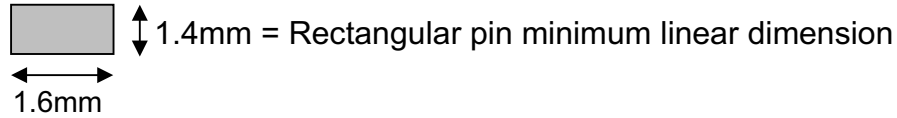


Oval/rectangular pin minimum diameter linear dimension = 1.6mm



### 3.2 Option 2 – Rectangular shaped pins:

- Minimum Standard Wire Gauge (SWG) 16
- Minimum cross section area of 2.24mm<sup>2</sup>
- Minimum linear dimension 1.4mm in any direction



**Note:** Pins with smaller dimensions than those listed above are not approved.

4. Glazed openings must not be less than 165mm from any door edge. Multiple apertures are acceptable within the permitted glazed area, with a minimum dimension of 135mm of core between apertures
5. Aperture shape is not restricted, providing the glazing system and beads are compatible with that shape
6. All timber for glazing beads must be hardwood of straight grained, joinery quality, free from knots, splits and checks.

## 10 Door Frames

### 10.1 Door frame construction

Timber based door frames for Laminesse Firesmoke & Firesafe must be constructed to meet the following specification (for aluminium door frame options see appendix D).

Material	Minimum Section Size (excluding the stop – mm)	Min Density (kg/m <sup>3</sup> )
Softwood or hardwood	70 x 32	510
MDF <sup>1</sup>	70 x 30	700
WoodEx 30	70 x 30	510
Aluminium	See appendix D	

**Notes:**

1. If the doorset features a transomed solid overpanel, the door frame must be softwood or hardwood (not MDF, WoodEx 30 or Aluminium) with a minimum section of 70mm x 32mm and of the minimum density stated above
2. All door frame timber must be straight grained, joinery quality, free from knots, splits and checks
3. Stops may be integral (in one piece with the door frame) or planted; a minimum 12mm thickness of stop (15mm for WoodEx 30) is adequate for single acting frames, the maximum radius to the corners of the leaf is 8mm
4. Frame joints must be one of the types shown in section 10.4, and with no gaps. All jointing methods require mechanical fixing with the appropriate size ring shank nails or screws.



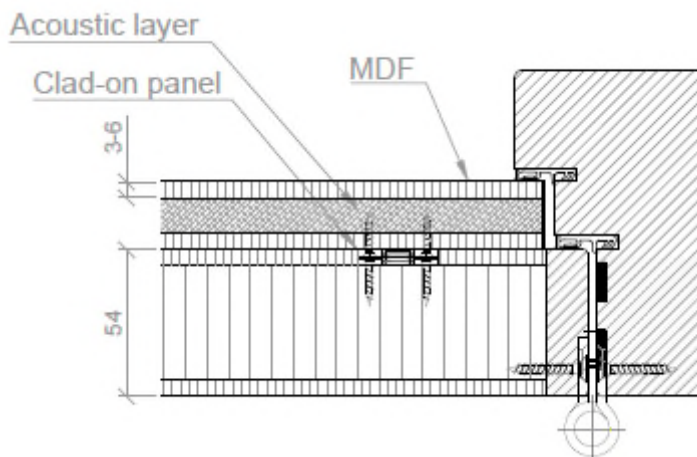
### 10.1.1 CS Group Acrovyn

Based on the evidence generated in support of Chilt/A11129 Revision E, timber and WoodEx door frames may be encapsulated in CS Group Acrovyn meeting the following specification. All other details must remain as required in section 10.1 above, as appropriate:

1. The intumescent detail as specified in section 14 and the relevant (CS Group headed) data sheets contained in Appendix C of this assessment must be replicated
2. CS Group Acrovyn must be bonded to the door frame using 3M Scotch-Grip cement 10 contact adhesive
3. See relevant (CS Group headed) data sheets in Appendix C of this assessment for maximum permitted leaf sizes
4. The maximum thickness of CS Group Acrovyn used must be 2mm, as per test evidence.

### 10.2 Double rebated frame option

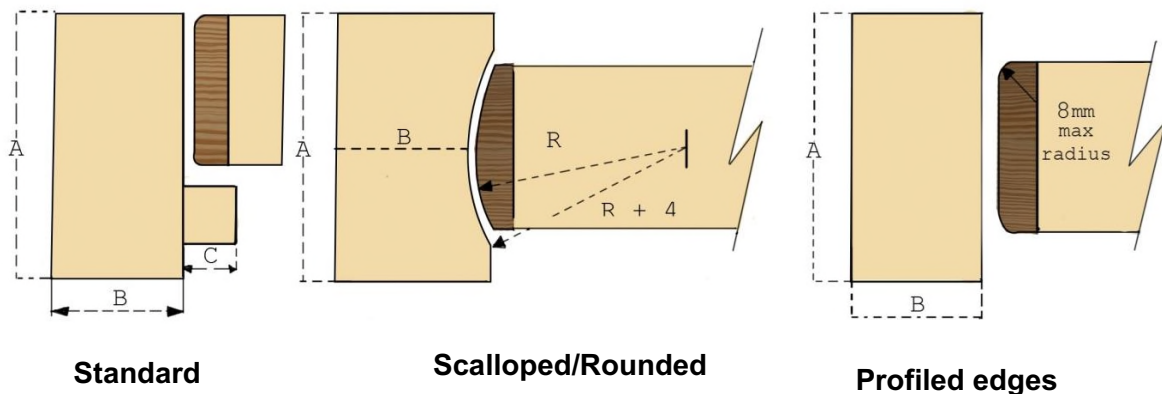
The Moralt acoustic clad on panel can be fitted within a double rebated frame as shown below on the 54mm thick Laminesse FireSmoke and FireSafe. The minimum timber details for the standard door frame must be complied with as shown in section 10.3 and further details of the clad on panel are given in section 12.5. It is not permitted to encapsulate double rebated frames as above.



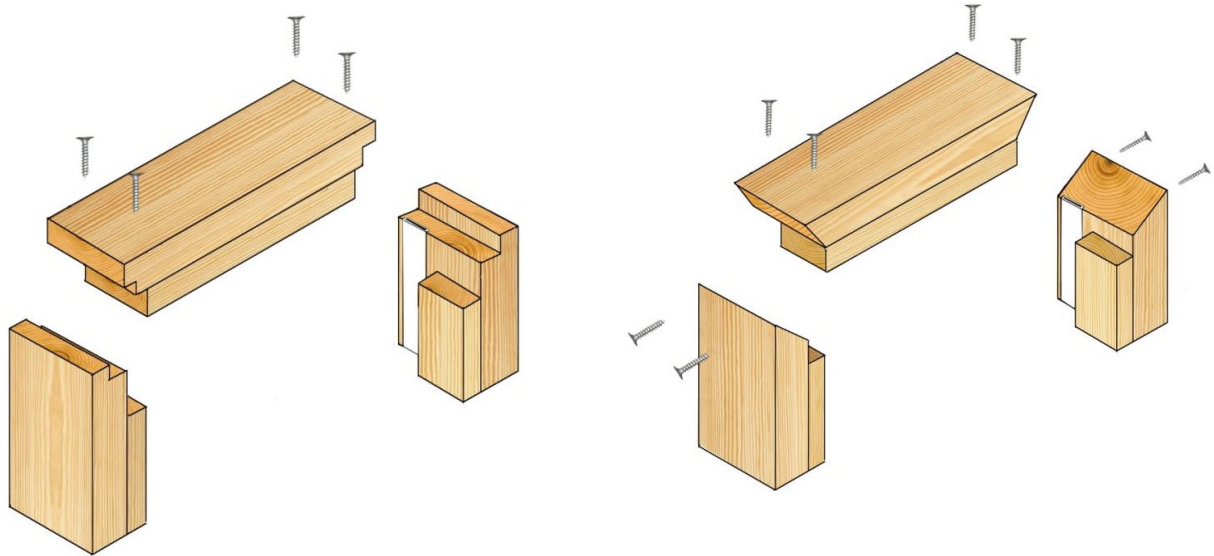
### 10.3 Frame Section details

The following diagram depicts the assessed frame profiles and dimensions.

- A = min 70mm  
B = min 30mm (see table above)  
C = min 12mm  
R = radius from floor spring  
8mm max radius to create a maximum 2mm edge profiling

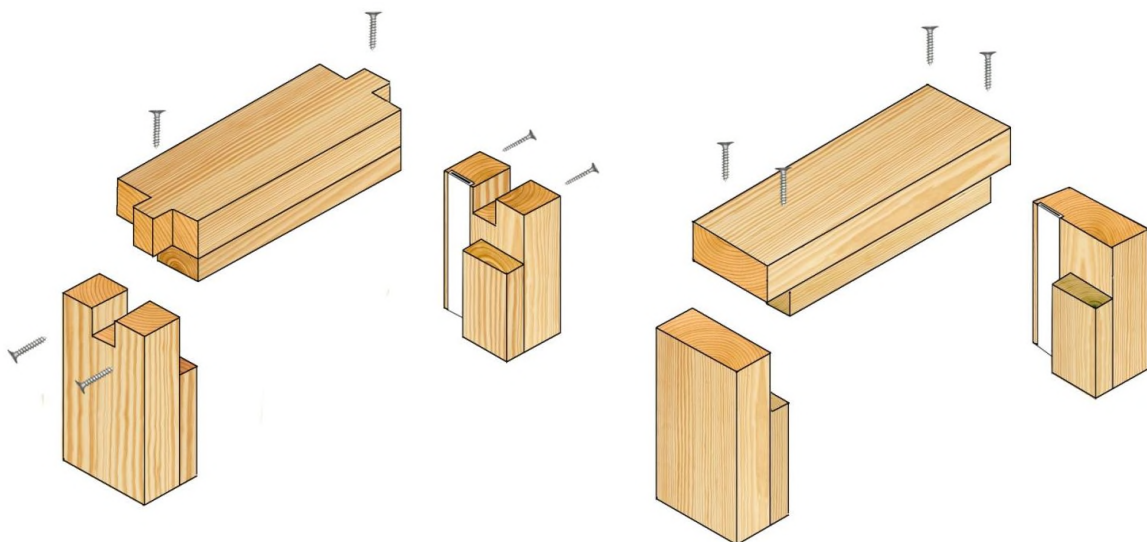


## 10.4 Door Frame Joints



Half Lapped Joint

Mitre Joint



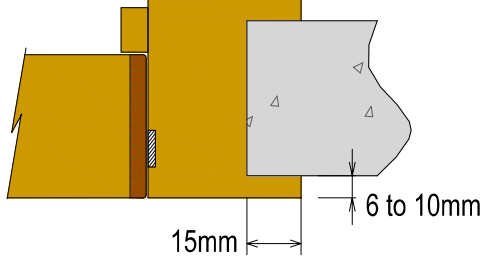
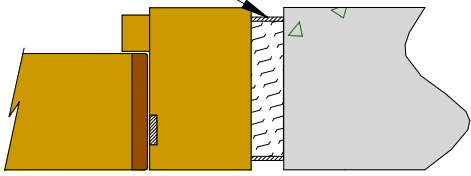
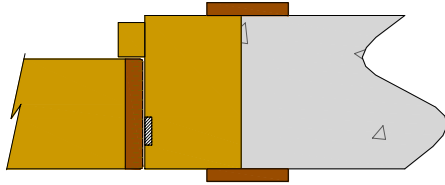
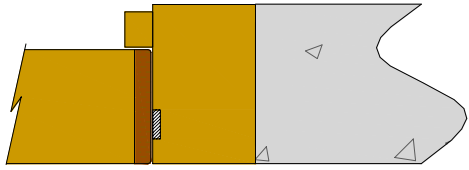
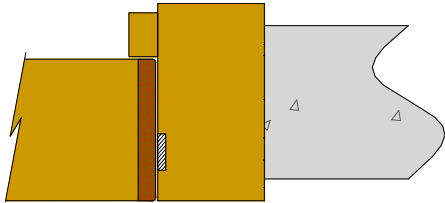
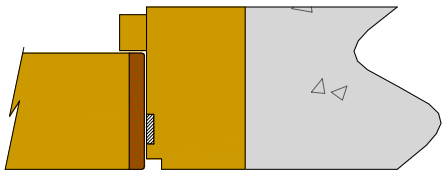
Mortise and Tenon Joint

Butt Joint

**Note:** Drawings are representative of each type of door frame joint, actual construction in terms of intumescent seal location and material etc. must be as the text within this document specifies.

## 10.5 Door frame installation

The following diagrams indicate acceptable and unacceptable door frame installations.

<b>Permitted Installations</b>	
 <p>15mm</p> <p>6 to 10mm</p>	<p>Max 10 x 10mm shadow gap with 2mm intumescent mastic capping or 10 x 4mm PVC encased intumescent seal</p> 
<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>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>
<b>Installations Not Permitted</b>	
	
<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>

**Notes:**

1. Drawings are representative of door frame installation only; actual installation must be as the text within this document specifies. See section 19 for specification on sealing to structural opening
2. For the shadow detail depicted (top right), the sub-frame must be manufactured from one of the following materials, tightly fitted and with no gaps:
  - timber with a density  $\geq 450 \text{ kg/m}^3$
  - plywood with a density  $\geq 600 \text{ kg/m}^3$
  - MDF with a density  $\geq 700 \text{ kg/m}^3$
  - particleboard with a density  $\geq 600 \text{ kg/m}^3$
  - non-combustible board.

## 11 Lipping Materials

### 11.1 Timber Lippings

Laminesse FireSmoke and FireSafe 44/54mm must be lipped on all edges in accordance with the following specification. The lipping specifications for aluminium frame doorsets are contained in appendix D.

Material	Size (mm)	Min Density (kg/m <sup>3</sup> )
Timber for lippings must be straight grained joinery quality hardwood, free from knots, splits and checks.	<ol style="list-style-type: none"> <li>1. Flat = 6 – 14 thick with a maximum of 2mm profiling permitted at corners of lipping (see section 10.1)</li> <li>2. Rounded = 11 – 21 thick with a radius matching the distance between leaf edge and floor pivot (see section 10.3)</li> <li>3. Rebated = 20 – 30 thick with a 12mm deep equal rebate*</li> </ol>	640

**Notes:**

1. Rebated edges are only permitted at the head of single doorsets with flush overpanels
2. Single doorsets with flush overpanels may use either a square or rebated overpanel junction
3. Double doorsets with flush overpanels must use a square junction.

## 12 Leaf Facing Materials

### 12.1 General

The overall 44mm thick leaf construction consists of the following leaf construction variations:

1. FireSmoke – 6mm MDF facings
2. FireSmoke – 6mm Chipboard facings
3. FireSafe – 3 – 4mm Ply veneer facings.

Tests RF14256 & CFR0706151 evaluated the performance of the 6mm facings.

## 12.2 Grooves

Both faces of Laminesse FireSmoke 44/54mm door leaves with 6mm thick facings may be grooved to the following specification. Grooves may coincide with the top and bottom of glazed apertures if desired.

Element	Details	
Max groove size (mm)	6 wide x 4 deep	
Proximity to door edges (mm)	Horizontal Grooves	≥ 250 from top and bottom
	Vertical Grooves	≥ 150 from sides
Groove spacing (mm)	Horizontal Grooves	≥ 100
	Vertical Grooves	≥ 100
Orientation	Vertical or horizontal	
Configuration	Latched and unlatched, single and double acting, single leaf doorsets	
Leaf size range (mm)	All doorsets with 6mm facings	
Intumescent seal dimensions (mm)	≥ to 15 x 4	

A maximum of 6 No. vertical and 6 No. horizontal grooves are permitted perpendicular to one another providing all other details meet the specification given in the table above.

## 12.3 Decorative and Protective Facings

The following additional 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
Cellulosic paper / non-metallic foil	0.4

### Notes:

1. Metallic facings are not permitted except for push plates and kick plates
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. PVC and plastic laminates materials must not return around the edge of leaves.

## 12.4 PVC Edge Protectors & Post-Formed CS Group Acrovyn

### 12.4.1 General

It is possible to fit proprietary edge protectors to this doorset design providing they have suitable supporting test evidence to BS 476: Part 22: 1987 or BS EN 1634-1, when fitted to timber doorsets of similar construction to this design. The end user must satisfy themselves that the test evidence supports the proposed end use application.

### 12.4.2 CS Group Edge Protectors

The Moralt Laminesse Firesmoke & Firesafe 44/54mm designs have been assessed for use with CS Group edge protectors. CS Group edge protectors are supplied pre-formed with the approved intumescent material. The CS Group edge protectors must be used as part of a complete intumescent system and the required intumescent specification and leaf sizes are given in the relevant data sheets in Appendix C. CS Group must be contacted for precise installation and fixing details ([www.c-sgroup.co.uk](http://www.c-sgroup.co.uk)).

### 12.4.3 Post-Formed CS Group Acrovyn

It is possible to encapsulate the Moralt Laminesse Firesmoke & Firesafe 44/54mm designs by post-forming the leaf in CS Group Acrovyn, based on the supporting test evidence in Chilt/A11129 Revision E, and the following specification:

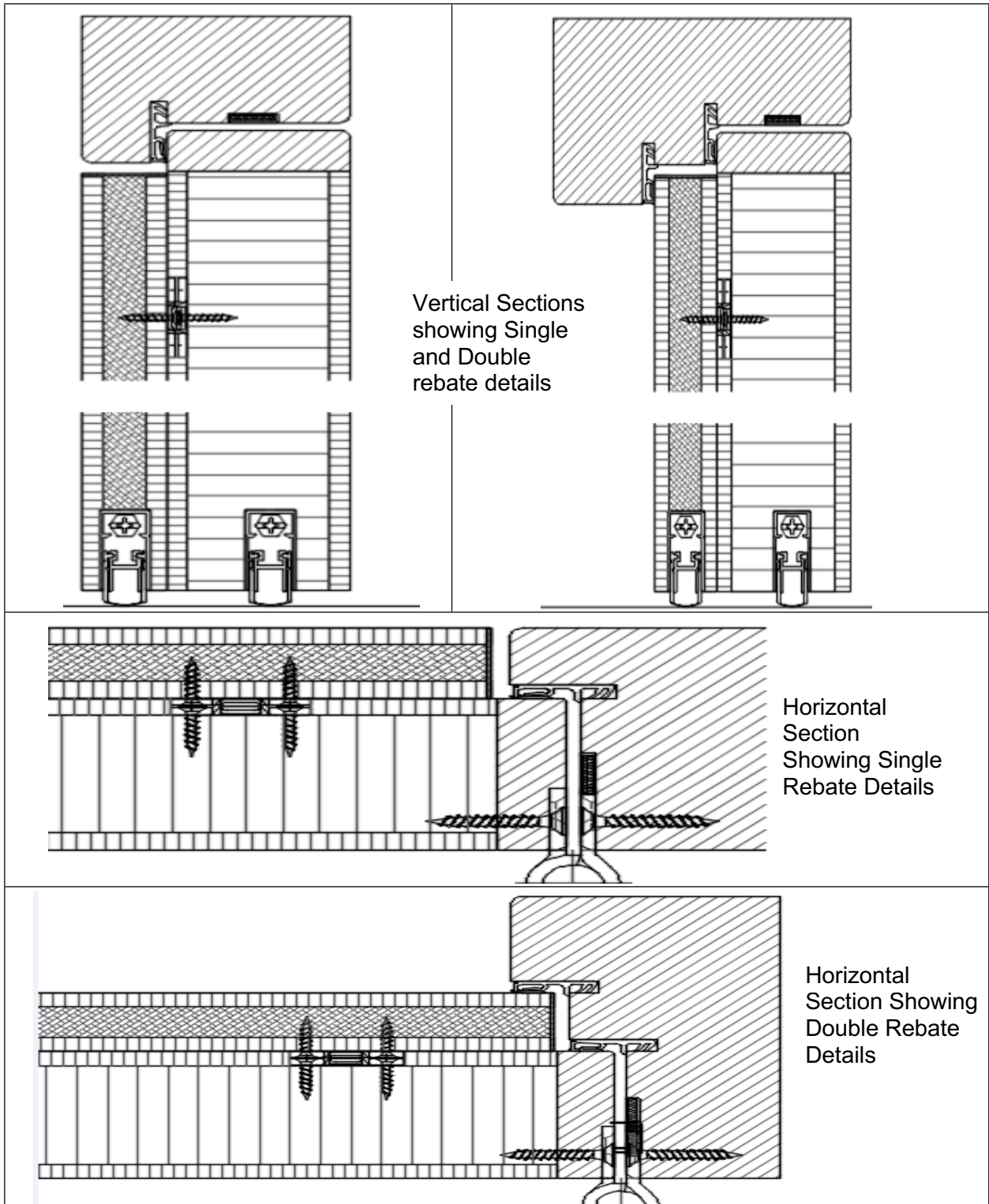
1. CS Group Acrovyn may be wrapped around the vertical edges of the leaf, or the leaf can be fully encapsulated on all four edges
2. The vertical edge detail prior to post-forming must either be lipped with 8mm thick PVC adhered to the leaf edge using WC127 PVC weld cement, or hardwood as detailed in this assessment (see section 11.1). Rebated timber lippings are not permitted
3. The horizontal edge detail prior to post-forming does not require lipping but may be lipped with 8mm thick PVC adhered to the leaf edge using WC127 PVC weld cement, or hardwood as detailed in this assessment (see section 11.1). Rebated timber lippings are not permitted
4. The maximum radius of the lipping at the corners of the vertical edges before post-forming must be 9mm, which provides for 11mm external radius after the CS Group Acrovyn has been applied
5. The intumescent detail as specified in section 14 and the relevant (CS Group headed) datasheets contained in Appendix C of this assessment must be replicated
6. CS Group Acrovyn must be bonded to the leaf using 3M Scotch-Grip cement 10 contact adhesive
7. See relevant (CS Group headed) datasheets in Appendix C of this assessment for maximum permitted leaf sizes
8. The maximum thickness of CS Group Acrovyn used must be 2mm, as per test evidence
9. The CS Group Acrovyn can be provided as pre-formed trays with dimensions to suit the proposed leaf sizes, as well as sheets for post-forming by the door manufacturer
10. It is permitted to hang leaves fitted with CS Group Acrovyn in timber or MDF door frames meeting the specification given in section 10.1 (not encapsulated with CS Group Acrovyn) or section 10.1.1 (encapsulated with CS Group Acrovyn).

## 12.5 Moralt acoustic clad on panel

The Moralt acoustic clad on panel has been included into the LAMINESSE FireSmoke & LAMINESSE FireSafe 54mm thick designs to improve acoustic performance. See below for the details of the panel and fixing. The panel is held in position by a minimum of 6 clips (note only 4 shown on the figure. The following limitations apply:-

- This board can only be attached to unglazed doors.
- The panel must be a single piece covering the entire face of the door leaf.
- Any item of hardware which is required to be mortice into the edge of the door must be morticed into the timber door core and not into the clad on panel.
- The location of the seals must remain on the doorleaf.
- The panel to be located on minimum of 6 fixing points
- Clips secured by screws either 3.5 by 16mm long or 3.5 by 20mm long
- It is not permitted to attach the acoustic clad on panels to PVC encapsulated leaves, or include the panels within PV encapsulation.

These door designs have been found to be fully insulating which means the unexposed face temperature has not risen more than 140 deg C. The panel is primarily a Rockwool core with MDF facings, which would not, in the opinion of Warringtonfire, adversely affect the performance of the door.



### 13 Adhesives

The following adhesives must be used in the construction.

Element	Product/Manufacturer
MDF or Plywood facings	Details of adhesives are held, in confidence, on file at Warringtonfire
Timber lippings	
Core elements	



## 14 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 <b>note 2</b>	<ol style="list-style-type: none"> <li>1. PVC encased Therm-A-Seal/Therm-A-Blade – Intumescent Seals Ltd</li> <li>2. PVC encased Rigid Box Seal FO8700–Pyroplex Ltd</li> <li>3. PVC encased Type 617 – Lorient Polyproducts Ltd<sup>3</sup></li> </ol>
Hinges	Not required unless leaves are over 2500mm high	<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. G30 – Intumescent Seals Ltd</li> </ol>
Lock/latches	Under forend & keep if the forend or keep exceeds 150mm up to the maximum assessed dimension	
	Under forend and keep for all doorsets in aluminium frames	1mm MAP paper – Lorient Polyproducts Ltd
Top pivots & flush bolts	Lining all sides of the mortices	<ol style="list-style-type: none"> <li>1. 2 mm Interdens – Dufaylite Developments Ltd</li> <li>2. 2 mm MAP paper – Lorient Polyproducts Ltd</li> <li>3. 2 mm Pyrostrip 300 – Mann McGowan</li> <li>4. 2 mm Therm-A-Strip – Intumescent Seals Ltd</li> <li>5. 2 mm Therm-A-Flex – Intumescent Seals Ltd</li> </ol>
Concealed closer	Lining all sides of the closer and slide arm mortices	Manufacturers tested intumescent protection pack
Concealed hinges	Lining all sides of mortice in frame and leaf	1mm BASF exterdens Graphite TE 527 3D intumescent pack
Multipoint locking	Lining mortices of lock/latch and top and bottom locks all keeps	1mm thick BASF interdens kit

### Notes:

1. The seal specification for each configuration is contained in appendix C
2. When multipoint locking systems are used, the edge seals must go in the frame reveals
3. Type 67 edge seals may only be used with Aluminium door frames (see appendix D) or when the leaves are encapsulated, as described in section 12.4.

## 15 Hardware

### 15.1 General

The following sections detail the scope and constraints for fitting hardware to the door design.

The following items of hardware must also bear the CE mark:

Locks and latches (EN 12209),

Electro mechanically operated locks (EN 14846),

Single axis hinges (EN 1935),

Controlled door closing devices (EN 1154),

Electrically powered hold open devices (EN 1155),

Door co-ordinators (EN 1158),

Emergency exit hardware (EN 179),

Panic exit hardware (EN 1125).

### 15.2 Tested Hardware

The following hardware has been successfully incorporated in the tests on Laminesse Firesafe & Firesmoke doorsets.

Element	Manufacturer and Product Reference
Hinges	Royde & Tucker H101 lift off hinges
Closer- surface mounted overhead closers	Dorma Door Controls Ltd TS73V
	Briton 2003E
Latch	Legge 'life' tubular mortise latch
Furniture	Aluminium lever type handle

The following concealed hardware has been successfully incorporated in the tests on LAMINESSE FireSmoke & LAMINESSE FireSafe 54mm doorsets.

Item	Make/type	Size (mm)
Concealed closer	Dorma ITS 96 with channel guide	52 x 34 x 340 ( body) 31 x 22 x 440 ( channel)
Concealed hinges	Simonswerk Tectus TE	155 x 26
Multipoint locking system	Glutz Multipoint lock/latch ( Ref 1839.7.60.78.1788 )	1788 x 20 (forend) 241 x 24 ( strike ) 110 x 24 ( strike ) Lock 200 x 89 x 20 Bolts 44 x 67.5 x 20

### 15.3 Certifire

The Certifire third party certification scheme approves various items of hardware for different door types and different fire ratings and has its own set of requirements relating to that item of hardware.

Where the alternative hardware sections in this report allow alternatives to the tested hardware, Certifire approved hardware may be used as an alternative, subject to the following provisos:

- In all cases, the requirements of this report must take precedence.
- The hardware must comply with the requirements of the relevant section e.g. hinges.

The hardware must comply with the limitations specified in terms of design, materials and dimensions.

### 15.4 Additional & Alternative Hardware

#### 15.5 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 14
Materials:	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel
Position	800 – 1200mm above the threshold

#### 15.5.1 Multipoint locking

The Glutz multipoint locking system has been tested successfully in LAMINESSE FireSmoke & LAMINESSE FireSafe 54mm doorsets. Other multipoint locking systems can be fitted provided they have been successfully tested in 54mm thick timber based doorsets for 30 minutes to BS 476: Part 22: 1987 or BS EN 1634-1. The mortices must be no bigger than that detailed in section 15.2 for the Glutz multipoint locking system and the manufacturers tested intumescent protection system for the mortices must be installed.

This includes the following Winkhaus systems

- AV2– The system variants acceptable to this assessment are those which fit into the mortices detailed in section 15.2 for multipoint locking systems. However, if the manufacturer assessments permits other system variants for the 54mm thick door construction and this fire rating, then they can be used providing the recommendations contained in that assessment are applied.

When a multipoint locking system is used the door edge seal must be fitted in the frame reveals.

## 15.6 Hinges

Leaves  $\leq 2250\text{mm}$  (h) must be hung on minimum 3 hinges. Leaves  $> 2250\text{mm}$  (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 – 40mm	
Blade thickness		2.5 – 4mm	
Fixings:		Minimum of 4 No. 30mm long No. 8 or No.10 steel wood screws per blade	
Materials:		Steel, stainless steel or brass (melting point $\geq 800^{\circ}\text{C}$ )	
Hinge positions:	If 3 hinges are required:	Top	150 – 200mm from the head to top of hinge
		2 <sup>nd</sup>	Minimum 250mm 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	100-200mm 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 250mm 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	

## 15.7 Automatic Closing

Automatic closing devices, must either be as tested or components of equal specification that have demonstrated contribution to the required integrity performance of this type of doorset design, when tested to BS 476: Part 22: 1987 or BS EN 1634-1.

Concealed closer can be fitted into LAMINESSE FireSmoke & LAMINESSE FireSafe 54mm thick doorsets only, provided they have been successfully tested in timber based doorsets 54mm thick for 30 minutes to BS 476: Part 22: 1987 or BS EN 1634-1. The mortices must be no bigger than that detailed in section 15.2 for the Dorma ITS 96 and the manufacturers tested intumescent must be installed.

**Note:** The top pivots to floorspring assemblies must be protected with 2mm thick intumescent gasket (see section 14) or alternatively the manufacturers tested intumescent pack.

## 15.8 Pull Handles

Handles may be surface-fixed or bolted through the door leaf, providing they are steel, stainless steel or brass and 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.

## 15.9 Push Plates & Kick Plates

Steel or stainless steel face-fixed hardware such as push plates and kick plates may be fitted to the doorsets.

They may be recessed to a maximum depth of 2mm on both sides of the door leaf on LAMINESSE FireSmoke & LAMINESSE FireSafe 54mm thick doorset design only. 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.

## 15.10 Door Security Viewers

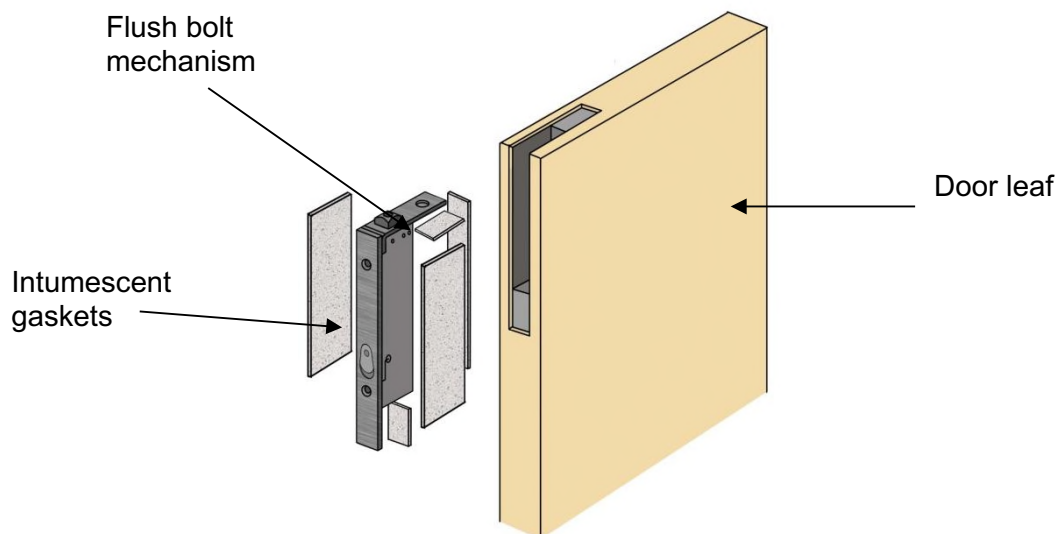
Door security viewers with brass or steel bodies of a diameter less than or equal to 15mm may be used provided that the through-hole is bored tight to the case of the viewer (maximum tolerance +1 mm). Lenses must be glass and the item must be protected with acrylic intumescent mastic.

## 15.11 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 leaf edge fitted with intumescent strips:

- 210mm long x 20mm deep x 20mm wide.

Flush bolts must be steel or brass and the mortice must be as tight to the mechanism as is compatible with its operation. All edges of the mortices of the keep and body mechanism must be protected with intumescent gaskets as specified in section 14. Alternatively the hardware manufacturers tested gaskets may be used. Alternatively the hardware manufacturers tested gaskets may be used. See diagram below for example of intumescent protection to flush bolt.



### 15.12 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.

### 15.13 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.

### 15.14 Environmental Seals

Silicon based flame retardant acoustic, weather and dust seals (e.g. Norsound 710, Norsound 720, Lorient IS1212, IS1511, IS7025, IS7060) may be fitted to this doorset design without compromising the performance, providing their fitting does not interfere with the activation of the intumescent seals or hinder the self closing function of the leaves.

The following Deventer seals can be incorporated as shown in the figure in section 10.2

- DS6955a
- DS6922a
- DS155a
- DS112a

### 15.15 Threshold Seals

The following types of automatic threshold drop seals may be recessed in to the bottom edge of leaves to this design without compromising the performance:

Manufacturer	Product Reference
Lorient Polyproducts Ltd.	IS8010si
	LAS8005si
Raven	RP8Si
Athmer	Schall-Ex Duo L-15
Norsound Ltd.	810 range
STS Ltd	ST422
Planet	HS, RH and US

### 15.16 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: Part 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.

## 15.17 Air Transfer Grilles

### 15.17.1 General

Air transfer grilles may be fitted providing the product has suitable test evidence to BS 476: Part 22: 1987 or BS EN 1634-1 that demonstrates a minimum 30 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.

### 15.17.2 Smoke Control

Smoke control as defined by the performance criteria set out in BS 476: Part 31: Section 31.1 or BS EN 1634-3: 2001 cannot be claimed for a doorset fitted with an air transfer grille(s) unless it is automatically operating on activation of the smoke alarm and has supporting data to the aforementioned test standards for smoke control.

## 16 Door Gaps

For fire resistance applications, door gaps and alignment tolerances must fall within the following range:

Location	Dimension
Door edge gaps	A minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud of each other or from the door frame by more than 1mm.
Threshold	10mm between bottom of leaf and top of floor covering For ambient smoke control tolerances see section 21

## 17 Structural Opening

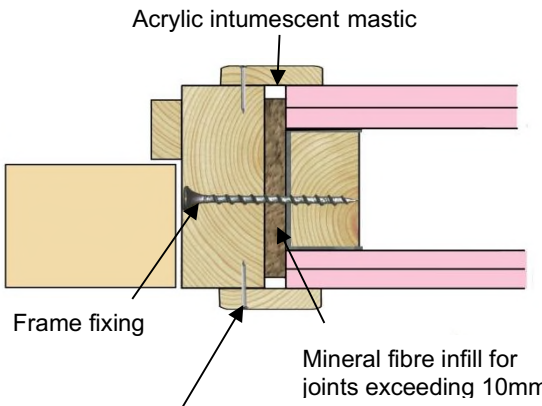
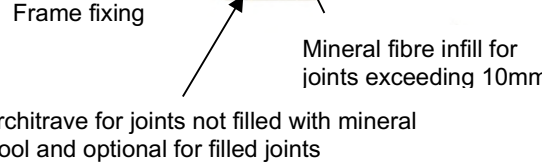
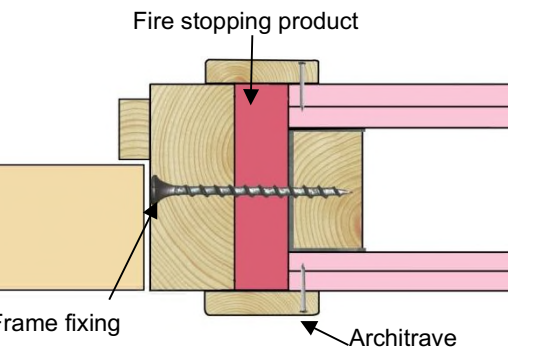
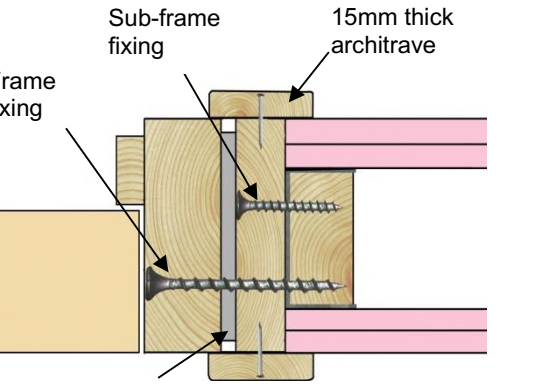
The door assemblies are approved for installation within standard rigid and flexible supporting constructions that have demonstrated a minimum of 30 minutes fire resistance, when tested to BS 476: Part 22: 1987. Consideration must be given to the suitability of the supporting construction for supporting the proposed door assemblies.

## 18 Fixings

The door assemblies must be fixed back to the supporting structure using steel fixings appropriate for the substrate. The fixings are to be inserted at 500mm centres to all edges, with a fixing no more than 150mm from any corner and they must penetrate the supporting structure to a depth of 50mm. The fixings must be positioned to avoid exposure during fire conditions, which may necessitate a twin line of fixings. Packers must be inserted at the fixing locations.

## 19 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: Part 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: Part 22: 1987 or BS EN 1634-1. Architraves are optional.</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: Part 22: 1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.</p>	 <p>Fire stopping product</p> <p>Frame fixing</p> <p>Architrave</p>
<p>4. Timber based or non-combustible sub-frame up to 50mm thick, with gaps up to 10mm between the components filled on both sides with 10mm depth of acrylic intumescent mastic or full depth expanding PU foam, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. 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 various methods of sealing the frame to structural opening gap is also given in BS 8214: 2016, "*Timber-based fire door assemblies. Code of Practice*", which may be referred to where appropriate.

**Note:** Drawings are representative of doorset installation only, actual installations must be as the text within this document specifies.



## 20 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	Timber frames	Unglazed doorsets or doorsets including 30 minute insulating glazing (see note 5 in section 9.3)
	Aluminium frames	

## 21 Smoke Control

### 21.1 General

If the doorset design is required to provide a smoke control function to comply with Building Regulations, the doorset must meet one of the following criteria;

*(a) have a leakage rate not exceeding 3m<sup>3</sup>/m/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.

### 21.2 Further Considerations

Note that there is other guidance available, including BS EN 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.

It is the responsibility of the doorset specifier to stipulate the precise smoke control specification, prior to commencing manufacture and/or installation.

## 22 Conclusion

If the Moralt Laminesse Firesafe & Firesmoke 44/54mm doorset designs, constructed in accordance with the specification documented in this global assessment, were to be tested in accordance with BS 476: Part 22: 1987, it is our opinion that they would provide a minimum of 30 minutes integrity and insulation (subject to section 20).

## 23 Declaration by the Applicant

### Report WF 399533 for Chilt/13058 Revision D

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: *Klaus Feilke*

For and on behalf of: Moralt AG




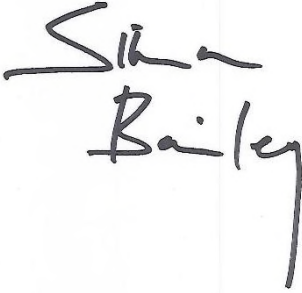
## 24 Limitations

The following limitations apply to this assessment:

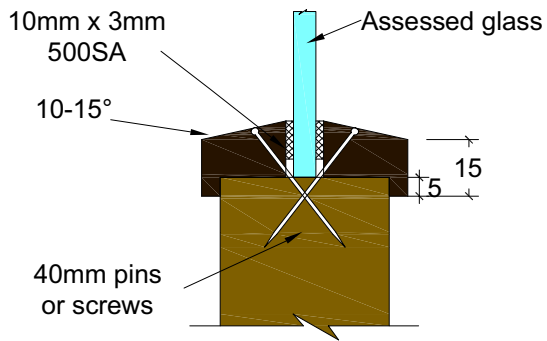
1. This assessment addresses itself solely to the elements and subjects discussed and does not cover any other criteria. All other details not specifically referred to should remain as tested or assessed.
2. This assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available, 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.
7. This report may only be reproduced in full. Extracts or abridgements of reports shall not be published without permission of Warringtonfire. All work and services carried out by Warringtonfire Testing and Certification Limited are subject to, and conducted in accordance with, the Standard Terms and Conditions of Warringtonfire Testing and Certification Limited, which are available at <https://www.element.com/terms/terms-and-conditions> or upon request.

## 25 Validity

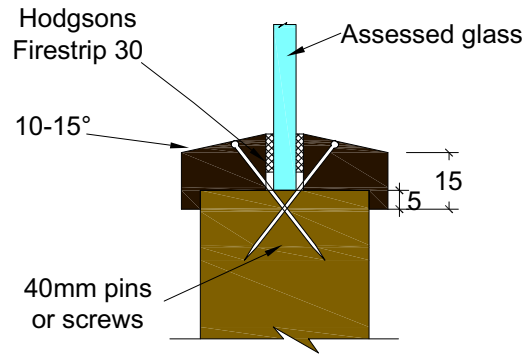
1. The assessment is valid for the dates shown on the front cover after which time it must be submitted to Warringtonfire for technical review and re-appraisal.
2. This assessment report is not valid unless it incorporates the declaration given in Section 23 duly signed by the applicant.

<b>Signature:</b>		
<b>Name:</b>	<b>A M Winning</b>	<b>S. Bailey</b>
<b>Title:</b>	Senior Product Assessor	Senior Product Assessor

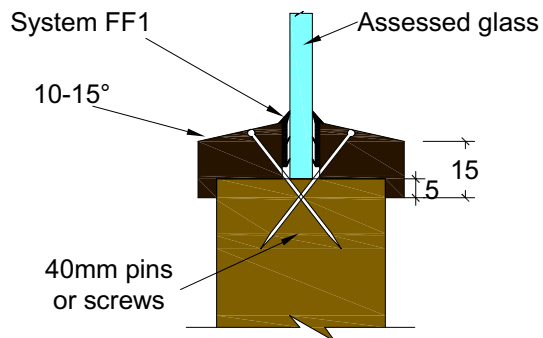
## Appendix A 30 Minute Proprietary Glazing Systems



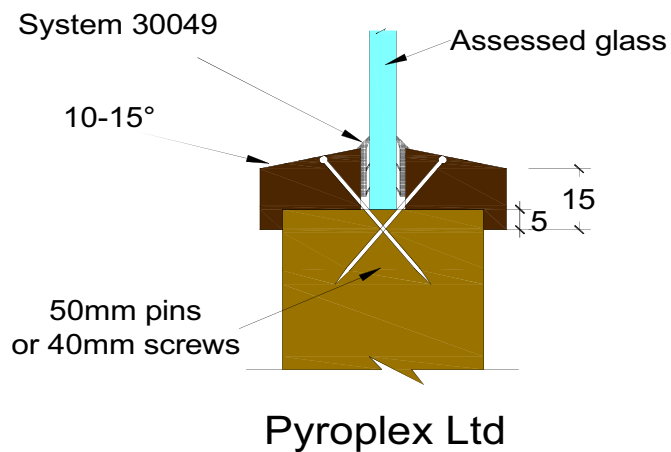
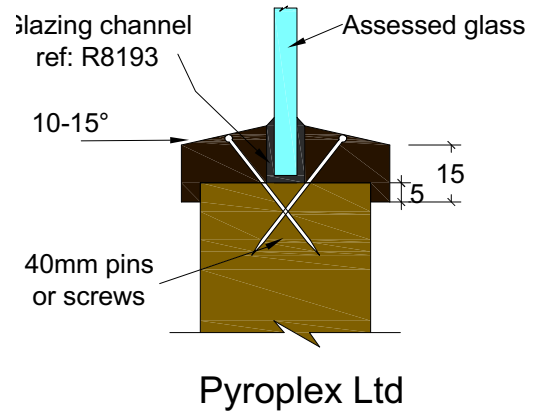
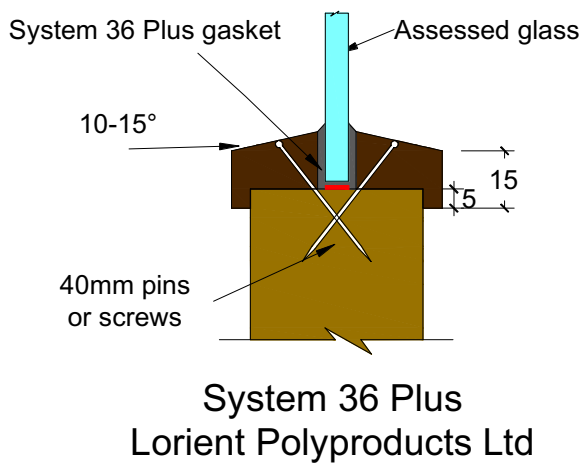
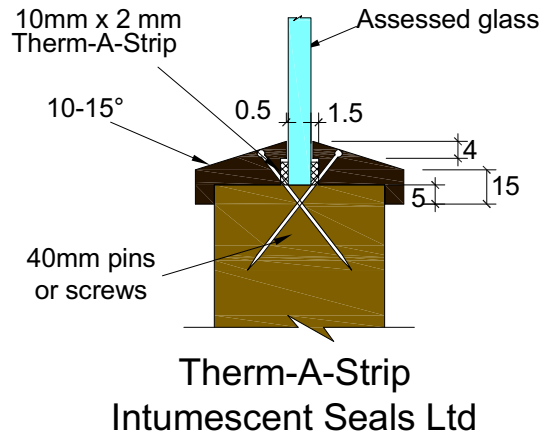
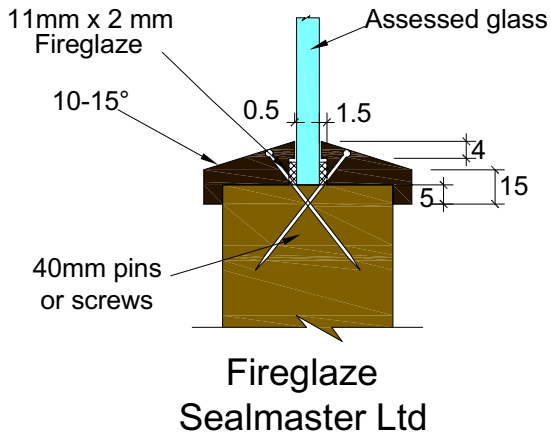
**Pyroglaze 30**  
Mann McGowan Ltd



**Firestrip 30**  
Hodgsons Sealants Ltd



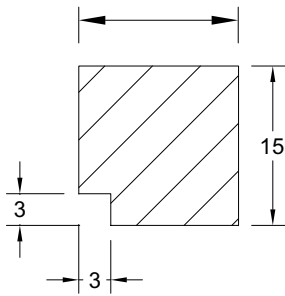
**System FF1**  
Lorient Polyproducts Ltd



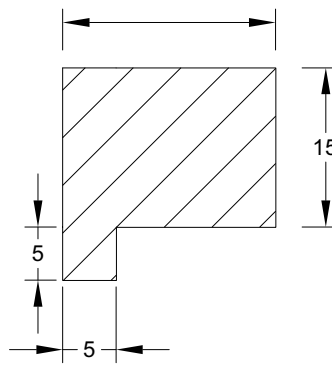
### Assessed Square Glazing Bead Profiles

The following square bead profiled may be used as an alternative to the splayed beads detailed above – refer to section 9 for glazing system and glass restrictions.

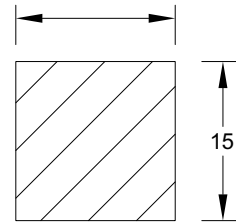
To finish flush with the leaf face



Suited to glass thickness



To finish flush with the leaf face



## Appendix B Revisions

Rev	Warringtonfire Reference	Date	Description
A	CNA/F14308	09.02.2015	Addition of WoodEx30 door frame, additional facing options and grooving options added
B	CNA/F15133	29.05.2015	Addition of 42mm thick core option
C	WF399353	22 .08 2018	Changed into Exova Warringtonfire format and Technically reviewed and revalidated for a further 5 years. Test WF382394 included which enabled, concealed closers, concealed hinges and multipoint locking included. Acoustic clad on panel included.
D	WF421102	11.12.2019	Update to Warringtonfire format and in accord with the principles of BS EN 15725: 2010.



## **Appendix C**

**Data Sheets for**

**Moralt**

**Laminese FireSmoke and FireSafe 44/54mm**

**30 Minute Fire resisting Doorsets**

## Laminese FireSafe 44/54mm Doorsets – 30 Minutes Fire Resistance

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

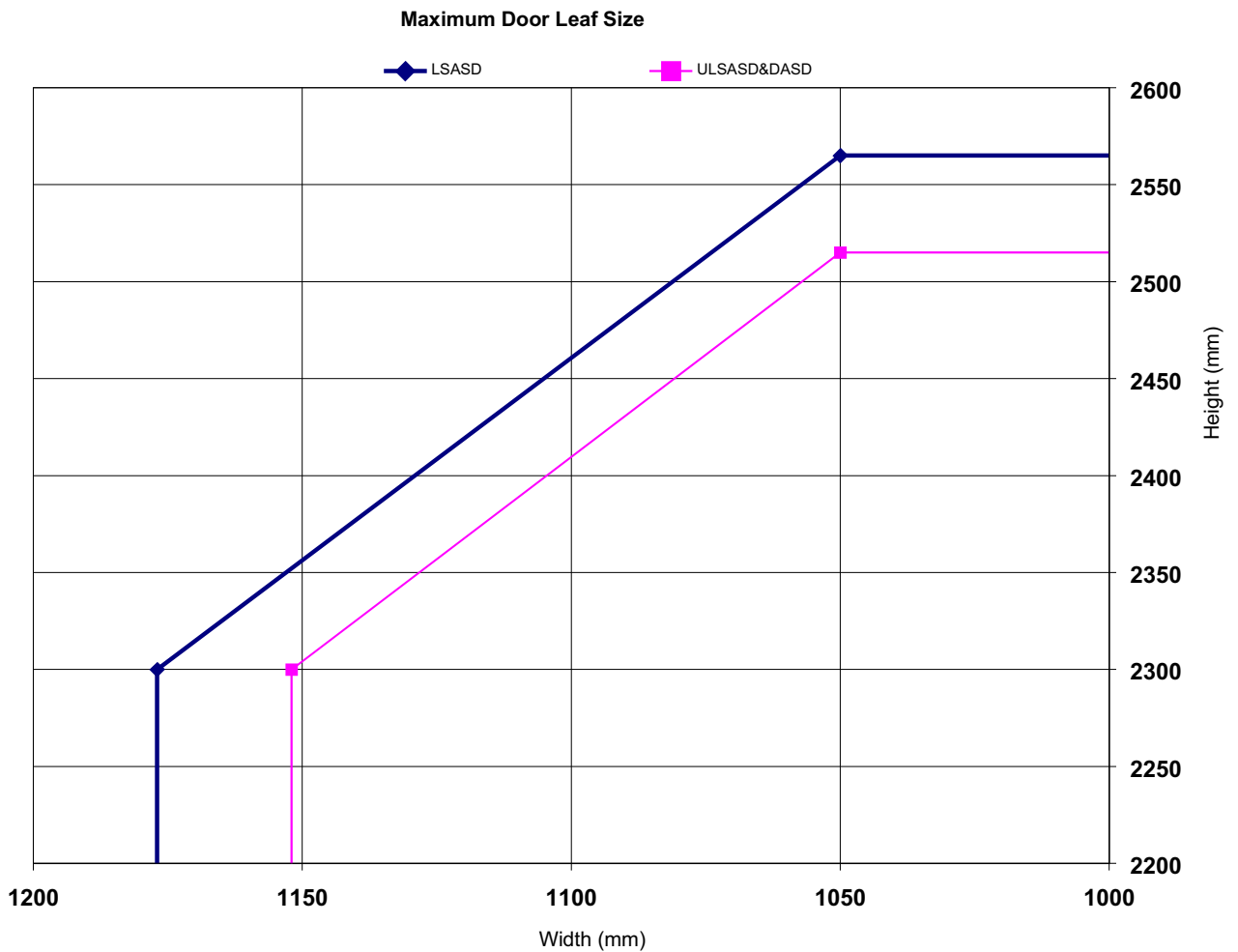
	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	From:	2300	x	1177
		To:	2565	x	1050
	ULSASD & DASD	From:	2300	x	1152
		To:	2515	x	1050

**Intumescent Materials:** PVC Encapsulated Rigid Box Seal – Pyroplex Ltd or Therm-A-Seal – Intumescent Seals Ltd

**Head:**  
**Square:** 1 No 20 x 4mm seal fitted centrally in the leaf head or bottom edge of the overpanel  
**Rebated:** not permitted

**Jams & Overpanel:** 1 No 15 x 4mm seal fitted centrally in the leaf edge or frame rebate

**Hardware Protection:** see section 14



## Laminasse FireSmoke and FireSafe 54mm Doorsets – 30 Minutes Fire Resistance Latched and Unlatched Single Acting & Double Acting Single Doorsets – Extended Height

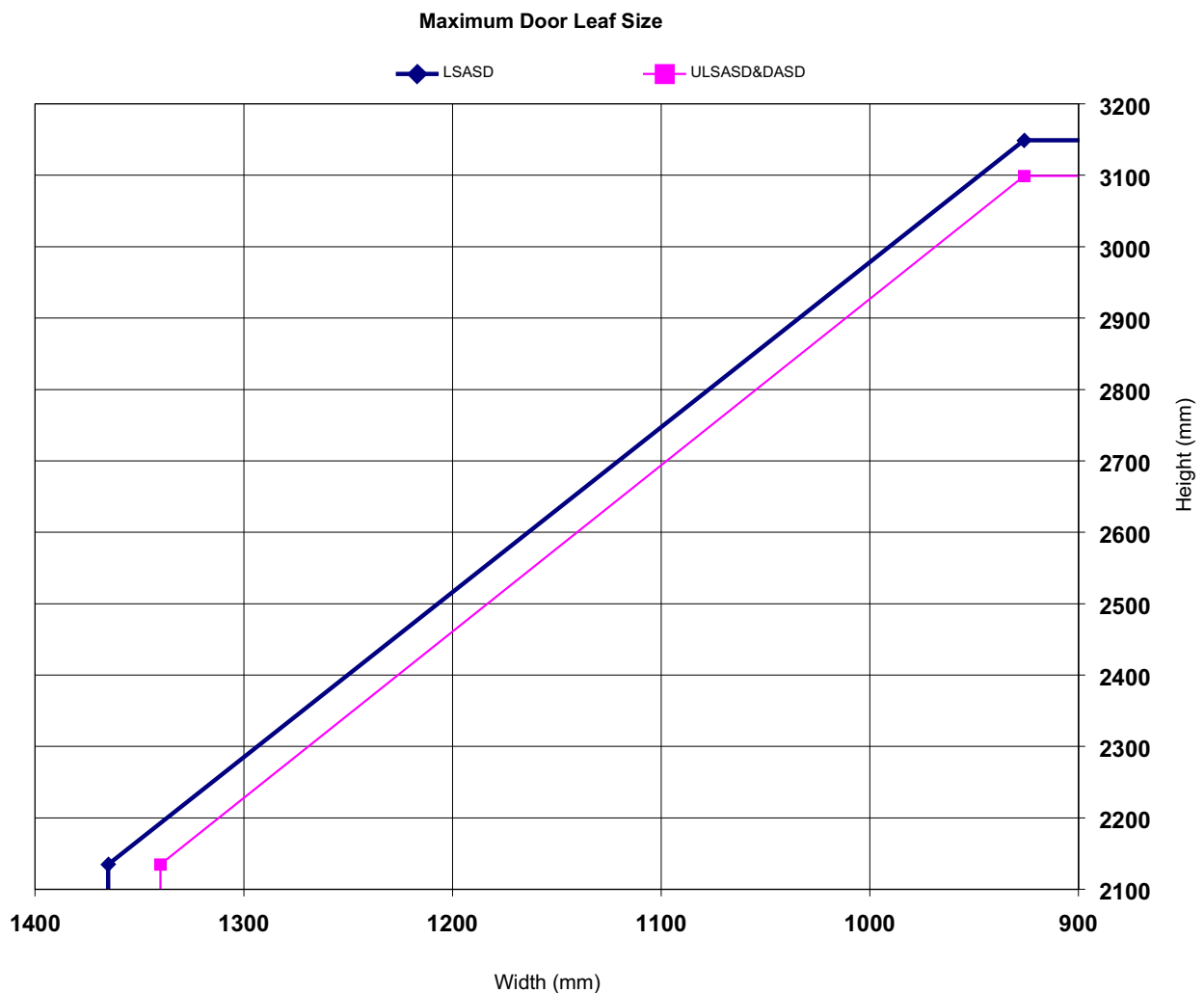
	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD	From:	2135	x	1365
		To:	3149	x	926
	ULSASD & DASD	From:	2135	x	1340
		To:	3099	x	926

**Intumescent Materials: PVC Encapsulated Therm-A-Seal – Intumescent Seals Ltd or Rigid Box Seal – Pyroplex Ltd**

**Head:**  
**Square:** 1 No 20 x 4mm seal fitted centrally in the leaf head or bottom edge of the overpanel. For leaves over 2600mm high and/or 1100mm wide increase to 25 x 4mm seal  
**Rebated:** not permitted

**Jams & Overpanel:** 1 No 15 x 4mm seal fitted centrally in the leaf edge or frame rebate. For leaves over 2600mm high and/or 1100mm wide increase to 20 x 4mm seal

**Hardware Protection:** see section 14



## Laminesse FireSmoke and FireSafe 44/54mm Doorsets – 30 Minutes Fire Resistance

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

	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSASD+OP	From:	2040	x	1101
		To:	2362	x	950
	ULSASD+OP & DASD+OP	From:	2040	x	1076
		To:	2312	x	950
Maximum Overpanel height (mm)		Flush	500		

**Intumescent Materials: PVC Encapsulated Therm-A-Seal – Intumescent Seals Ltd**

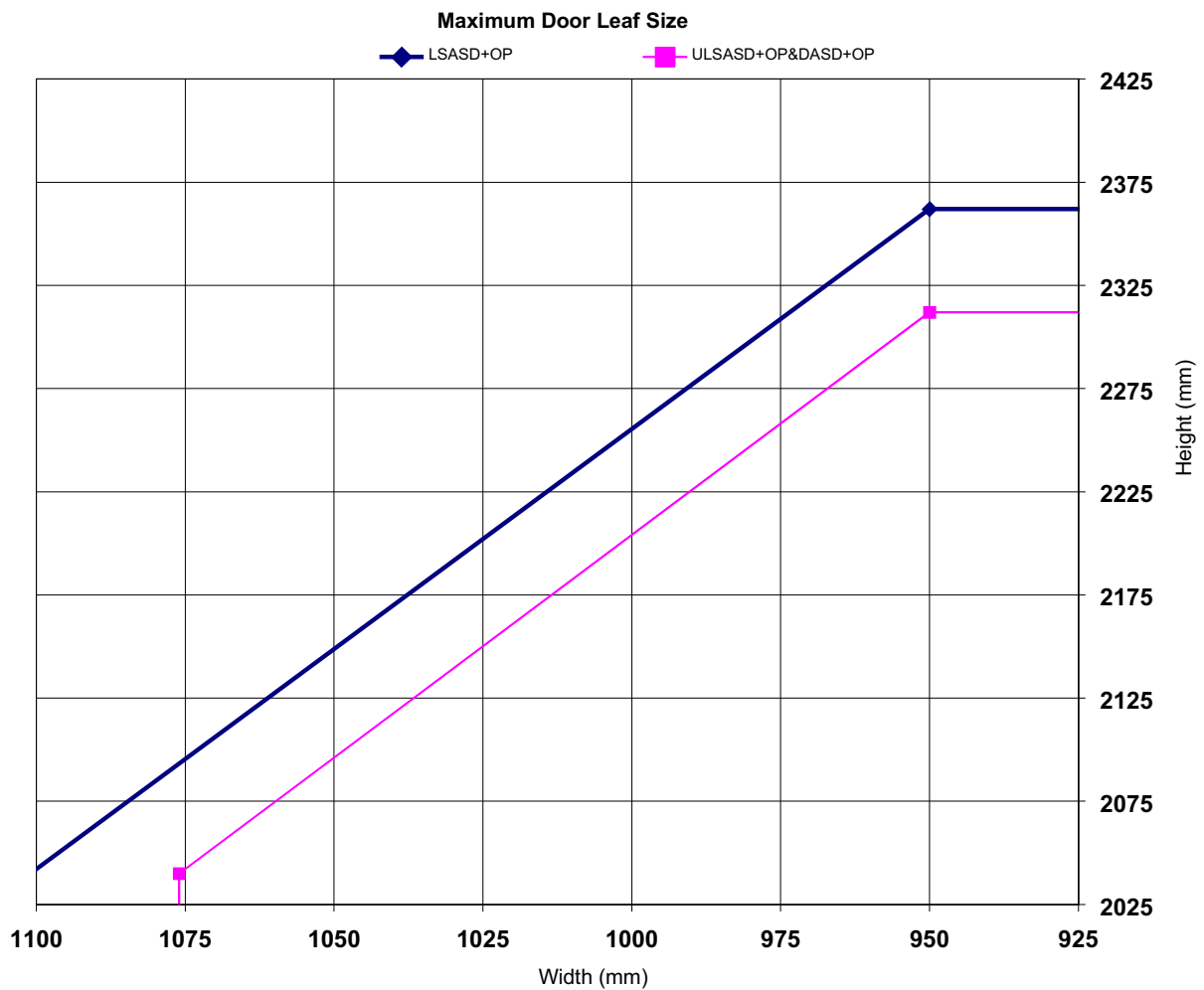
**Head:**

**Square:** 1 No 20 x 4mm seal fitted centrally in the leaf head or bottom edge of the overpanel

**Rebated:** 2No 10 x 4mm, 1 seal centrally fitted in the bottom of each rebate

**Jambs & Overpanel:** 1 No 15 x 4mm seal fitted centrally in the leaf edge or frame rebate

**Hardware Protection:** see section 14



## Laminesse FireSmoke and FireSafe 44/54mm Doorsets – 30 Minutes Fire Resistance

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

	Configuration		Height (mm)		Width (mm)
Leaf Sizes	LSADD	From:	2300	x	1127
		To:	2465	x	1050
	ULSADD & DADD	From:	2300	x	1102
		To:	2415	x	1050

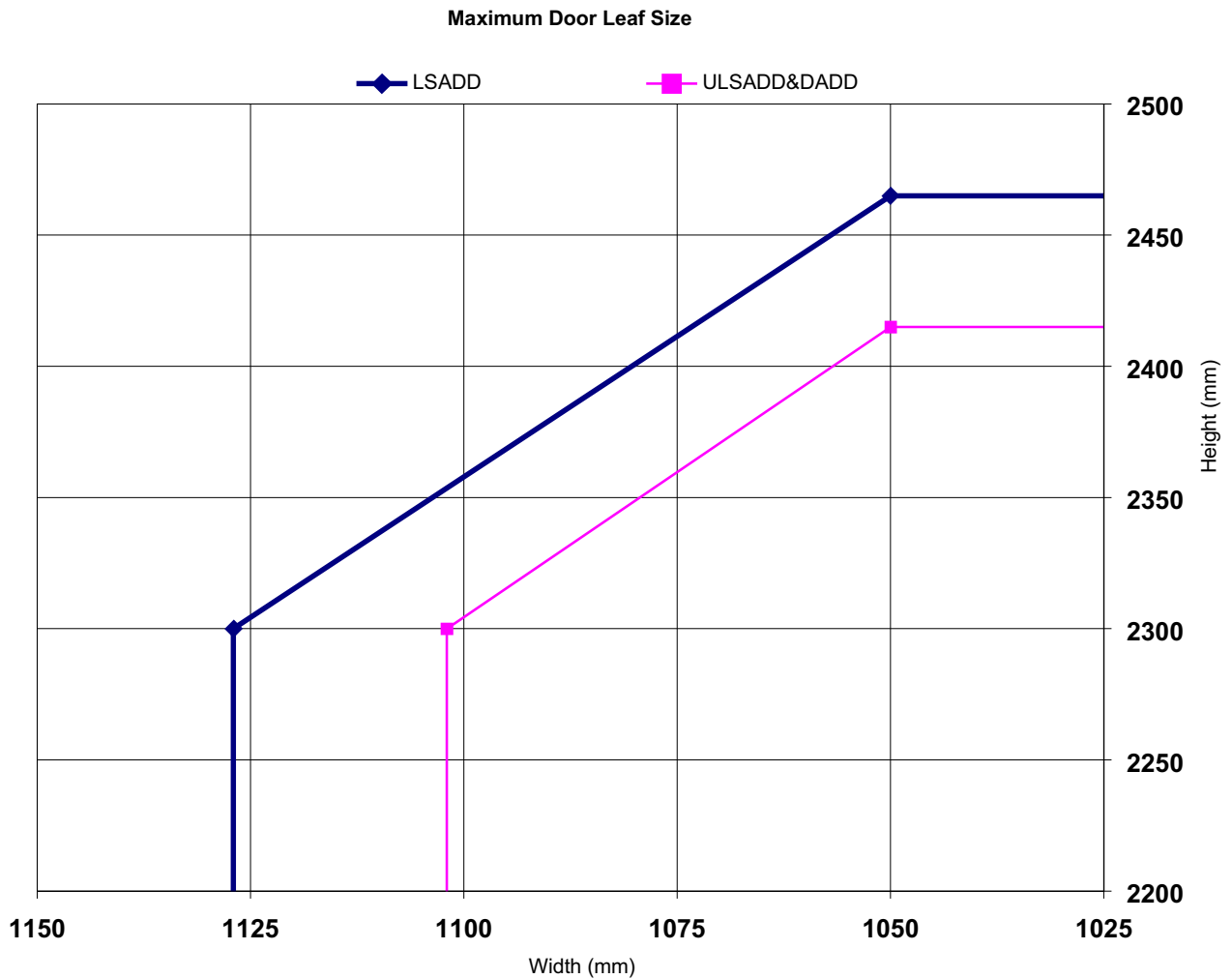
**Intumescent Materials: PVC Encapsulated Therm-A-Seal – Intumescent Seals Ltd**

**Head:** 1No 20 x 4mm exposed and fitted centrally in the leaf or frame head.

**Meeting Edges:**  
**Square:** 1 No 20 x 4mm exposed and fitted centrally in one leaf edge only.  
**Rebated:** Not permitted.

**Jambes & Overpanel:** 1No 20 x 4mm exposed and fitted centrally in the leaf edge or frame reveal

**Hardware Protection:** see section 14

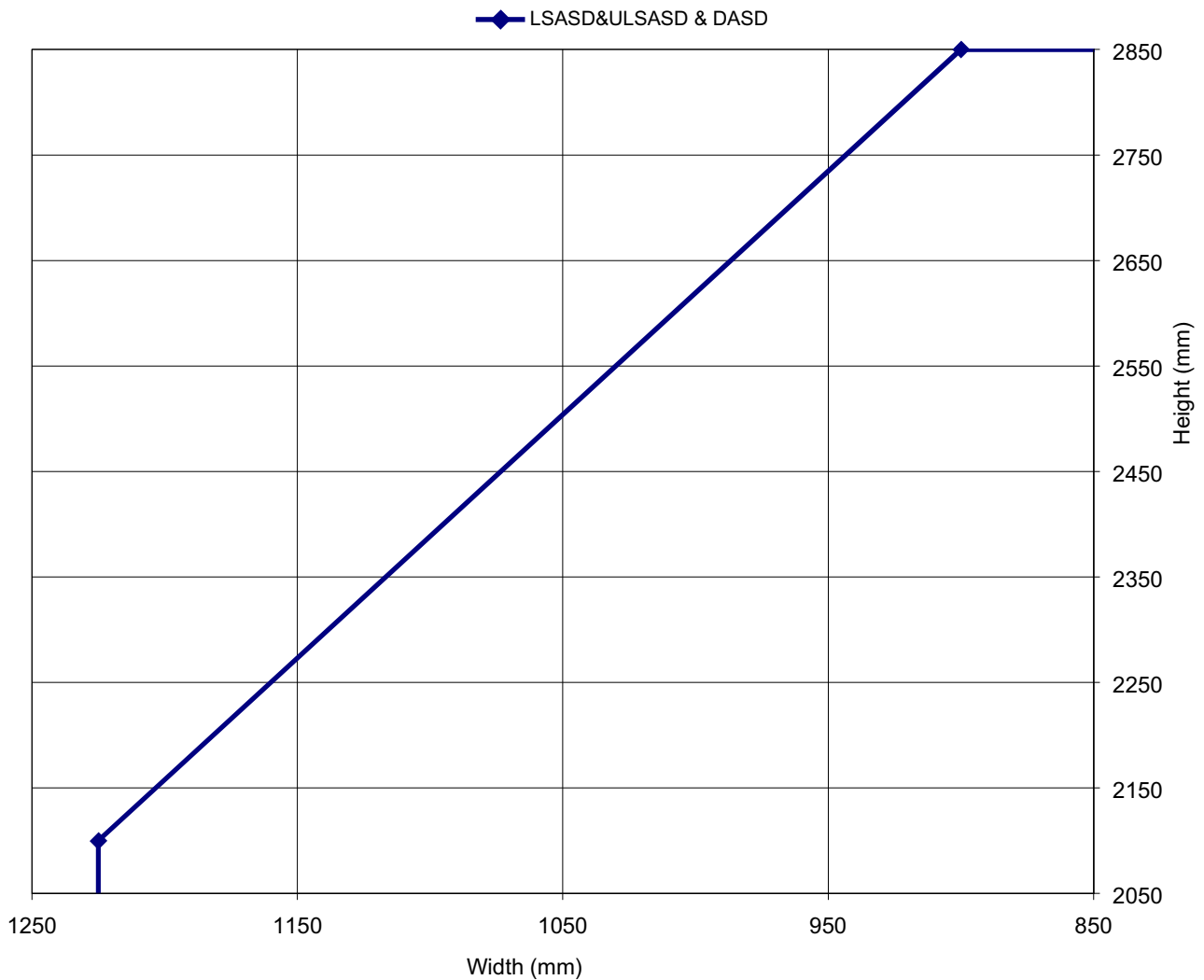


## Laminesse FireSmoke and FireSafe 44/54mm Doorsets – 30 Minutes Fire Resistance CS Edge Protectors/Acrovyn Wrap

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

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSASD &	From:	2100	x 1225
	ULSASD & DASD	To:	2850	x 900
Max. Overpanel Height (mm)		Transomed	2000	
<b>INTUMESCENT MATERIALS: Lorient Polyproducts Ltd - Type 617</b>				
<b>Head:</b>				
<b>Square:</b> 1No. 20 x 4mm strips centrally fitted in the leaf head or frame reveal.				
<b>Jams &amp; Overpanel:</b> 1No. 20 x 4mm strips centrally fitted in the leaf edges or frame reveal.				
<b>Hardware Protection:</b> See section 14				

Maximum Door Leaf Size



## Laminesse FireSmoke and FireSafe 44/54mm Doorsets – 30 Minutes Fire Resistance CS Edge Protectors/Acrovyn Wrap

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

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSADD	From:	2100	x 1200
		To:	2800	x 900
Max. Overpanel Height (mm)		Transomed	1500	

**INTUMESCENT MATERIALS: Lorient Polyproducts Ltd - Type 617**

**HEAD:**

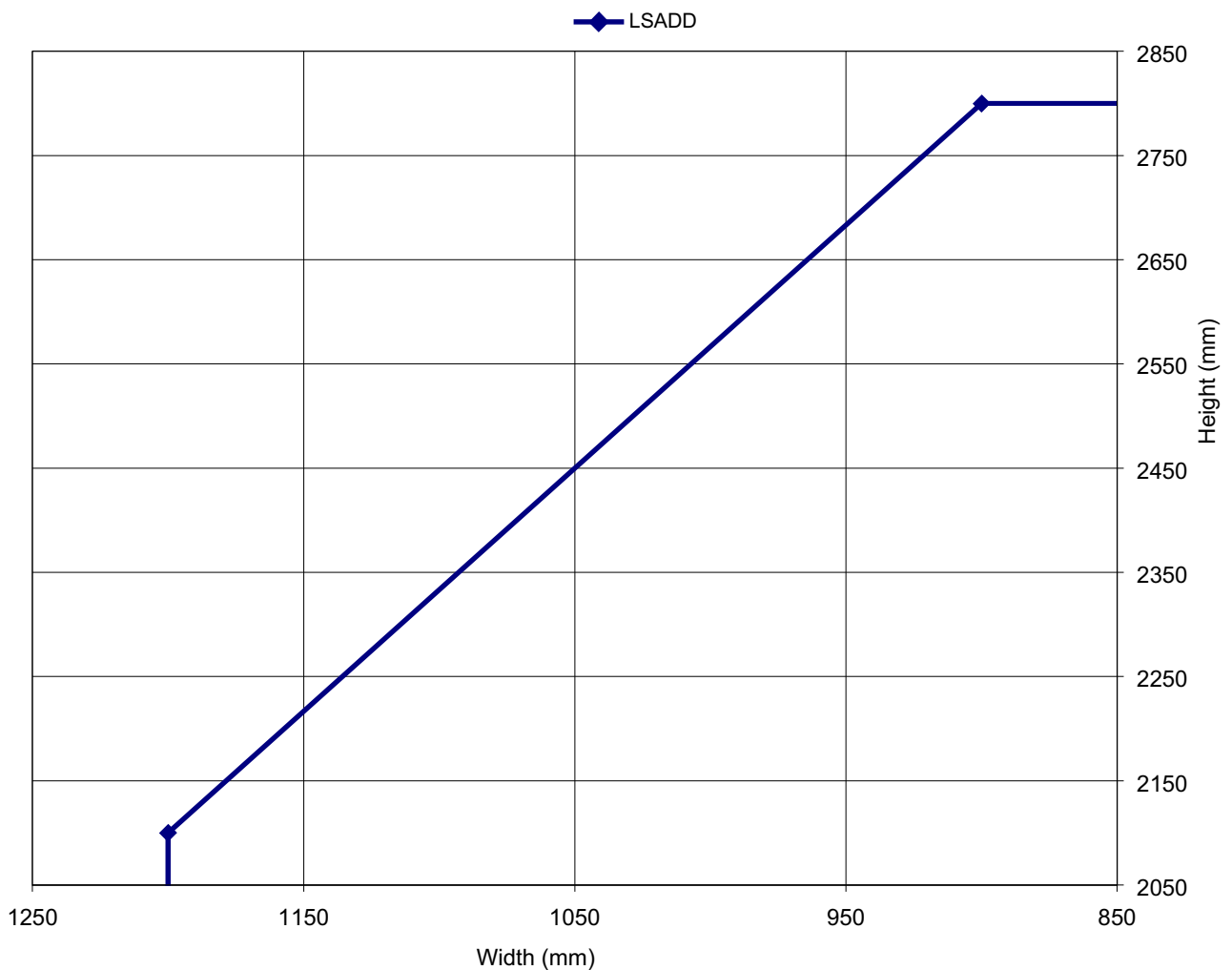
**Square:** 1No. 20 x 4mm strips centrally fitted in the leaf heads or frame reveal.

**Jams & Overpanel:** 1No. 20 x 4mm strips centrally fitted in the leaf edges or frame reveal.

**Meeting Edges: Square:** 1No. 15 x 4mm strip centrally fitted in the meeting edge of both leaves.

**Hardware Protection :** See section 14

Maximum Door Leaf Size



## Appendix D

### Moralt Laminesse FireSmoke and FireSafe 44/54mm Doorsets Aluminium Frame Doorsets

#### 1. Introduction

This appendix contains the information relating to Moralt Laminesse FireSmoke and FireSafe 44/54mm doorsets utilising aluminium door frames. The assessment uses the same extrapolation and interpretation techniques applied for the main assessment and is conducted in terms of BS 476: Part 22: 1987.

**Since the cited test data utilised an asymmetrical construction; the assessed fire resistance detailed in this section may only be claimed from the opening direction.**

The application of Moralt clad on panels is not relevant for this section.

#### 2. General specification of construction

The door leaves and overpanels for Laminesse FireSmoke and FireSafe 44/54mm doorsets utilising aluminium door frames are manufactured in accordance with the design specified in section 4 of this assessment. All other aspects of the assessed construction specification detailed in the main assessment apply, 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 specimen tested in BTC 15415F. Data sheets specifying the maximum approved leaf sizes and graphs detailing the permitted gradient between height and width are shown at the end of this appendix.

Based on the test evidence cited, this assessment covers the following doorset configurations.

Abbreviation	Description
LSASD+OP	Latched single acting single doorset with flush overpanel
ULSASD+OP	Unlatched single acting single doorset with flush overpanel
LSADD+OP	Latched single acting double doorset with flush overpanel
ULSADD+OP	Unlatched single acting double doorset with flush overpanel

**Note:** The maximum assessed flush overpanel height is 500mm.

#### 4 Lippings

Aluminium framed Laminesse FireSmoke and FireSafe 44/54mm must be lipped on all edges in accordance with the following specification.

Material	Size (mm)	Min Density (kg/m <sup>3</sup> )
Timber for lippings must be straight grained joinery quality hardwood, free from knots, splits and checks.	<ol style="list-style-type: none"> <li>1. Flat = 10 – 15 thick with a maximum of 2mm profiling permitted at corners of lipping (see section 10.3)</li> <li>2. Rounded = not permitted</li> <li>3. Rebated = 20 – 25 thick with a 13mm deep equal rebate*</li> </ol>	640

\* Permitted at leaf head to flush overpanel junctions only.



## 5 Door Frame Specification

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

Element	Description	Dimensions (mm)
Head & jambs	Extruded aluminium – Komfire 100	108 x 40 x varies (d x w x t)
Stop	Integral with the main frame	Depth = 25 Height = 25
Jamb & head jointing	Mitred and cleated	-
Fixings to partition	No.8 steel screws, 38mm long	150 from threshold then at 300cc up jambs and across the head

## 6 Fixings

Fixings must be of the appropriate type and length for the structural opening medium and must be spaced, as a maximum, at the dimensions shown above.

## 7 Structural openings

Laminesse FireSmoke and FireSafe 44/54mm aluminium 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 must be filled with softwood stiffeners).

Gaps between doorframes and the structural opening must be controlled to a maximum of 5mm, gaps between frame and the supporting construction should be filled to a depth of 10mm with acrylic intumescent mastic, appropriately fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634.

## 8 Intumescent Materials

The following intumescent materials must be used.

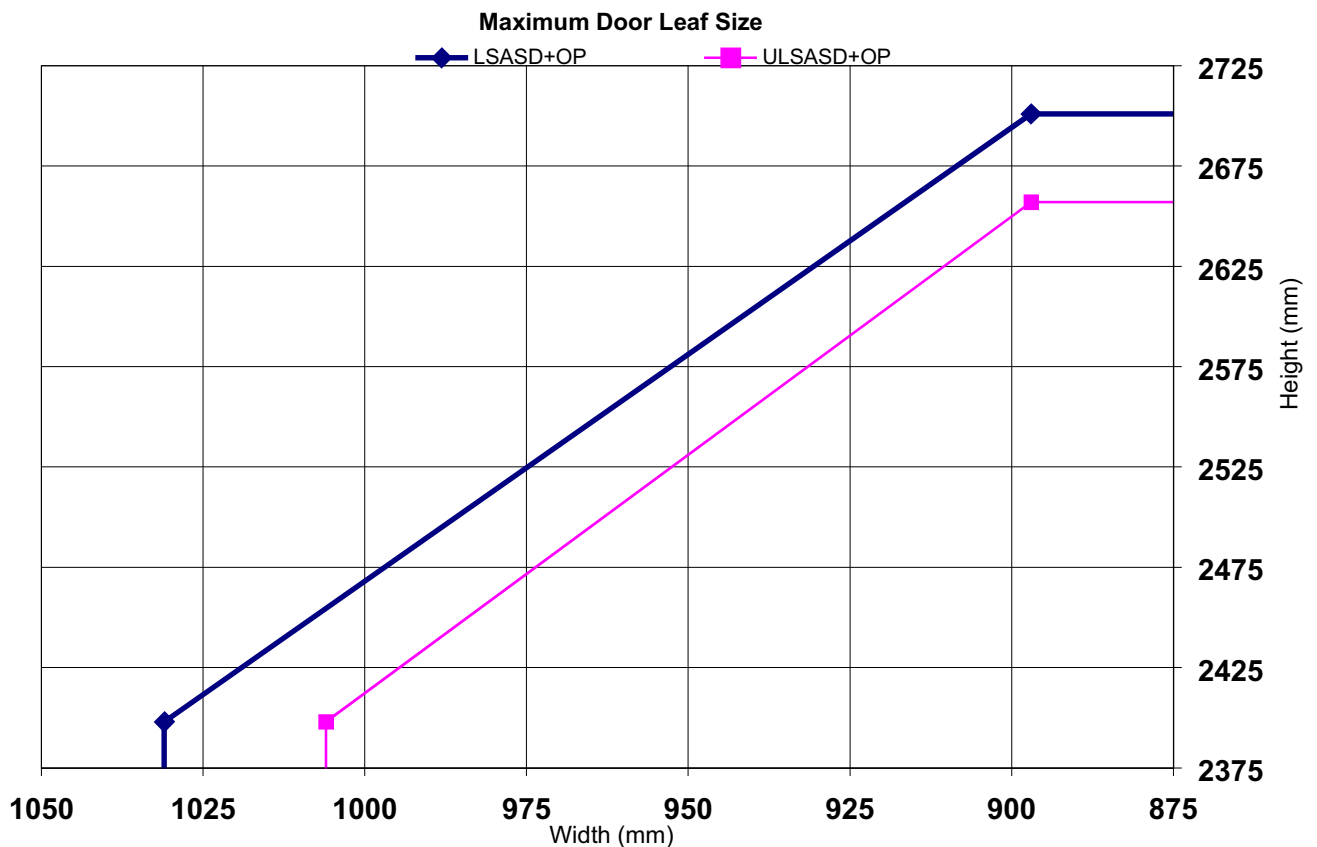
Application	Location	Lorient Polyproducts Ltd – Product Description
Meeting edges	One meeting edge for double doorsets	PVC encapsulated seal - Type 617
Head to overpanel junctions	1. Centrally in rebate of leaf head	PVC encapsulated seal - Type 617
	2. Centrally in rebate at bottom edge of overpanels	Intumex graphite Seal
Frame reveal	Offset in frame extrusion	Intumex graphite Seal
Hinges	Under blades in leaf edge only	1mm MAP paper
Locks/latches	Under forend & keep	

See the following data sheets for details.

## Laminesse FireSafe and FireSmoke 44/54mm Aluminium Frame Doorsets – 30 Minutes Fire Resistance

### Latched and Unlatched Single Acting Single Doorsets + Flush Overpanel

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSASD+OP	From:	2398	x 1031
		To:	2707	x 897
	ULSASD+OP	From:	2398	x 1006
		To:	2657	x 897
Maximum Overpanel height (mm)	Flush	500		
Glazing	Maximum Glazed Area:	0.72m <sup>2</sup> (see section 9 of main assessment for details)		
	Approved systems:	See section 9 and appendix A of main assessment for details		
Frame specification	Material:	Aluminium – See Appendix D		
	Min. Section (mm):	100 x 40		
<p><b>Intumescent Materials: Lorient Polyproducts Ltd</b></p> <p><b>Leaf Head:</b> 1No 10 x 4mm PVC encapsulated type 617 seal exposed and fitted 9mm from the face of the door leaf in the bottom of the rebate in the leaf head; plus 1No 15 x 2mm thick Intumex seal exposed and fitted 7mm from the face of the overpanel in the bottom of the rebate in the base of the overpanel. The higher section of the rebated lipping in the leaf head must be oriented such that the leaf opens toward the fire risk side</p> <p><b>Frame Jambs &amp; Head:</b> 1No 22 x 2mm thick Intumex seal exposed and fitted 5mm from fire risk side in the frame reveal.</p> <p><b>Hardware Protection:</b> see section 8 in appendix D.</p>				



**Laminese FireSafe and FireSmoke 44/54mm Aluminium Frame Doorsets  
– 30 Minutes Fire Resistance  
Latched and Unlatched Single Acting Double Doorsets + Flush Overpanel**

	Configuration		Height (mm)	Width (mm)
Leaf Sizes	LSADD+OP	From:	2398	x 981
		To:	2607	x 897
	ULSADD+OP	From:	2398	x 956
		To:	2557	x 897
Maximum Overpanel height (mm)	Flush	500		
Glazing	Maximum Glazed Area:		0.72m <sup>2</sup> (see section 9 of main assessment for details)	
	Approved systems:		See section 9 and appendix A of main assessment for details	
Frame specification	Material:		Aluminium – See Appendix D	
	Min. Section (mm):		100 x 40	
<b>Intumescent Materials: Lorient Polyproducts Ltd</b>				
<p><b>Leaf Head:</b> 1No 10 x 4mm PVC encapsulated type 617 seal exposed and fitted 9mm from the face of the door leaf in the bottom of the rebate in the leaf head; plus 1No 15 x 2mm thick Intumex seal exposed and fitted 7mm from the face of the overpanel in the bottom of the rebate in the base of the overpanel. The higher section of the rebated lipping in the leaf head must be oriented such that the leaf opens toward the fire risk side.</p> <p><b>Meeting Edges - Square:</b> 1No 20 x 4mm exposed and fitted centrally in one leaf edge only</p> <p><b>Frame Jamb &amp; Head:</b> 1No 22 x 2mm thick Intumex seal exposed and fitted 5mm from fire side in the frame reveal.</p> <p><b>Hardware Protection:</b> see section 8 in appendix D</p>				

