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Title:

Global Fire Resistance Assessment of
Jiangsu Sainty-Fire ProTech Doorsets
30 Minutes Fire Resistance

Valid From: 10th March 2020

Valid Until: 10th March 2025

WF Report No:

BMT/CNA/F16018 Revision A

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Prepared for:

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1 Foreword

This field of application report has been commissioned by Jiangsu Sainty Bancom Wood Co. Ltd, T/A Sentry International, and relates to the fire resistance of 30 minute Sentry ProTech fire resisting doorsets.

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

This field of application (scope) uses established empirical methods of extrapolation and experience of fire testing similar 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 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 UKAS accredited laboratories¹, to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturers stated door design and is summarised in section 3.

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

This field of application has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the Passive Fire Protection Forum (PFPF) 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.

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

2 Proposal

It is proposed to consider the fire resistance performance of the doorset design described in the technical specification in section 4 of this report, for 30 minutes fire resistance integrity, if the doorset 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 design, which is summarised in section 3. Analysis of specific construction details that require assessment are given within this report against the relevant element of construction, as appropriate.

3 Test Evidence

The test evidence summarised below has been generated to support the fire resistance performance of the door designs that are the subject of this field of application.

3.1 Comparison of Test Standards

The ISO834 time/temperature curve used in BS 476: Part 22: 1987 test is the same as within BS EN 1634-1, except for the use of Plate Thermometer device(s) for furnace control in the EN test, which test data has shown to make the EN test more onerous. This is due to the higher thermal inertia required for the plate thermocouple to read the same temperature as the probe thermocouple used for the BS 476: Part 22 test, particularly during the early stages of the test. It is therefore our assessment that the same integrity performance would be achieved in a test conducted utilizing the principles of BS 476: Part 22: 1987 and that test data generated to the requirements of the EN test may therefore be used in support of this scope of application document, written to the requirements of BS 476: Part 22: 1987.

Note: dimensions are in mm unless otherwise stated.

Abbreviations: (h) = height; (w) = width; (t) = thickness; (d) = depth.

Doorsets with latches fitted but disengaged for the test, are reported as 'unlatched'.

Commented [AW1]: Make section 3.1

3.2 Test Report PF15260 Revision A

The referenced test report, essential details of which are summarised below, is primary data for the door design being considered in this report. This test supports latched single and double leaf, single acting, glazed and unglazed doorsets, hung in softwood frames with steel lift off hinges, and a mortise lock, opening towards the furnace.

Date of test	26 th November 2015	
Identification of test body:	Exova Warringtonfire, now trading as Warringtonfire Testing and Certification Ltd. UKAS No. 1762	
Sponsor:	Jiangsu Sainty Bancom Wood Co. Ltd	
Tested Product:	Doorset A: Latched, single acting, double leaf, timber based, glazed flush doorset; Doorset B: Latched, single acting, single leaf, timber based, glazed flush doorset.	
Summary of test specimen:	<p>Leaf dimensions A: 2135 (h) x 915/300 (w) x 44 (t). Leaf dimensions B: 2480 (h) x 915 (w) x 44 (t).</p> <p>Both doorset leaves comprised a core of 3 layers of 12 (t) <i>Albasia falcata</i> lamels laid in alternating horizontal and vertical directions with a 36 (t) x 25 (w) pine top rail, and faced on each side with 4 (t) plywood with a 0.5 (t) beech veneer. Leaves were lipped with 6 (t) sapele to all four sides and hung in 70 (d) x 32 (w) Redwood frames, on 3 No. (doorset A) and 4No. (doorset B), steel, lift off hinges. PVC encased 15 x 4 Pyroplex rigid box seals were centrally fitted into the frame reveal of the head and jambs and 2No. 10 x 4 PVC encased Pyroplex rigid box seals were fitted to the meeting edges of doorset A. Rutland TS3204 surface mounted overhead closers were fitted to the head of the leaves on the exposed face and an engaged Easi-T mortice latch was fitted 1000 from the threshold.</p> <p>The left leaf of doorset A and the leaf of doorset B were each fitted with a 875 (h) x 715 (w) aperture. Doorset A incorporating 6 (t) Pilkington Pyroshield 2 GWPP glass glazed with Lorient Polyproducts Ltd 36/6 Plus, and Doorset B incorporating 7(t) Pilkington Pyrodur, glazed with Intumescent Seals Ltd Therm-A-Seal. Both utilised sapele hardwood glazing beads, 26 (h) x 21.5 (d), including a 5 x 5 bolecion return, retained with 60 long steel pins, 50 from each corner and at 150 centres.</p> <p>Both doorsets were oriented to open in towards the furnace and were latched for the duration of the test.</p>	
Test Standard:	BS EN 1634-1:2014 and BS EN 1363-1:2012	
Performance	Doorset A	Integrity: 34 minutes Insulation: 4 minutes ¹
	Doorset B	Integrity: 38 minutes Insulation: 16 minutes ¹

Commented [AW2]: You have door type A in the intro? Which type is this?

¹ failure by virtue of integrity failure.

3.3 Test Reports 141031001SHJ-BP-1

The referenced test report, the essential details of which is summarised below, is primary data for the door design being considered for assessment in this report. This test supports latched, single leaf, unglazed doorsets, hung in hardwood frames with steel hinges, and a mortise lock, opening towards the furnace, and fitted with Lorient Polyproducts LP2004 intumescent perimeter seals.

Date of test	11 th November 2014
Identification of test body:	Intertek testing Services Shenshen Ltd, Shanghai, China. IAS accreditation No. TL-394.
Sponsor:	Jiangsu Sainty Bancom Wood Co. Ltd
Tested Product:	Latched, single acting, single leaf, timber based flush doorset.
Summary of test specimen:	<p>Door leaf dimensions: 2135 (h) x 915 (w) x 44 (t).</p> <p>The leaf comprised a core of 3 layers of 12 (t) <i>Albasia</i> blockboard lamels laid in alternating horizontal and vertical directions with a 36 (t) x 32 (w) pine top rail, and faced on each side with 4 (t) plywood. The leaf was lipped with 8 (t) Meranti to all four sides and hung in a Meranti frame, of 600Kg/m³ density, on 3 No. steel, bearing butt hinges. Lorient Polyproducts LP2004, 20 x 4 PVC encased intumescent seals were fitted into the frame reveal of the head and jambs, butted up to the stop. A stainless steel Jiangsu Hua Lv Steel 058-AA mortise lock with latch and deadbolt was fitted.</p> <p>The doorset was oriented to open in towards the furnace and was latched for the duration of the test.</p>
Test Standard:	EN 1634-1:2014 and an EN 1363-1:2012
Performance	Integrity: 36 minutes ¹ Insulation: 36 minutes

¹ No failures of integrity or insulation had occurred when the test was terminated at 36 minutes at the request of the sponsor.

4 Technical Specification

4.1 General

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

4.2 Intended use

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

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

4.3 Description of Construction

The basic tested construction of Sainty-Fire ProTech door leaves covered by this assessment comprises the following elements:

Element		Materials	Dimensions (mm)	Min. Density (kg/m ³)
Stiles		None fitted	-	-
Top rail		Pine	36 thick x 25 wide	450
Core	Outer	Spruce/Pine mix of vertically orientated lamels	12 thick x 38 wide	450
	Inner	Spruce/Pine mix of horizontally orientated lamels	12 thick x 38 wide	450
Facings		Poplar core plywood	4 thick	450
Adhesive	Lipping	PU	-	-
	Core	WBP melamine	-	-
	Facing	WBP melamine	-	-
Lipping – all edges		Sapele	6 thick	640

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 D.

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

6 Configurations and Orientation

6.1 Configurations

Based on the test evidence listed in Appendix A, this assessment covers the following doorset configurations:

Abbreviation	Description
LSASD	Latched, single acting, single doorset
LSADD	Latched, single acting, double doorset

6.2 Orientation

The primary fire resistance tests for these doorset designs were conducted with the doorset hung such that the door leaf opened towards the fire which is considered the most onerous orientation in terms of fire resistance performance. Based on this testing, assessment is made that the doorsets to this design may be hung either way with respect to the fire risk, opening either away from or towards the fire risk side of the doorset. This is confirmed in table 2 of clause 13.4.1 of BS EN 1634-1: 2014 + A1: 2018.

The fire risk may therefore be from both directions with respect to these doorsets.

7 Leaf Size Adjustment

Sainty-Fire ProTech door leaves to this design may be altered as follows:

Element	Reduction
Leaf	The manufactured dimensions of the leaf may be reduced in height or width, providing reduction is made from the vertical or bottom edges of the leaf, i.e. reduction is not permitted from the top rail position.
Lipping	The lipping dimensions stated in section 11 may be reduced by 20% for fitting purposes.

8 Overpanels

8.1 Solid

Overpanels of the same construction as the door leaves may be used only when separated by a transom. The overpanel must be fully contained within the door frame (see following diagram).

The transom required to separate the leaf heads from the overpanel must be to the same specification as the door frame.

Door frame joints must utilise one of the following methods: mortice and tenon joints or butt joints (see section 12.2).

Either method requires joints to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws. Butt joints must be additionally bonded with urea formaldehyde or equivalent.

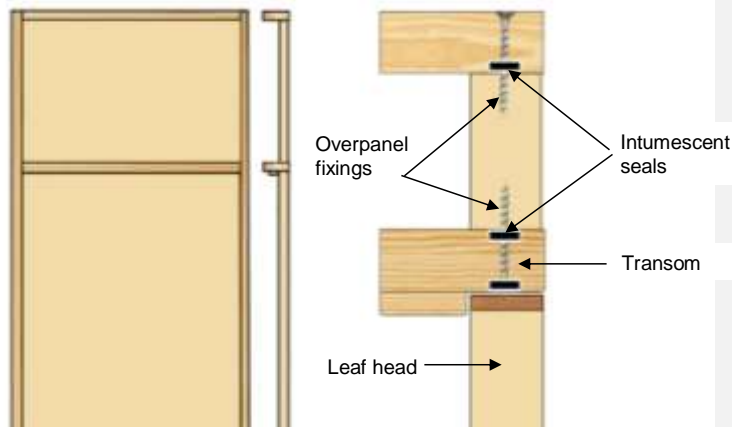
Overpanels must be fixed using the following method:

- 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 seals specified for the jambs in Appendix D 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.

Maximum overpanel height is as follows:

Configuration	Max. Overpanel Height (mm)
Single doorsets	2000
Double doorsets	1500



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

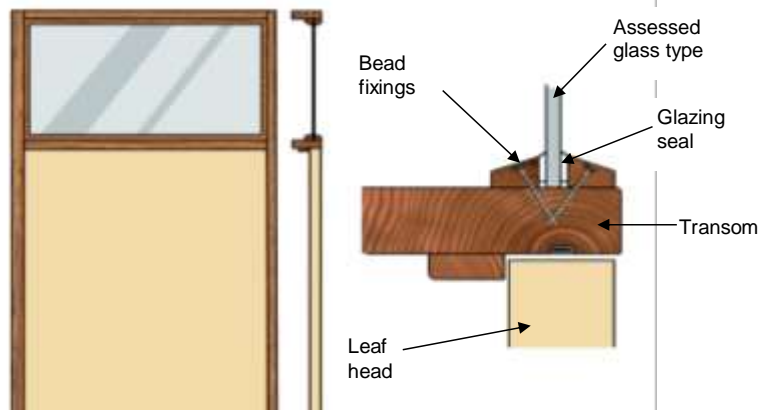
8.2 Glazed Fanlights

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 640kg/m^3 , whilst the frame section for the transom must be a minimum of $70\text{mm} \times 44\text{mm}$. All other elements of timber door frame and transom construction must comply with the specification contained in section 12.

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.

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



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 the Sainty-Fire ProTech door design 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:

The maximum assessed glazed area for all configurations is 1.0m².

Drawings of approved proprietary glazing systems are contained in Appendix B.

9.2 Assessed Glazing Systems

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

Glazing System	Manufacturer
1. Therm-A-Strip 30	Intumescent Seals Ltd.
2. Fireglaze 30	Sealmaster Ltd.
3. Firestrip 30	Hodgsons Sealants Ltd.
4. System 36 Plus	Lorient Polyproducts Ltd.
5. Pyroglaze 30	Mann McGowan Ltd.
6. R8193	Pyroplex Ltd.
7. Flexible Figure 1 (FF1)	Lorient Polyproducts Ltd.

9.3 Assessed Glass Products

Assessed glass types are as follows:

Glass Type	Thickness (mm)	Manufacturer	Max. Area (m ²)
1. Pyroshield 2	6 & 7	Pilkington Group Ltd.	1.0
2. Pyran S	6	Schott Glass Ltd.	1.0
3. Pyrostem	6	Pyroguard UK Ltd.	1.0
4. Pyroguard EW 30	7	Pyroguard UK Ltd.	0.87
5. Pyrobelite 7	7	AGC Flat Glass Europe	1.0
6. Pyrodur 30-104	7	Pilkington Group Ltd.	1.0
7. Pyrodur 60-10	10	Pilkington Group Ltd.	1.0
8. Pyroguard EW MAXI	11	Pyroguard UK Ltd.	0.58
9. Pyranova 15-S2.0	11	Schott UK Ltd.	1.0
10. Pyrobelite 12	12	AGC Flat Glass Europe	1.0
11. Pyrodur 60-20	13	Pilkington Group Ltd.	1.0
12. Swissflam Lite	14	Vetrotech St. Gobain AG	1.0
13. Pyroguard EI 30	15	Pyroguard UK Ltd.	0.54
14. Pyrostop 30-10	15	Pilkington Group Ltd.	1.0
15. Pyrobel 16	16	AGC Flat Glass Europe	1.0

Note: 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.

9.4 Glazing Beads & Installation

Glazing beads must be as specified in the following table:

Material	Profile	Min. Density (kg/m ³)	Application
Hardwood	Splayed	≥640	All proprietary systems detailed in section 9.2 & shown in Appendix B & all glass types listed in section 9.3
Hardwood	Square	≥640	Proprietary system 1 – 3 as specified in section 9.2 & glass types 4 – 15 listed in section 9.3

Timber for glazing beads must be joinery quality straight grained hardwood, free from knots, splits and checks.

Sectional drawings detailing the tested and approved proprietary glazing systems are contained in Appendix B.

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 B for square bead profile options).

A 6 – 10mm thick square aperture liner is permitted for use with square beads providing it is constructed from hardwood of minimum density 640kg/m³ and glued in position using a UF, PVA or PU type adhesive.

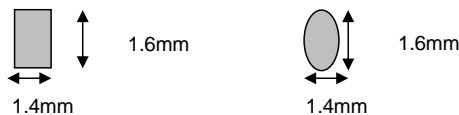
Glazing beads must be retained in position with 60mm long steel pins or 60mm long No 6-8 screws, inserted at 35-40° to the vertical at no more than 50mm from each corner and at 150mm maximum centres.

Pneumatically (gun) fired steel pins are acceptable providing the pins meet the specifications shown below, are a minimum of 60mm long, and wherever possible are orientated perpendicularly to the glass.

Round pin diameter (mm) = minimum 1.6mm:



Oval/rectangular pin minimum linear dimensions = 1.6mm x 1.4mm:



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

Glazed openings must not be less than 100mm from any door edge. Multiple apertures are acceptable within the permitted glazed area, with a minimum of 80mm of door core separating the apertures.

Aperture shape is not restricted, providing the glazing system and beads are compatible with that shape

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 100mm of door core between apertures.

9.5 False Glazing Beads

False timber beads may be bonded to the glass face. Suitable glass for this application is restricted to types 4 – 15 in section 7.3. One of the following intumescent glazing products must be used:

Glazing System	Manufacturer
1. Therm-A-Strip 30	Intumescent Seals Ltd.
2. Fireglaze 30	Sealmaster Ltd.
3. Firestrip 30	Hodgsons Sealants Ltd.
4. Envirograf Product 77 – G10/10	Intumescent Seals Ltd.

Seals for glazing beads must be a minimum of 10mm wide x 0.5 – 3mm thick. Preformed strip systems 1 – 4 may be self-adhesive and grooved into the rear of the glazing bars.

10 Facing Materials

10.1 General

At the thickness tested, facings are considered structural and therefore substitution with alternative materials is not permitted. The following tested material is therefore the only approved facing option for this door design:

Material	Dimensions (mm)	Configuration	Min. Density (kg/m ³)
Poplar core plywood	4 thick	All	450

10.2 Additional Decorative & Protective Facings

The following materials are permitted for this door design, in addition to the primary tested material, since they would degrade rapidly under test conditions without significant effect:

Facing Material	Maximum Permitted Thickness (mm)
Paint	0.5
Timber veneers	1.8
PVC	2.0
Plastic laminates	2.0
Cellulosic paper/Non-metallic foil	0.4

Notes:

1. Metallic facings are not permitted (except for push plates & kick plates).
2. The door leaf thickness may be reduced by a total maximum of 0.6mm to each face (a maximum of 1.2mm in total) for calibration purposes, only in order to accommodate one of the additional facings shown in the table above. The finished leaf thickness must be a minimum of 44mm.
3. Materials must not conceal intumescent strips.
4. PVC and Plastic laminates must not be applied to the leaf edge.

11 Lippings

Sainty-Fire ProTech door leaves must be lipped on all edges. Lippings must meet the following specification:

Type	Dimensions (mm)	Min. Density (kg/m ³)
Flat lipping	6 – 11 thick	≥640
Rounded lipping	Not permitted	
Rebated lipping	Not permitted	

Note: Timber for lippings must be straight grained, joinery quality hardwood, free from knots, splits & checks.

12 Door Frames

12.1 Door Frame Construction

Timber based door frames for the Sainty-Fire ProTech door design must be constructed to meet the following specification:

Material	Min. Section Size (mm)	Min. Density (kg/m ³)
Softwood or Hardwood	70 x 32 (excluding the stop)	510

Timber used for constructing door frames must meet or exceed class J30 as specified in BS EN 942: 2007, providing any defects are adequately repaired.

A 12mm deep planted stop is adequate for single acting frames (see diagram below).

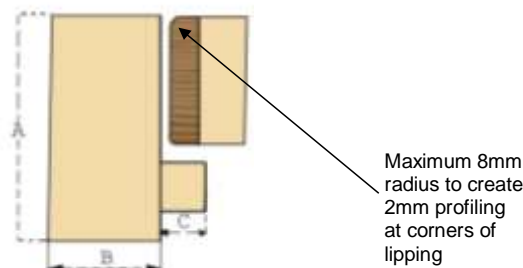
Frame joints may be mortice and tenoned, mitred, half lapped or butted and with no gaps (see section 10.2). All jointing methods require mechanical fixing with the appropriate size ring shank nails or screws.

The following diagram depicts the assessed frame profiles and dimensions:

A = Min. 70mm

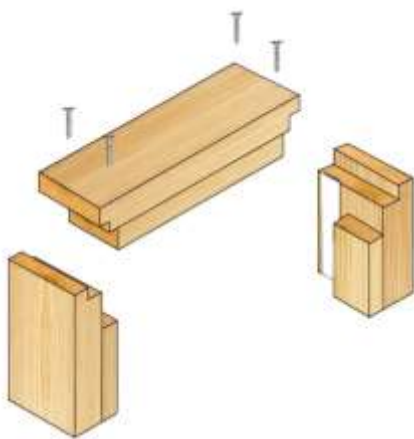
B = Min. 32mm (see table above)

C = Min. 12mm

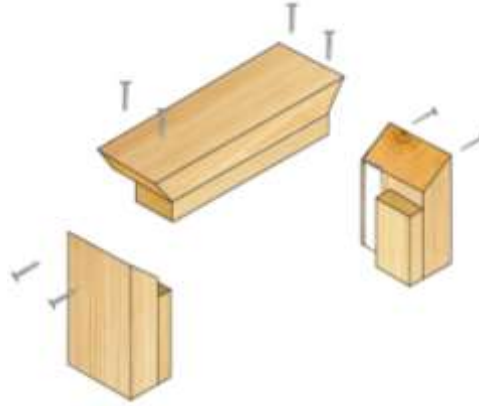


Standard

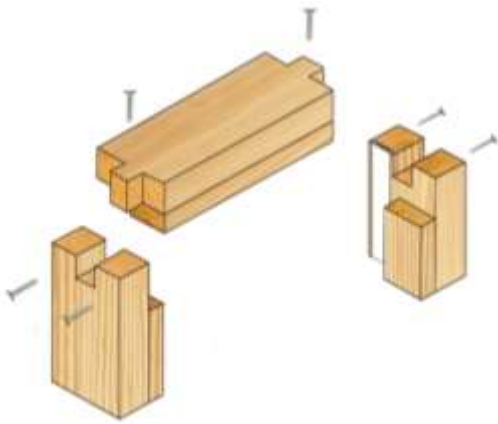
12.2 Door Frame Joints



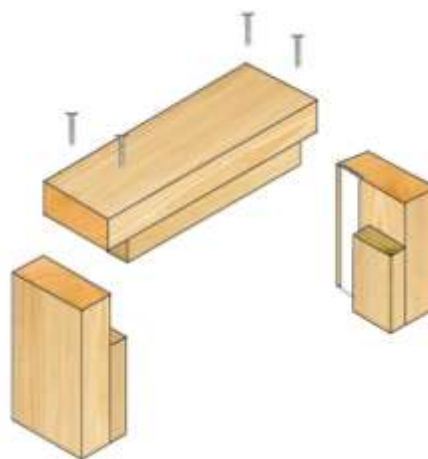
Half Lapped Joint



Mitre Joint



Mortice & Tenon Joint

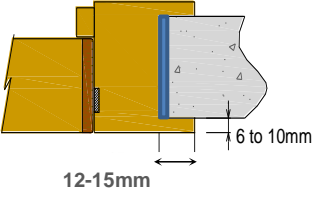
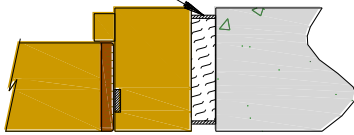
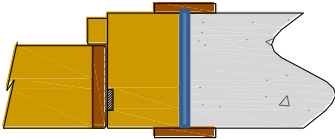
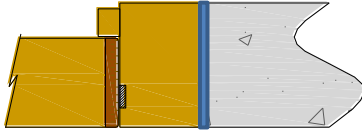
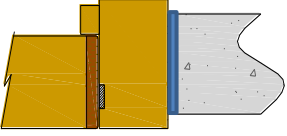
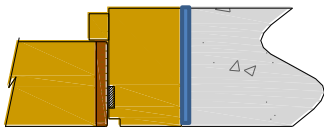


Butt Joint

Drawing is 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.

12.3 Door Frame Installation

The following diagrams indicate acceptable and unacceptable door frame installations:

Permitted Installations	
 <p style="text-align: center;">12-15mm 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>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>
Installations Not Permitted	
	
<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: Dark brown = lippings and architraves; blue = 5-10mm fitting tolerance for sealing*.

Structural openings may be thicker than frames providing the minimum frame sections in 12.1 are maintained and frame to structural opening junctions are sealed in accordance with section 19.

The diagrams above are representative; actual installation must be as the text within this document specifies. *See section 19 for sealing to structural opening.

13 Adhesives

The following adhesives must be used in construction of the Sainty-Fire ProTech doorset design:

Element	Adhesive Type
Lipping	PU
Facings	WBP melamine
Core	WBP melamine

14 Intumescent Materials

The intumescent materials tested and assessed for the Sainty-Fire ProTech doorset design are as follows:

Element	Product	Size (mm)	Location
Edge seals – frame reveal	Lorient Polyproducts LP2004 ¹	20 x 4	Fitted in frame reveal butted up to the stop
Edge seals – frame reveal	Pyroplex 8700 rigid box seal	15 x 4	Fitted in frame reveal 14mm from frame edge
Edge seals – meeting edges only	Pyroplex 8500 rigid box seal	10 x 4	Fitted in meeting edges
Around hinges	Partially interrupted	-	Seal fully interrupted by hinge blade
Under hinge blades	Interdens	1 thick	Fitted under hinge blades on frame & leaf
Encasing latch body	Interdens	1 thick	Fitted around body of latch
Under latch forend	Interdens	1 thick	Fitted under latch forend
Under latch keep	Interdens	1 thick	Fitted under latch keep
Around latch keep	Fully interrupted	-	Latch keep fully interrupts seal in leaf edge & frame reveal

¹ Latched single leaf doorsets only.

The seal specification for each configuration is contained in Appendix D.

15 Tested Hardware

The following hardware has been successfully incorporated in the test on this design:

Element	Product	Size (mm)	Location
Hinges	Royde & Tucker H101 lift-off type hinges	100 x 35 (blade size)	See section 14.1 below for details
Closer	Rutland TS3204 face-fixed overhead closer	220 x 59 (footprint size)	Fitted to exposed face as per manufacturer's instructions
Latch/Lock	Easi-T mortice latch	105 x 22 (forend size)	Fitted 1000mm from leaf threshold
		125 x 38 (keep size)	
Furniture	Zoo Hardware lever type handle	100 x 38 (footprint size)	Fitted appropriate to lock/latch

16 Additional & Alternative Hardware

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

16.1 CE Marking

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

- Single Axis Hinges: Standard EN 1935,
- Latches & Locks: Standard EN 12209,
- Controlled Door Closing Devices: Standard EN 1154,
- Panic Exit Hardware: Standard EN 1125,
- Door Co-ordinators: Standard EN 1158.

16.2 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.
- Hardware must comply with the requirements of the relevant sections, below.
- The hardware must comply with the limitations specified in terms of the design.

16.3 Automatic Closing

Automatic closing devices must either be as tested or Certifire approved for 30 minute applications in ITT doorsets with solid timber door leaves.

Note: Concealed overhead closers are not permitted without supporting test evidence.

16.4 Hinges

Door leaves must be hung on a minimum of 3No. hinges. Door leaves over 2400mm high must fit 4No. 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 4No. 30mm long No. 8 or No.10 steel wood screws per blade	
Materials		Steel or stainless steel	
Hinge positions	Leaf dimensions <2400mm	Top	150 – 200mm from leaf head to top of hinge
		2 nd	Minimum 200mm from top hinge to central between top & bottom hinges
		Bottom	180 - 250mm from threshold to bottom of hinge
	Leaf dimensions >2400mm	Top	150 – 200mm from leaf head to top of hinge
		2 nd & 3 rd	Equispaced between top & bottom hinges
		Bottom	180 – 250mm from threshold to bottom of hinge
Intumescent protection		See section 14	

16.5 Latches & Locks

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

Element	Specification
Maximum forend & strike plate dimensions	235mm high by 25mm wide by 4mm thick
Maximum body dimensions	180mm high by 70mm wide by 18mm thick
Intumescent protection	See section 12
Materials	All parts essential to the locking/latching action (including the latch bolt, forend & strike) to be steel
Location	Between 800 – 1200mm from the threshold

16.6 Pull Handles

Steel, stainless steel or brass (melting point of $\geq 800^{\circ}\text{C}$) handles may be surface fixed or bolted through the leaf, providing the length is limited to 1200mm between fixings. If through fixed, there must be no more than 1mm clearance between the hole and stud.

16.7 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.

16.8 Push Plates & Kick Plates

Steel, stainless steel or brass (melting point $\geq 800^{\circ}\text{C}$), face-fixed hardware such as push plates and kick plates may be fitted to the doorsets provided their fitting requires the removal of no part of the door leaf. These items are permitted to a maximum 20% of the door leaf area if mechanically fixed and a maximum of 30% if bonded with contact or thermally softening adhesive. Plates must not return around the door leaf edges.

16.9 Letter Plates/Boxes

Letter plates/boxes must be Certifire approved for 30 minute applications in ITT doorsets with solid timber door leaves. They must be positioned as specified by the Certifire approval and must fit the manufacturers' intumescent seal, lining the aperture.

16.10 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, Sealed Tight Solutions ST1009) 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.

16.11 Threshold Seals

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

Manufacturer	Product
Lorient Polyproducts Ltd.	LAS8001Si
Raven	RP8Si
Athmer	Schall-Ex Duo L-15
Norsound Ltd.	NOR810, NOR810S, NOR810dB+

17 Supporting Construction

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.

18 Fixings

The frame jambs are to be fixed to the supporting construction using steel fixings at 500mm maximum centres with a fixing no more than 150mm from the corners. The fixings must be steel or brass with a melting point of $\geq 800^{\circ}\text{C}$, of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm. It is not necessary to fix the frame head, although packers must be inserted.

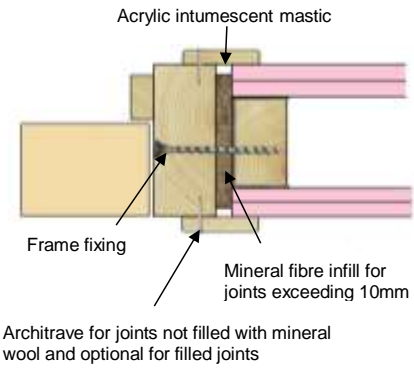
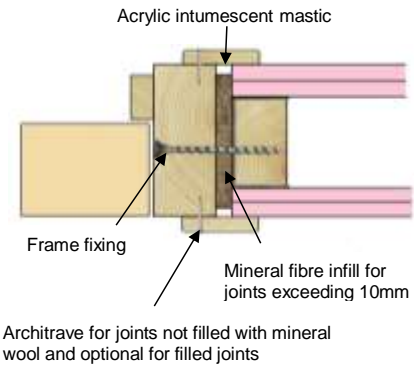
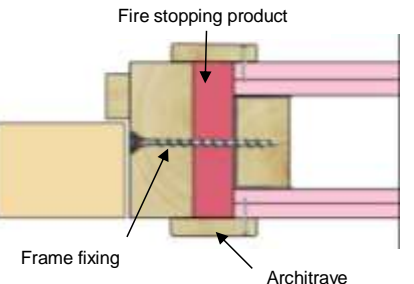
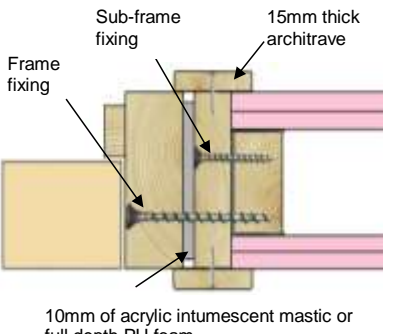
19 Door Gaps

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

Location	Dimensions
Door edge gaps	A minimum of 2mm and a maximum of 4mm.
Alignment tolerances	Leaves must not be proud of the door frame or each other by more than 1mm.
Threshold	10mm between bottom of leaf and top of floor covering. See section 22 for smoke control considerations.

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: Part 22: 1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.</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>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>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>	

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.

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 glazing
Fully insulating	Unglazed doorsets or doorsets including 30 minute insulating glazing (e.g. Pyrostop 30-10 or Pyrobel 16)

22 Smoke Control

22.1 General

If the doorset design is required to provide a restricted smoke leakage function at ambient temperatures, 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 Sentry International 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 EN 9999-2008 – *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.

23 Conclusion

If the Sainty-Fire ProTech doorset design, constructed in accordance with the specification documented in this Global Assessment, were to be tested in accordance with BS EN 1634-1:2014 + A1:2018, it is our opinion that it would provide a minimum of 30 minutes integrity and insulation (subject to section 21).

Note: The primary evidence for the Sainty-Fire ProTech doorset design has been generated to the BS EN 1634-1:2014 test standard, which is known to be more onerous than the BS 476 Part 22:1987 standard, primarily due to the use of plate thermocouples within the furnace to record the furnace temperature.

The same time temperature curve is used to control the temperature within the furnace for both test methods (the heating curve given within ISO 834-1). However, the plate thermocouple used to record the temperature within the furnace for the EN test method, requires a higher thermal inertia to read the same temperature as the probe thermocouple that is used for the BS 476 Part 22:1987 test, particularly during the early stages of the test. This results in more onerous test conditions for doorsets tested to the BS EN 1634-1: 2014 test standard compared with the BS 476 Part 22:1987 test standard, which has been demonstrated by testing the same products to both standards.

It is therefore the opinion of Warringtonfire that the fire resistance performance of the Sainty-Fire ProTech doorset design can be assessed to provide at least 30 minutes fire resistance integrity performance, if the doorsets, constructed in accordance with the specifications documented in this field of application, were to be tested in accordance with BS 476: Part 22: 1987.

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:

For and on behalf of: **JIANGSU SAINTY BANCORP WOOD CO. 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, 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 EN 1634-1:2014 +A1:2018, 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

26 Validity

1. The assessment is initially valid for a period of 5 years from the date of issue, after which time it is recommended to be submitted to Warringtonfire for re-appraisal.
2. This assessment report is not valid unless it incorporates the declaration given in Section 24 duly signed by the applicant.

Signature:		
Name:	S Bailey	Dr K D S Towler
Title:	Senior Product Assessor	Senior Product Assessor

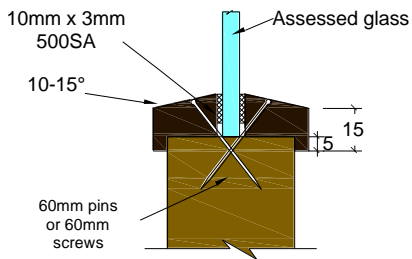
Appendix A Performance Data

Table of Test Data Summarised in Section 3

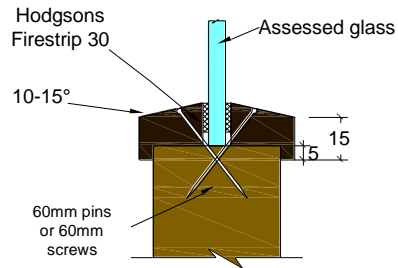
Report No.	Configuration	Leaf Size (mm)	Test Standard	Performance (mins)
FEP/F15260 Rev. A	A: LSADD	2135 x 915/300 x 44	BS EN 1634-1 & BS EN 1363-1	A - Integrity: 34 A – Insulation: 4*
	B: LSASD	2480 x 915 x 44		B - Integrity: 38 B – Insulation: 16*
141031001 SHJ-BP-1	LSASD	2135 x 915 x 44	BS EN 1634-1 & BS EN 1363-1	Integrity: 36 Insulation: 36

* Insulation failure was recorded on the glass in the glazed aperture.

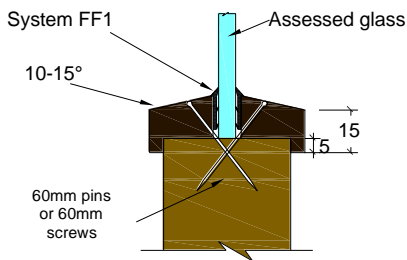
Appendix B
30 Minute Proprietary Glazing Systems



Pyroglaze 30
Mann McGowan Ltd

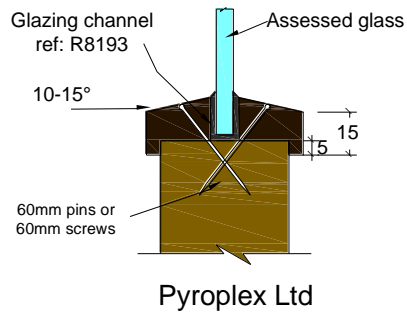
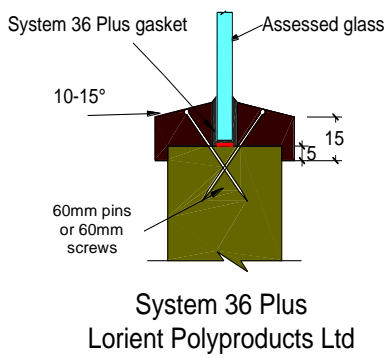
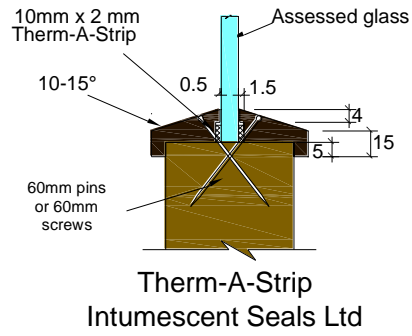
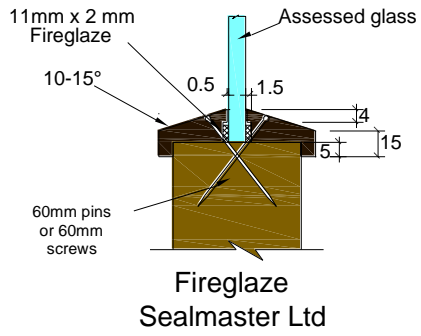


Firestrip 30
Hodgsons Sealants Ltd



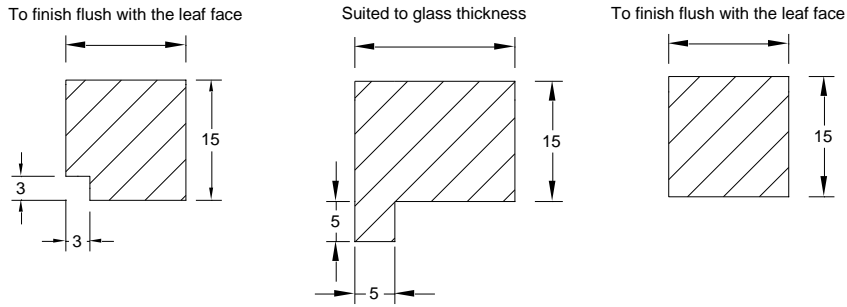
System FF1
Lorient Polyproducts Ltd





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).



Appendix C Revisions

Revision	Warringtonfire Reference	Date	Description
A	WF426794	02.03.2020	Review and revalidation of the report for a further five years, rebranding to Warringtonfire, reformatting to the guidance in BS EN 15725:2010, and incorporation of test data from Intertek test 141031001-SHJ-BP-1 to allow the use of Lorient Polyproducts Ltd LP2004 perimeter intumescent seals.

Appendix D

Date Sheets for:

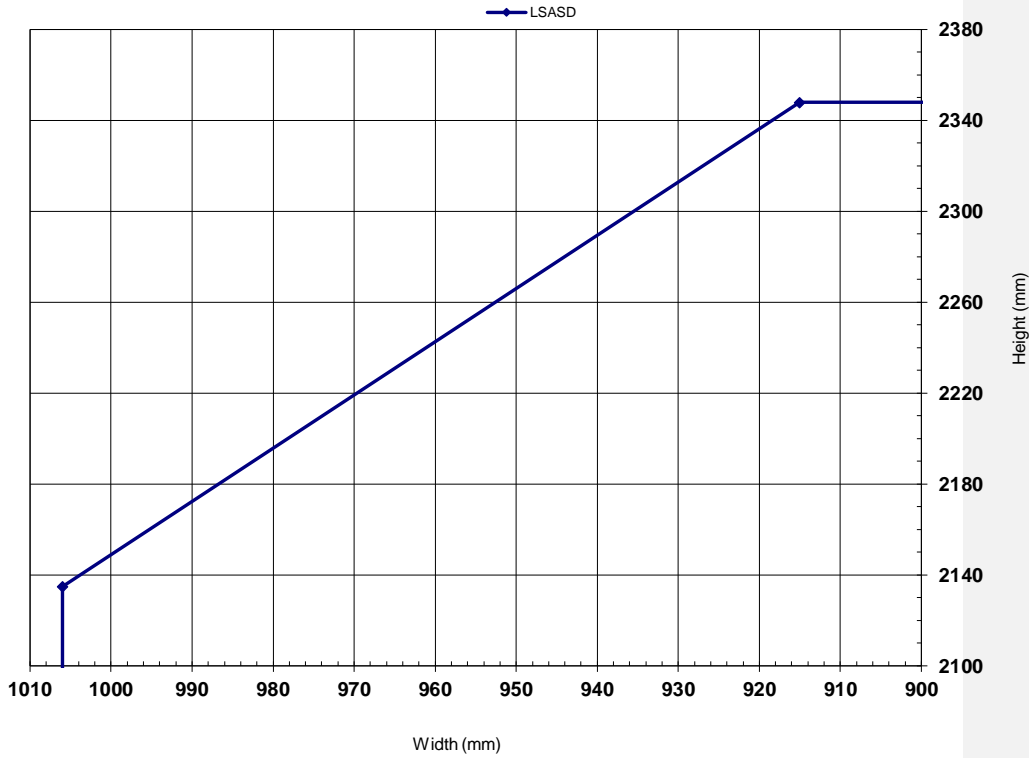
Sainty-Fire ProTech Doorsets

30 Minutes Fire Resistance

Sainty-Fire ProTech Doorsets – 30 Minutes Fire Resistance
Latched, Single Acting, Single Doorsets – Lorient Type 617 Seals – Hardwood Frames

Leaf Sizes	Configuration	From:	Height (mm)	Width (mm)
	LSASD	From:	2135	x 1006
		To:	2348	x 915
Maximum Overpanel Height (mm)		Transomed	2000	
Glazing		Max. Glazed Area	1.0m ² (see section 7 for details)	
		Approved Systems	See section 9 & Appendix B	
Frame Specification (see section 12)		Material	Hardwood	
		Min. Section (mm)	70 x 32	
		Min. Density(kg/m ³)	600	
INTUMESCENT MATERIALS: PVC encased LP2004 (Type 617) – Lorient Polyproducts Ltd.				
HEAD: 1No. 20 x 4mm strip exposed and fitted either butted up to the stop in the frame reveal or centrally fitted in the frame reveal or leaf edge.				
JAMBS: 1No. 20 x 4mm strip exposed and fitted either butted up to the stop in the frame reveal or centrally fitted in the frame reveal or leaf edge.				
HARDWARE PROTECTION: See section 14.				

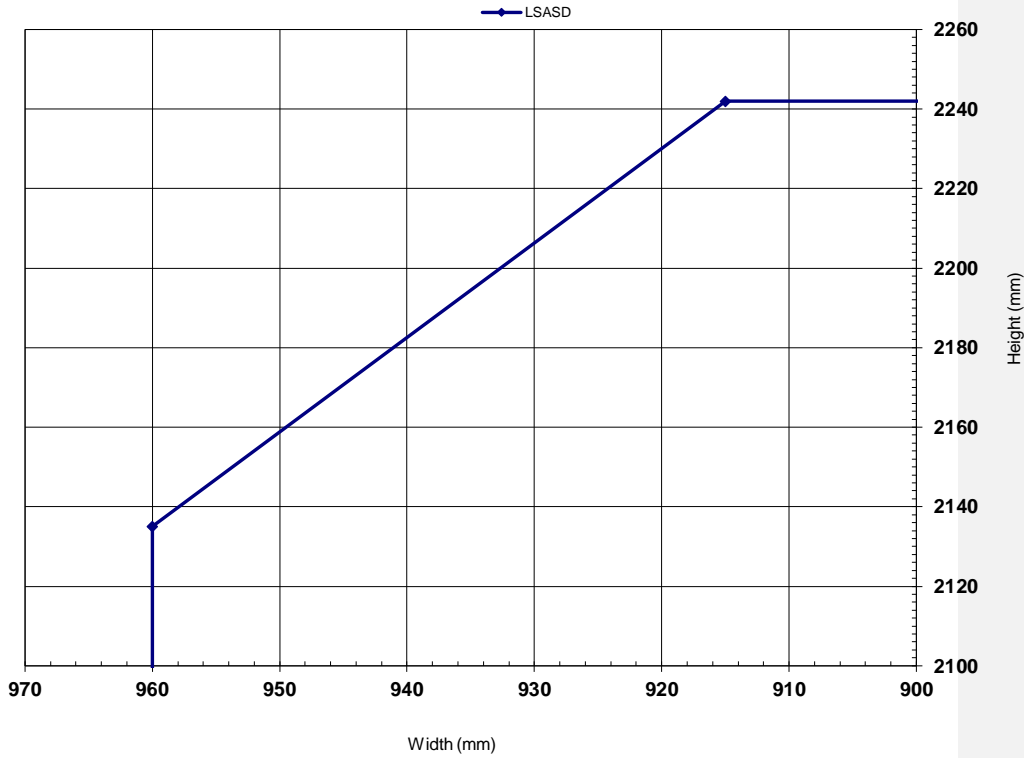
Maximum Door Leaf Size



Sainty-Fire ProTech Doorsets – 30 Minutes Fire Resistance
Latched, Single Acting, Single Doorsets – Lorient Type 617 Seals – Softwood Frames

Leaf Sizes	Configuration	From:	Height (mm)	Width (mm)
	LSASD	From:	2135	x 960
		To:	2242	x 915
Maximum Overpanel Height (mm)		Transomed	2000	
Glazing		Max. Glazed Area	1.0m ² (see section 7 for details)	
		Approved Systems	See section 9 & Appendix B	
Frame Specification (see section 12)		Material	Softwood	
		Min. Section (mm)	70 x 32	
		Min. Density(kg/m ³)	510	
INTUMESCENT MATERIALS: PVC encased LP2004 (Type 617) – Lorient Polyproducts Ltd.				
HEAD: 1No. 20 x 4mm strip exposed and fitted either butted up to the stop in the frame reveal or centrally fitted in the frame reveal or leaf edge.				
JAMBS: 1No. 20 x 4mm strip exposed and fitted either butted up to the stop in the frame reveal or centrally fitted in the frame reveal or leaf edge.				
HARDWARE PROTECTION: See section 14.				

Maximum Door Leaf Size

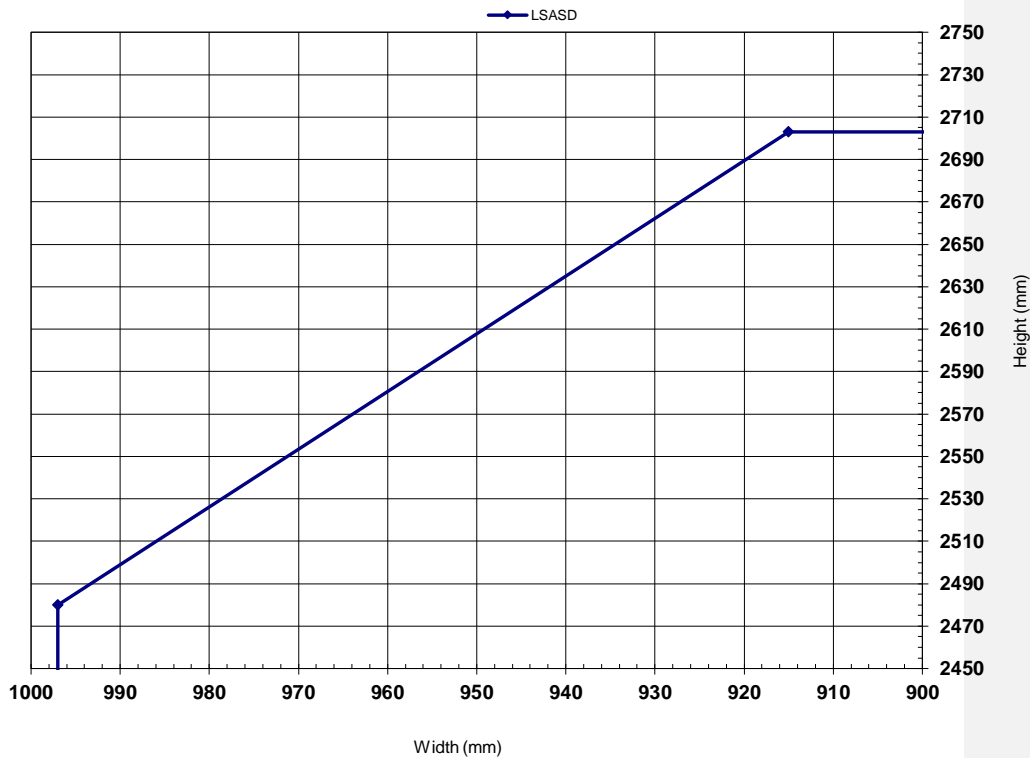


Sainty-Fire ProTech Doorsets – 30 Minutes Fire Resistance

Latched, Single Acting, Single Doorsets – Pyroplex Seals - Softwood or Hardwood Frames

Leaf Sizes	Configuration		Height (mm)		Width (mm)
	LSASD	From:	2480	x	997
		To:	2703	x	915
Maximum Overpanel Height (mm)		Transomed	2000		
Glazing		Max. Glazed Area	1.0m ² (see section 7 for details)		
		Approved Systems	See section 9 & Appendix B		
Frame Specification (see section 12)		Material	Softwood or Hardwood		
		Min. Section (mm)	70 x 32		
		Min. Density(kg/m ³)	510		
INTUMESCENT MATERIALS: Pyroplex Rigid Box Seal – Pyroplex Ltd.					
HEAD: 1No. 15 x 4mm strip exposed and centrally fitted in the frame reveal or leaf edge.					
JAMBS: 1No. 15 x 4mm strip exposed and centrally fitted in the frame reveal or leaf edge.					
HARDWARE PROTECTION: See section 14.					

Maximum Door Leaf Size



Sainty-Fire ProTech Doorsets – 30 Minutes Fire Resistance

Latched, Single Acting, Double Doorsets – Pyroplex Seals - Softwood or Hardwood Frames

Leaf Sizes	Configuration	From:	Height (mm)	Width (mm)
	LSADD	To:	2135 x 969	
			2263 x 915	
Maximum Overpanel Height (mm)		Transomed	1500	
Glazing		Max. Glazed Area	1.0m ² (see section 7 for details)	
		Approved Systems	See section 9 & Appendix B	
Frame Specification (see section 12)		Material	Softwood or Hardwood	
		Min. Section (mm)	70 x 32	
		Min. Density(kg/m ³)	510	
INTUMESCENT MATERIALS: Pyroplex Rigid Box Seal – Pyroplex Ltd.				
HEAD: 1No. 15 x 4mm strip exposed and centrally fitted in the frame reveal or leaf edge.				
JAMBS: 1No. 15 x 4mm strip exposed and centrally fitted in the frame reveal or leaf edge.				
MEETING EDGES:				
Square: 1No. 10 x 4mm strip exposed and fitted 7mm from the opening face in one leaf edge & 1No. 10 x 4mm strip exposed and fitted 7mm from the closing face in the opposite leaf edge.				
Rebated: Not permitted.				
HARDWARE PROTECTION: See section 14.				

Maximum Door Leaf Size

