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Title

Field of Application for:

The Jiangsu Sainty Range of Sainty-Fire / Sentry Pro 60 Doorsets Using Pro 60 Ply Faced & Pro 60 MDF Faced Door Blanks in Timber Based Door Frames

For 60 minutes Fire Resistance

Report No.:

BMT/CNA/F16019 Revision D

Issue Date:

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Valid Until:

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Job Reference:

549427

Prepared for:

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

Signatories and Revision History

Issue No.	Date	FM No.	Report scope and Signatures
A	7/4/2021	437415	Technically review and revalidate assessment for further 5 year period, including update to Warringtonfire format and to the general principles of BS EN 15725. Added test report WF430472 to support inclusion of door leaves with MDF facings (Min density 600kg/m3), Mann McGowan and Lorient perimeter seals, concealed closer, Raven Seals drop seal, EV lippings and larger frame option. Update doorset reference to Sainty-Fire / Sentry Pro60.
B	17/05/2021	503634	Update to assessment to include stress groove detail to the rear of the frame and allowing perimeter seals fitted in the door leaf edges with a restriction on this when a concealed closer is fitted.
C	13/09/2021	507587	To include glazing system Lorient 36/15 Plus with Pyrostop 30-10 & Pyrobel 16 glass types.
D	5/02/2026	549427	Technical review and revalidate assessment for further 5 year period. Update the company name to Jiangsu Sainty Land Up Pro Trading Co. Ltd, update the glazing section to permit the tested designs and Certifire approved glass and glazing systems, removal of smoke seal section and inclusion of addition non-essential hardware options and new wall types, structural opening and fixity section.

Assessor	Reviewer
Name: Liam Dunk*	Name: Chris Newton*
Title: Technical Manager – Firestopping	Title: Senior Product Assessor
Signature: Signed by: E92E9BDA6AE6488...	Signature: Signed by: 3A9C822F3E7F487...

*For and on behalf of Warringtonfire

Executive summary

This field of application report presents an assessment of the fire resistance performance of the specified proprietary Jiangsu Sainty doorset designs, as fire tested and described in the reports detailed within section 3 when modified as detailed herein.

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

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

The findings of this report are that if Jiangsu Sainty doorsets constructed in accordance with the specification documented in this field of application were to be tested in accordance with BS 476: Part 22: 1987, it is expected that they would be capable of providing a minimum of 60 minutes integrity and insulation (subject to section 12).

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

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Contents

1 Introduction

This field of application report presents an assessment of the fire resistance performance of the specified proprietary Sentry Sainty doorset designs, as fire tested and described in the reports detailed within section 3 when modified as detailed herein.

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

1.1 Assessment framework

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

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

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

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

This report has been prepared and checked by product assessors with the necessary competence, who subscribe to the principles outlined in the Passive Fire Protection Forum (PFPF) 'Guide to Undertaking Technical Assessments of the Fire Performance of Construction Products Based on Fire Test Evidence - 2021'. The aim of the PFPF guidelines is to give confidence to end-users that assessments that exist in the UK are of a satisfactory standard to be used for building control and other purposes.

This report uses established empirical methods of extrapolation and experience of fire testing similar elements, in order to extend the scope of application by determining the limits for the designs based on the tested constructions and performances obtained. The scope is an evaluation of the potential fire resistance performance, if the variations specified herein were to be tested in accordance with the test standard specified.

This report has been written using appropriate test evidence generated at UKAS accredited laboratories, to the relevant test standard. The supporting test evidence has been deemed appropriate to support the stated design and is summarised in Appendix A.

2 General requirements and assumptions

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

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

- All densities referred to in this document are based upon an assumed moisture content of 12%.
- It is assumed that unless otherwise documented in the field of application sections of this report, the doorset subject to this report will be constructed in accordance with the test evidence referred to herein.
- For components created using solid timber sections referred to in this assessment, it is assumed that, for all timbers, they will be of a quality deemed to meet or exceed class J30 as specified in BS EN 942: 2007, subject to adequate repairs, other than glazing beads which must meet a minimum class J10. Note that areas under intumescent seals/gaskets are not considered to be concealed faces and defects must be repaired.
- Where timber is referred to within this document it is assumed that the timber element is made from a continuous solid piece, unless specifically detailed otherwise.
- All dimensions detailed herein may be varied by ±2% except where minimum, maximum or a range of dimensions are given.
- Where morticed items of hardware are used (within the leaf or frame) it is assumed that the preparation for such items are tight to the item (and where applicable intumescent protection) as tested with no excessive gaps, unless stated otherwise within a particular section of this report.

It is assumed that the end user will have an understanding of the tested specification as defined in the relevant test report(s) summarised in Section 3.

Whilst specific items are included within this Field of Application report that may be used to provide additional performance characteristics (such as acoustic or smoke control for example), it is beyond the remit of this Field of Application report to provide scope for performance characteristics other than fire resistance integrity and (where applicable) insulation performance. Any other performance requirement for the door designs contained herein is to be subject to a separate analysis.

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

3 Test Data

The test evidence summarised below has been generated to support the fire resistance performance of the door designs that are the subject of this field of application. The summary details are considered to be the key aspects of the design tested. These test summaries are not intended to be a definitive guide to constructing a doorset. The details for the construction of a doorset must be taken from other sections within this Field of Application.

Note:

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

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

Some of the test evidence used in the evaluation is over 5 years old. In accordance with industry guidance, the evidence has been reviewed to consider its suitability. Warringtonfire are satisfied that there have been no significant revisions to the relevant test standards which would render the evidence irrelevant.

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

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

It is therefore the opinion of Warringtonfire that the evidence citied in the following section, tested to both named standards referenced above can be utilised in this assessment which will conclude in terms of the fire resistance performance of the Sainty-Fire / Sentry Pro 60 doorset designs if tested in accordance with BS 476: Part 22: 1987.

3.1 Primary Test Evidence

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

3.1.1 Test Report BMT/FEP/F15167 Revision A

The referenced test report, the essential details of which are summarised below, is the primary data for a latched, single acting, single and double, Sainty-Fire ProTech doorsets with Plywood facings fitted with 23mm thick Pyroguard and 7mm thick Pyrodur glazing, being considered for assessment in this report.

Date of Test:	27.Nov. 2015
Identification of Test Body:	Warringtonfire Testing and Certification Ltd previously known as Exova Warringtonfire. UKAS No. 1762
Sponsor:	Jiangsu Sainty Bancom Wood Co. Ltd
Tested Product:	Latched, Single Acting, Leaf & A Half Timber Doorset with Glazing – LSADD & Latched, Single Acting, Single Timber Doorset with glazing – LSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	N/A
Summary of Test Specimen:	LEAF (Doorset A & B): Doorset A Overall Size: 2135 (h) x 915/300 (w) x 54 (t). Doorset B Overall Size: 2440 (h) x 915 (w) x 54 (t). Core: 3no layers of 12 (t) x 38 (w) Spruce/Pine mix lamels (450kg/m^3), inner layer fitted horizontally and outer layers fitted vertically. Lipping: Sapele (640kg/m^3), 6 (t) to all four edges. Facing: 9 (t) Poplar core Plywood. Top Rail: Pine (450kg/m^3), 36 (t) x 25 (w). FRAME (Doorset A & B): Head & Jambs: Sapele (640kg/m^3), 70 (w) x 32 (t), with 15 (w) x 12 (t) planted stop. Frame Fixing: 4No Ø6 x 80 (l) steel screws per jamb. Firestopping: Tightly packed mineral fibre capped with intumescent acrylic mastic nominally 15 (w) x full depth of the frame. Architrave: MDF, 45 (w) x 18 (t). INTUMESCENT (Doorset A): Frame Head & Jambs Reveal: 2No 15x4 Pyroplex 8700, fitted 10 apart with the first seal 8 from the flush face. Meeting Stiles: 2No 15x4 Pyroplex 8700, fitted 7 from the flush face in left leaf and 7 from stop side face in right leaf. INTUMESCENT (Doorset B): Frame Head & Jambs Reveal: 2No 15x4 Pyroplex 8700, fitted 10 apart with the first seal 8 from the flush face. HARDWARE (Doorset A & B): Hinges Doorset A: 3no Royde and Tucker H101 lift off type hinges, 100 (h) x 35 (w) blade size. Hinges Doorset B: 4no Royde and Tucker H101 lift off type hinges, 100 (h) x 35 (w) blade size. Closer: Rutland TS3204 overhead type closer, 220 (w) x 59 (h) footprint size. Lock/Latch: Easi-T mortice latch, 155 (h) x 22 (w) forend & 120 (h) x 25 (w) keep. Handle: Zoo Hardware lever handle, 100 x 38 footprint.

	HARDWARE PROTECTION (Doorset A & B): Under Hinges: 2 (t) Interdens. Encasing Latch Body & Under Latch & Keep Forend: 2 (t) Interdens GLAZING (Doorset A Main Leaf): Glass: Pyroguard, 23 (t) Location: 100 from leaf head and 100 from closing edge. Aperture Size: 810 (h) x 560 (w). Beading: Sapele (640kg/m^3), 30 (h) x 16.5 (d), 24º chamfer & 5 x 5 bolection. Bead Fixing: 60 (l) steel screws, at 35º, 135 centres & 50 from corners. GLAZING (Doorset B): Glass: Pilkington Pyrodur, 7 (t). Location: 300 from leaf head and 195 from closing edge. Aperture Size: 645 (h) x 505 (w). Beading: Sapele (640kg/m^3), 29 (h) x 25 (d), 20º chamfer & 5 x 5 bolection. Bead Fixing: 60 (l) steel screws, at 35º, 135 centres & 45 from corners. GLAZING SYSTEM (Doorset A & B): Glazing Perimeter: 25 (w) x 4 (t) Intumescent Seals Ltd Therm-A-Bead. Glazing Aperture Liner: 54 (w) x 2 (t) Intumescent Seals Ltd Therm-A-Glaze 60.
Test Standard:	BS EN 1634-1:2014 & EN 1363-1: 2012
Performance:	**Doorset A Integrity:** 67 minutes. **Doorset A Insulation:** 64 minutes. **Doorset B Integrity:** 63 minutes. **Doorset B Insulation (Door Leaf & Frame):** 63 minutes. **Doorset B Insulation (Glass):** 3 minutes.

3.1.2 Test Report WF430472 Issue 1

The referenced test report, the essential details of which are summarised below, is the primary data for the inclusion of Sainty-Fire ProTech doorset with MDF facings, Mann McGowan and Lorient perimeter seals, EV lippings, Rutland concealed closer and Raven Seals drop seal, being considered for assessment in this report.

Date of Test:	4.Nov. 2020
Identification of Test Body:	Warringtonfire Testing and Certification Ltd. UKAS No. 1762
Sponsor:	Jiangsu Sainty Bancom Wood Co. Ltd
Tested Product:	2no. Latched, Single Acting, Single Timber Doorsets one flush door leaf and one with glazing – LSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	N/A
Summary of Test Specimen:	LEAF (Doorset A & B): Doorset A & B Overall Size: 2153 (h) x 933 (w) x 54 (t). Core: 3no layers of 12 (t) x 38 (w) Spruce/Pine mix lamels (450kg/m^3), inner layer fitted horizontally and outer layers fitted vertically. Lipping: EV lipping Poplar (700kg/m^3), 8 (t) to all four edges. Facing Doorset A: 9 (t) Poplar core Plywood. Facing Doorset B: 9 (t) MDF (600kg/m^3). Veneer: 0.6 Engineered Veneer EV Poplar (540kg/m^3). Top Rail: Spruce/Pine (450kg/m^3), 36 (t) x 25 (w). Drop Down Seal: Raven Seals RP8Si Aluminium drop seal, 34 (h) x 14 (w). FRAME (Doorset A & B): Head & Jambs: Sapele (640kg/m^3), 75 (w) x 35 (t), with 20 (w) x 12 (t) planted stop. Frame Fixing: 4No Ø5 x 80 (l) steel screws per jamb. Firestopping: Tightly packed mineral wool capped with 10 (d) Mann McGowan Pyromas A intumescent mastic, 7-14 (w) x full depth of the frame. INTUMESCENT Doorset A: Frame Head & Jambs Reveal: 2No 15x4 Mann McGowan 500P, fitted 8 apart with the first seal 9 from the flush face. INTUMESCENT Doorset B: Frame Head & Jambs Reveal: 2No 15x4 Lorient Type 617, fitted 8 apart with the first seal 9 from the flush face. HARDWARE: Hinges: 3no Royde and Tucker H101 lift off type hinges, 100 (h) x 34 (w) blade size. Closer Doorset A: Rutland ETS.18314.SE overhead type closer, 249 (w) x 98 (h) x 48 (d). Closer Doorset B: Rutland ITS11205 concealed closer, 243 (w) x 58 (h) x 40 (d). Lock/Latch: E*S TL2 Steel tubular mortice latch, 57 (h) x 26 (w) forend, 22 (h) x 63 (w) x 15 (d) latch body & 57 (h) x 26 (w) keep. Handle: Consort Architectural Hardware CH499.01.SSS Stainless Steel lever handle, Ø55. HARDWARE PROTECTION: Under Hinges: 1 (t) Mann McGowan Interdens. Concealed Closer: 2 (t) Rutland IP115 intumescent kit, Interdens jacket fitted around body and graphite strip fitted to forend face in the top of the leaf. Graphite jacket fitted behind rebate slide rail body in the frame head.

	Encasing Latch Body & Under Latch & Keep Forend: 1 (t) Mann McGowan Interdens. Drop Down Seal: 1mm Interdens fitted around body. GLAZING Doorset A: Glass: Pyrobelite 12, 12 (t). Location: 120 from leaf head and 109 from closing edge. Aperture Size: 875 (h) x 715 (w). Beading: Sapele (640kg/m^3), 23.5 (h) x 32 (w), 15º chamfer & 5 x 7 bolection. Bead Fixing: 4.5Ø x 50 (l) steel screws, at 20º, 150 centres & 50 from corners. GLAZING SYSTEM: Glazing Perimeter: 10 (w) x 3 (t) Sealed Tight Solutions Ltd STS 105 GT-3 Closed cell tape. Glazing Aperture Liner: 30 (w) x 2 (t) Sealed Tight Solutions Ltd STS 302 Closed cell tape.
Test Standard:	BS 476: Parts 20/22: 1987 Method 6 and 8.
Performance:	**Doorset A Integrity:** 62 minutes.* **Doorset A Insulation:** N/A **Doorset B Integrity:** 73 minutes. **Doorset B Insulation:** 73 minutes.

*There was continuous flaming at the glazing position at 62:47. No other failures occurred with the test terminating at 74:00 minutes.

4 Technical Specification

4.1 General

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

4.2 Intended Use

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

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

4.3 Door Leaf

Doorsets constructed using the different leaf types can include various design features as summarised below.

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

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

4.3.1 Leaf 1 – Pro 60 Ply Faced – 54mm thick

The door designs can include:

1. Glazing
2. Various hardware options
3. Decorative facings

4.3.2 Leaf 2 – Pro 60 MDF Faced – 54mm thick

The door designs can include:

1. Various hardware options
2. Decorative facings

4.4 Door Frames

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

4.4.1 Frame 1 – Hardwood Timber – for use with Leaf Type 1 & 2

The construction of the door frames is hardwood with minimum frame dimensions. For further information on the specification and construction of the door frames see section 7.

4.5 Doorset Configurations & Maximum Leaf Sizes

4.5.1 General

The evaluation of the leaf size for each door leaf type and frame type and doorset configuration is based on the tests listed in Section 3 and takes into account:

1. The margin of over performance above 60 minutes integrity for the design
2. The characteristics exhibited during test and
3. The doorset configuration tested

The evaluation of the permitted configurations included in this field of application is based on the configuration(s) tested. The principle is that the more components included in testing for example double leaf doors compared with single leaf doors, the harder it becomes to pass a test. This approach leads to the following statements:

1. A test on a double doorset is more onerous than a test on a single doorset
2. A test on an unlatched doorset is more onerous than a test on a latched doorset as the leading edge is unrestrained and will deflect more in fire test conditions
3. A test on an unlatched single acting doorset is considered to be equivalent to a double acting doorset, due to the known deflection of an unlatched single acting doorset towards the furnace conditions i.e. away from the door stop.
4. A doorset with transomed overpanel is considered to perform comparably to a similar doorset without an overpanel. This is because the transom structurally separates the overpanel from the doorset.

The leaf size for each door leaf type and configuration is linked to the perimeter intumescent specification and frame type. The following section details the maximum leaf size for each door leaf type and configuration based on the intumescent specification and frame details tested.

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

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

4.5.2 Configuration

The table below shows the permitted configurations for the (Sainty-Fire / Sentry Pro60) doorset design, with the abbreviation and full description of each configuration.

The following sections details the assessed maximum leaf size envelops for each permitted configuration based on the intumescent specification and door frame tested.

Doorset Configurations			
Specification	Depiction	Abbreviation	Description
A		LSASD	Latched Single Acting Single Doorset
B		LSADD	Latched Single Acting Double Doorset

4.5.3 Orientation

The majority of primary fire resistance tests for these designs were conducted with the doorset hung such that the door leaf opened towards the fire, which is considered the most onerous orientation in terms of fire resistance performance. Based on this testing, assessment is made that the doorsets to this design may be hung either away from or towards the fire risk side of the doorset. The rationale behind the direction of fire testing timber based doorsets opening towards the fire test conditions is further explained in Annex C of BS EN 1634-1:2014 +A1:2018.

4.5.4 Envelopes for each Configurations

The following sections detail the door leaf envelopes which indicate the permitted leaf sizes for the listed configurations based on the perimeter intumescent, door leaf option and door frame.

Unequal leaf double doorsets are covered by this assessment provided that all the following criteria are met:

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

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

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

A table of essential hardware is given in section 10.3 for each doorset configuration, as a minimum requirement for the doorset described. Changes to hardware can affect the intumescent specification and frame details which are subsequently considered for each specific hardware component, where required.

4.5.4.1 General Note on Intumescent Seals

- Intumescent seals are to be fitted centrally to the thickness of the leaf unless stated otherwise.
- Intumescent seals are fully interrupted at hardware locations unless stated otherwise.
- Intumescent seals must run the full length of the leaf edge or frame reveals, with tightly formed abutting corner joints, unless stated otherwise.

- Vertical perimeter intumescent seals may include one tight butt joint in their length if needed.
    - Where two seals are fitted, the joints must be offset by a minimum of 100mm and may not be coincident.
    - Where one seal is fitted the joint must be in the lower half of the doorset.
- Intumescent seals are not to be concealed below lippings.
- While intumescent seals are not specified to be applied at the bottom edge of the leaf, their application may be a requirement for certain elements of building hardware. It is the opinion of Warringtonfire that the application of intumescent seals across the bottom edge of the leaf will not detract from the fire resistance performance under test conditions, when applied the intumescent may consist of either:
    - 1No. Intumescent seal no greater than 20mm wide centrally fitted or
    - 2No. Intumescent seals, each no greater than 10mm wide no greater than 10mm apart.
- Inclusion of specific design details (e.g. face grooves) and/or hardware may require a different intumescent seal specification compared to that stated for the leaf configurations in sections 4.5.5 and 4.5.6. Where this is the case, it is important that the following conditions are met:
- The intumescent type given for the specific design detail must match that given for the required leaf configuration and leaf size (e.g. if graphite is given as the required seal type for a concealed closer, only leaf configurations and sizes approved for graphite type seals can be used).
- The largest of the intumescent specifications given for the different design details must take precedence, which is to be determined by the total amount of intumescent required for that design detail (e.g. if the total amount of perimeter intumescent for a particular concealed closer is greater than that required for the associated leaf configuration and size, the intumescent detail stated for the concealed closer would take precedence).

4.5.4.2 Explanation for following sections

The performance of a doorset in terms of configuration and size is dependent on the leaf type, perimeter intumescent used and frame type. These elements are not automatically interchangeable. The following sections present the envelopes for the Pro 60 Ply Faced and Pro 60 MDF Faced leaf types and the hardwood frame types. Each envelope is linked to a specific perimeter intumescent which is given a unique reference and is based directly on test evidence.

The envelopes are presented as follows:-

- for LSASD increasing in configuration complexity up to LSADD
- for each configuration, each leaf type is considered separately
- for each configuration and leaf type, each frame type is considered separately
- for each configuration, leaf type, frame type and intumescent specification is considered separately and a unique envelope of permitted leaf sizes is presented based on the configuration, leaf type, frame type and intumescent and the envelope is directly linked to a unique test.

The intumescent specification reference as illustrated in the tables and graphs in the following sections is broken down into configurations, frame type and intumescent specification. The configuration hierarchy is categorised alphabetically and assigned a letter (A - B), which are fully described in the configuration section 4.5.2 of this assessment. The next component will be marked H for hardwood frame and assigned a number correlating to the frame type specified in frame section 7 of this assessment. The perimeter intumescent type and arrangement will be distinguished numerically. This will start from 1 and increase until all

perimeter intumescent types and variations have been allocated a number. The full description of the perimeter intumescent type and variation is given in the tables below each graph. This combined unique reference will be used to indicate on each graph the maximum leaf size increase that is permitted with each configuration, frame type and perimeter intumescent type and variation. An example of this referencing system and the information it conveys is described below;

Intumescent Specification reference: AH1/1 – indicates the following:

- (A): Latched, Single Acting, Single Door configuration as stated in section 4.5.2,
- (H1): Hardwood frame type 1 as stated in section 7,
- (/1): intumescent type 1 as show in the table below the graph.

4.5.4.3 Summary of Permitted Configuration for (Sainty-Fire / Sentry Pro60) Leaf Type 1 & Frame Type 1

Permitted Configurations with frame type 1 with leaf type 1 (Pro 60 Ply Faced)			
Frame		Configuration	
		LSASD	LSADD
1	Hardwood frame*	Yes	Yes

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

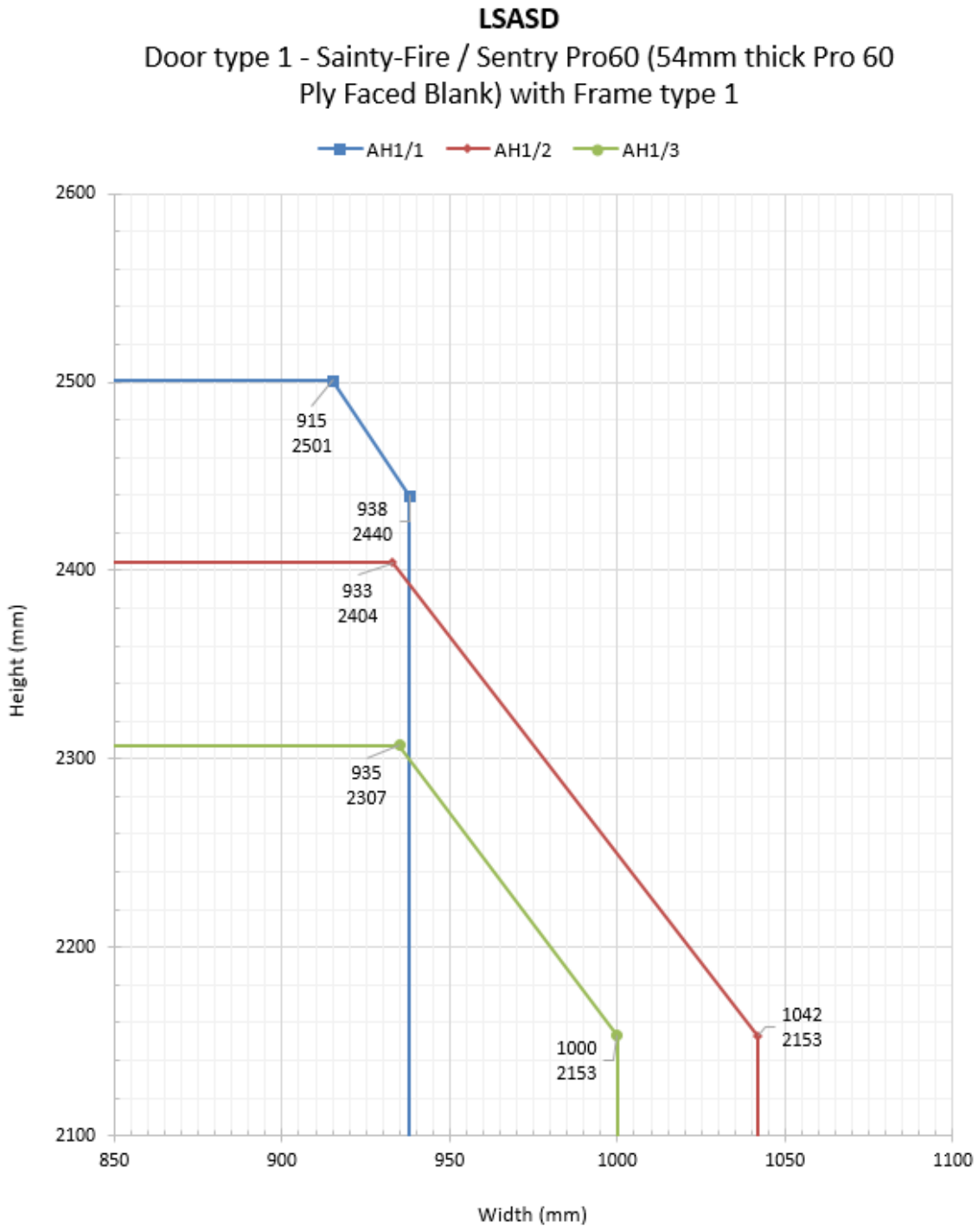
4.5.4.4 Summary of Permitted Configuration for (Sainty-Fire / Sentry Pro60) Leaf Type 2 & Frame Type 1

Permitted Configurations with frame type 1 with leaf type 2 (Pro 60 MDF Faced)			
Frame		Configuration	
		LSASD	LSADD
2	Hardwood frame*	Yes	No

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

4.5.5 LSASD Configuration: Leaf Sizes & Intumescent Specification

Doorset created from Leaf type 1 with frame type 1

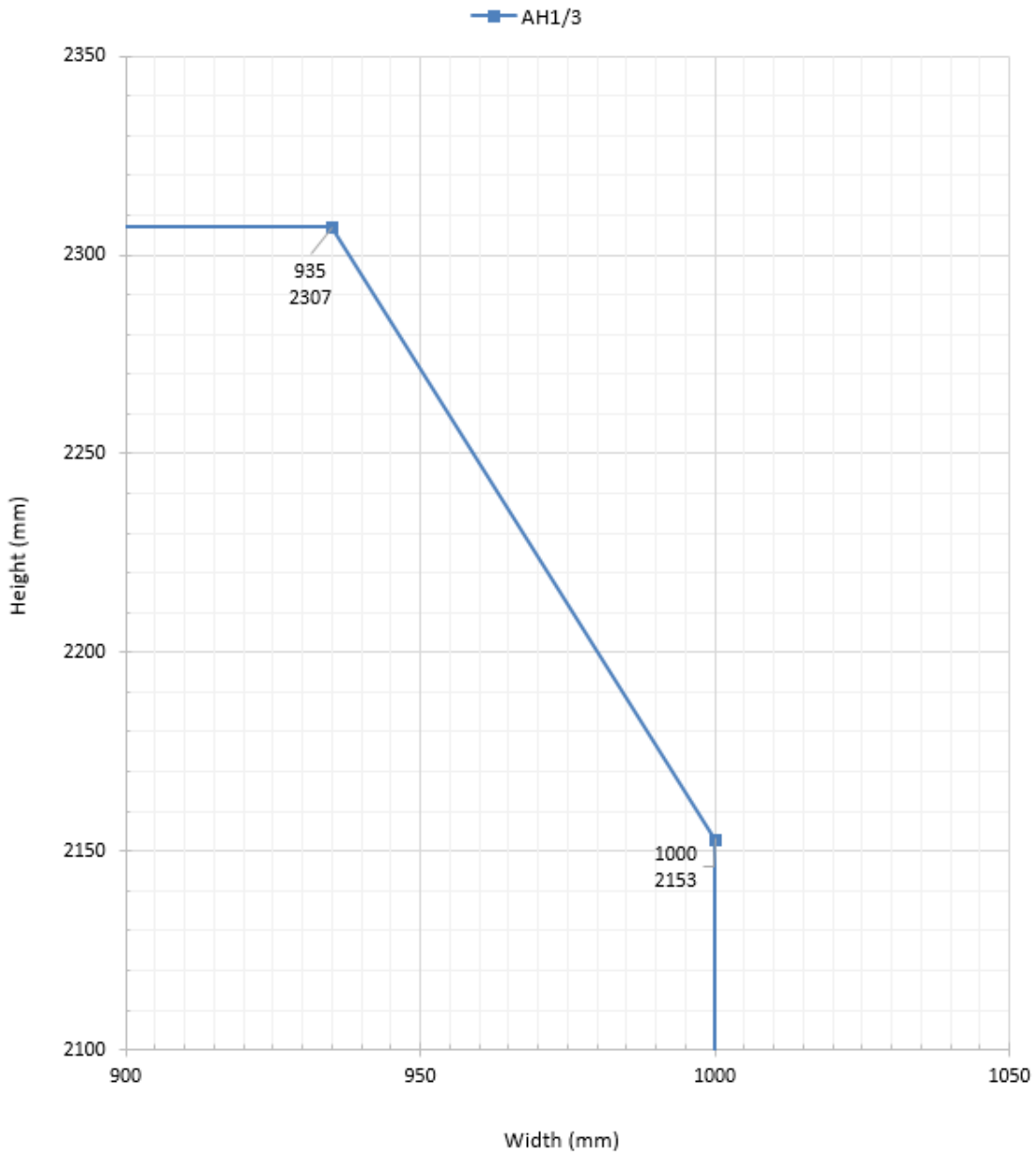


Intumescent Specification for LSASD Leaf 1 (Pro 60 Ply Faced) with Frame 1 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH1/1 Blue Line (**BMT/FEP/F15167 Rev A Doorset B**)	8700	Pyroplex Ltd	**Frame Head & Jambs or Door Leaf Top & Vertical Edges:** 2no fitted 10mm apart and 8mm from the flush face in the frame reveal or door leaf edges.
AH1/2 Red Line (**WF430472 Issue 1 Doorset A**)	500P	Mann McGowan Ltd	**Frame Head & Jambs or Door Leaf Top & Vertical Edges:** 2no fitted 8mm apart and 9mm from the flush face in the frame reveal or door leaf edges.
AH1/3[1] Green Line (**WF430472 Issue 1 Doorset B**)	Type 617	Lorient Polyproducts Ltd	**Frame Head & Jambs or Door Leaf Top & Vertical Edges:** 2no fitted 8mm apart and 9mm from the flush face in the frame reveal or leaf edges.

[1]The intumescent specification AH1/3 listed above was successfully tested with door leaf type 2. Door type 1 is of the same core construction as door type 2 but incorporates Plywood faces of the same thickness as the MDF. MDF is prone to delaminate and fall away when used as a facing material on timber door leaves in a fire situation more readily than Plywood facings. Considering the above and the added assurance of the considerable overrun achieved, Warringtonfire has permitted the use of the Lorient Polyproducts Ltd. Type 617 perimeter seals with door type 1. The maximum leaf sizes for this option are restricted to those calculated from the successfully tested door type 2, as illustrated in the graph above.

LSASD

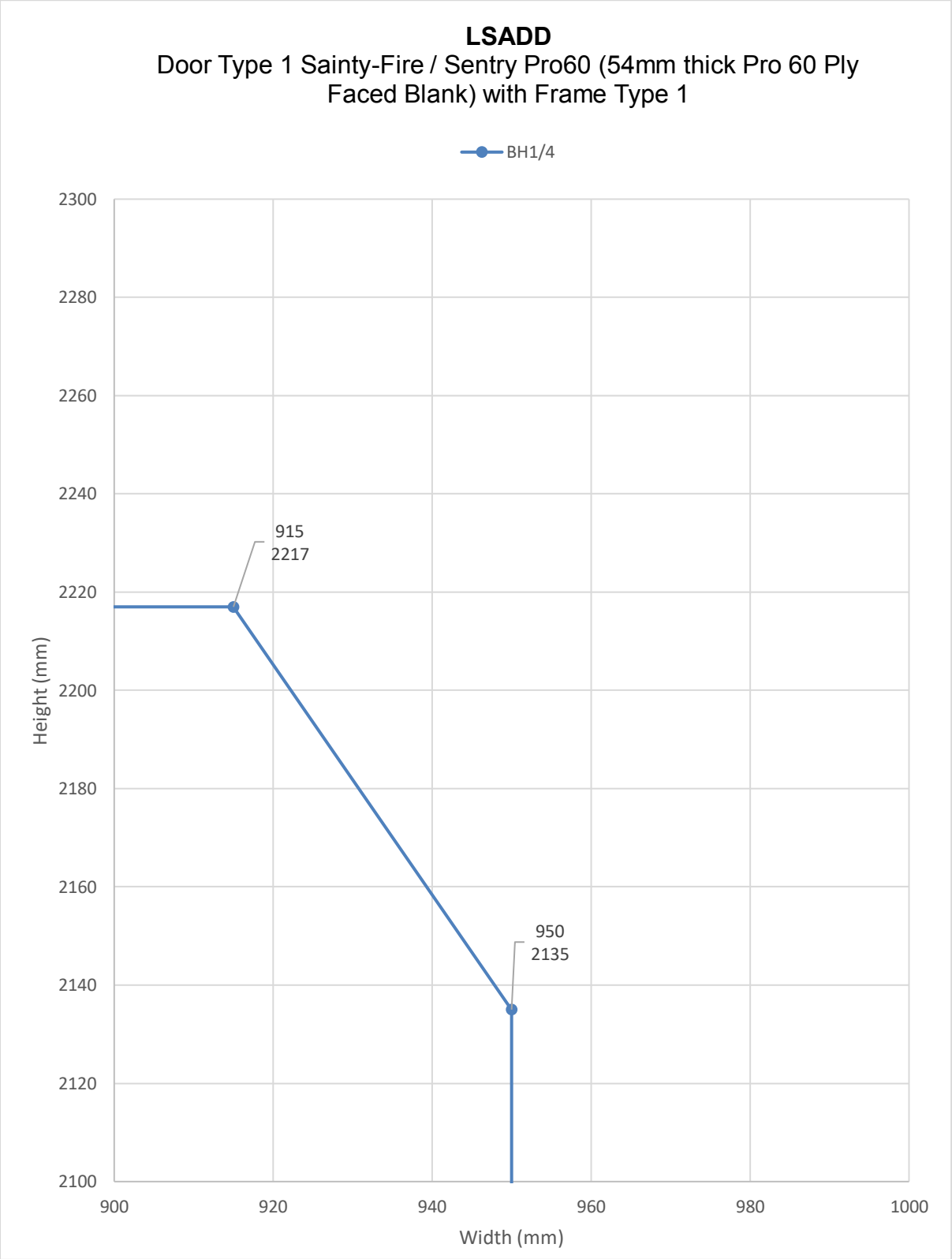
Door Type 2 - Sainty-Fire / Sentry Pro60 (54mm thick Pro 60 MDF Faced Blank) with Frame type 1



Intumescent Specification for LSASD Leaf 2 (Pro 60 MDF Faced) with Frame 1 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH1/3 Blue Line (**WF430472 Issue 1 Doorset B**)	Type 617	Lorient Polyproducts Ltd	**Frame Head & Jambs or Door Leaf Top & Vertical Edges:** 2no fitted 8mm apart and 9mm from the flush face in the frame reveal or door leaf edges.

4.5.6 LSADD Configuration: Leaf Sizes & Intumescent Specification

Doorset created from Leaf type 1 with frame type 1



Intumescent Specification for LSADD Leaf 1 (Pro 60 Ply Faced) with Frame 1 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BH1/4 Blue Line (**BMT/FEP/F15167 Rev A Doorset A**)	8700	Pyroplex Ltd	**Frame Head & Jambs:** 2no fitted 10mm apart and 8mm from the flush face in the frame reveal. **Meeting Edge:** 1no fitted 7mm from the flush face in the primary door leaf edge and 1no fitted 7mm from the stop side in the secondary door leaf edge.

5 General Description of Leaf Construction

5.1 Leaf Core Construction

The two door leaf types are detailed below are approved by this assessment.

5.1.1 Leaf Type 1 – (Pro 60 Ply Faced) – 54mm thick

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

Element		Material	Dimensions (mm)	Minimum Density (kg/m^3)*
Core	Inner	Imported European Spruce & Pine – horizontally orientated lamels	12 (t) x 38 (w)	450
	Outer	Imported European Spruce & Pine – vertically orientated lamels	12 (t) x 38 (w)	450
Stiles		None fitted	-	-
Top Rail		Pine	36 (t) x 25 (w)	450
Facing		Poplar core Plywood (with 0.4mm Long Grain Beech Veneer)	9 (t)	450

*Client stated minimum density.

The leaf must be lipped as specified in section 5.3.

For adhesives used to fix the core, lipping and facings see section 9.

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

The minimum leaf thickness after finishes applied is 54mm.

5.1.2 Leaf Type 2 – (Pro 60 MDF Faced) – 54mm thick

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

Element		Material	Dimensions (mm)	Minimum Density (kg/m^3)*
Core	Inner	Imported European Spruce & Pine – horizontally orientated lamels	12 (t) x 38 (w)	450
	Outer	Imported European Spruce & Pine – vertically orientated lamels	12 (t) x 38 (w)	450
Stiles		None fitted	-	-
Top Rail		Pine	36 (t) x 25 (w)	450
Facing		MDF	9 (t)	600

*Client stated minimum density.

The leaf must be lipped as specified in section 5.4.

For adhesives used to fix the core, lipping and facings see section 9.

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

The minimum leaf thickness after finishes applied is 54mm.

5.2 Leaf Size Adjustment During Manufacturing – all Leaf Options

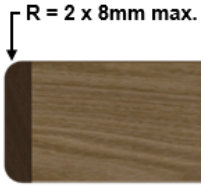
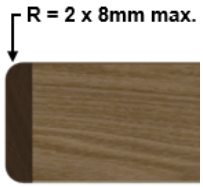
Door leaves may be altered as follows prior to the machining for hardware.

Pre-Machining Leaf Size Adjustment Specification	
Element	Reduction
Leaf	The size of the leaf may be reduced in height or width without restriction providing reduction is made from the vertical or bottom edges of the leaf, i.e. reduction is not permitted from the top rail for manufacturing purposes, and providing the finished leaf is lipped in accordance with section 5.3 or 5.4 respectively.
Timber Lipping	The timber lipping thickness can be reduced after it has been glued in place, providing it is not reduced below the minimum stated in 5.3 or 5.4 respectively.

5.3 Timber Lipping – Leaf type 1

The testing documented in section 3 has generally been undertaken on leaf type 1 using hardwood and Poplar EV lippings at varying thickness and densities applied to all edges. PU adhesive has been used in all cases to seal the lippings.

On the above basis, Pro 60 Ply Faced door blanks (leaf type 1) must be lipped with one of the following specifications.

Timber Lipping Specification for Pro 60 Ply Faced door blanks		
Material	Size (mm)	Min Density (kg/m^3)
Hardwood which must be straight grained joinery quality, free from knots, splits and checks. The use of Beech (*Fagus sylvatica*) is NOT permitted.	Flat = 6 – 11 thick with a maximum of 2mm profiling permitted at corners of lipping see below. 	640
Poplar EV	Flat = 8 – 12 thick with a maximum of 2mm profiling permitted at corners of lipping see below. 	700
-	Rounded = Not permitted	-
	Rebated = Not permitted	

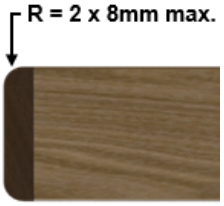
Notes:

1. All lippings are to be the same thickness as the door core plus the decorative facings. This means the lippings are always exposed.
2. Overpanels separated from the leaf heads with a transom do not need to be lipped.
3. Single and double doorsets with or without transomed overpanels require lipping on all 4 edges.
4. Double doorsets must use square lippings at the meeting edges. Rebated lippings are not permitted.
5. A 2.5° chamfer is permitted to the lipping at the leading edge of leaves providing the door gaps meet the requirements of section 11.7.
6. Refer to Section 9 for lipping adhesives.
7. Lippings may be hand applied or may be applied using an edgebander. With either method it must be ensured that sufficient glue is applied to across the entire surface area between the 2No. substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed, for either installation application.
8. For flat lippings it is permitted to apply maximum 8mm radius to the corners of the lipping at vertical edges to create a maximum 2mm edge profiling.

5.4 Timber Lipping – Leaf type 2

The test documented in section 3 for leaf type 2 was undertaken using 8mm thick Poplar EV lippings applied to all edges. PU adhesive was used to seal the lippings.

On the above basis, Pro 60 MDF Faced door blanks (leaf type 2) must be lipped with the following specification.

<table>
<tr><th colspan="3">Timber Lipping Specification for Pro 60 MDF Faced door blanks</th></tr>
<tr><th>Material</th><th>Size
(mm)</th><th>Min Density
(kg/m^3)</th></tr>
<tr><td rowspan="3">Poplar EV
The use of Beech (Fagus sylvatica) is NOT permitted.</td><td>Flat = 8 – 12 thick with a maximum of 2mm profiling permitted at corners of lipping, see below.
 
</td><td rowspan="3">700</td></tr>
<tr><td>Rounded = Not permitted</td></tr>
<tr><td>Rebated = Not permitted</td></tr>
</table>

Notes:

1. All lippings are to be the same thickness as the door core plus the decorative facings. This means the lippings are always exposed.
2. Overpanels separated from the leaf heads with a transom do not need to be lipped.
3. Single doorsets with or without transomed overpanels require lipping on all 4 edges.
4. A 2.5° chamfer is permitted to the lipping at the leading edge of leaves providing the door gaps meet the requirements of section 11.7.
5. Refer to Section 9 for lipping adhesives.
6. Lippings may be hand applied or may be applied using an edgebander. With either method it must be ensured that sufficient glue is applied to across the entire surface area between the 2No. substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed, for either installation application.
7. For flat lippings it is permitted to apply maximum 8mm radius to the corners of the lipping at vertical edges to create a maximum 2mm edge profiling.

5.5 Decorative & Protective Facings – all Leaf Options

Relatively thin leaf facing materials are deemed to be decorative and their application is not considered to be of detriment to the overall stability or performance of the doorset design. In fact, when applied as an additional component on top of the minimum facing material required by the door blank, they are likely to provide a small enhancement in performance as an additional barrier to fire spread, although, this is likely to be negligible.

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

Decorative & Protective Facing Specification	
Facing Material	Maximum Permitted Thickness (mm)
Paint[5]	0.5
Timber veneers[3]	2
Plastic laminates[3]	2
PVC[3]	2
Cellulosic and non-metallic foils[3]	0.4

Notes:

1. Metallic facings are not permitted except for push plates and kick plates
2. The door leaf thickness may be reduced on both sides by a maximum of 0.5mm for calibration purposes in order to accommodate the chosen finish. The minimum overall leaf thickness must remain at 54mm after finishing has been applied.
3. Materials may over sail lippings but must not return around leaf edges.
4. For all options, materials must not conceal intumescent strips.
5. Intumescent paints are not permitted.

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

6 Glazing within the Leaf

Leaf type: 1 only.

6.1 General

The Pro 60 MDF Faced door leaf type 2 has not been tested with a glazed aperture installed and is therefore not permitted with glazing.

The testing conducted on the Pro 60 Ply Faced door design has demonstrated that it is capable of tolerating glazed apertures, whilst providing a margin of over performance.

Test reference WF430472 Issue 1 included a type 1 door leaf with a glazed aperture measuring 875mm high x 715mm wide fitted 120mm from the head of the leaf and 109mm from the closing edge of the leaf.

Test BMT/FEP/F15167 Revision A included a type 1 door leaf with a glazed aperture measuring 810mm high x 560mm wide fitted 100mm from the head of the leaf and 100mm from the closing edge of the leaf.

Glazing is therefore acceptable within the following parameters.

Apertures must not be less than 100mm from top and side edges and 250mm from the bottom edge. (Supported by BMT/FEP/F15167 Revision A).

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

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

6.1.1 Maximum Permitted Glazed Aperture Dimensions

The maximum total assessed aperture area for any individual door leaf based on the test evidence detailed within section 3 is as follows**:**

Maximum total permitted aperture within the Pro 60 Ply Faced door leaves (WF430472 Issue 1)		
Maximum Height (mm)	Maximum Width (mm)	Maximum Area (m^2)
1050	858	0.78

Maximum glass thickness permitted is 23mm for single pane glazing.

Minimum glass thickness permitted is 7mm, as tested and may not be reduced.

The subsequent sections within this report detail the permitted glass and glazing systems with their associated size ranges permitted within the Pro 60 Ply Faced doorset design.

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

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

6.2 Certifire Single Pane Glass and Glazing System Options

Alternative glass and glazing systems with a Certifire certificate – valid at the date of manufacture of the doorset which has been written in accordance with Warringtonfire Testing & Certification Ltd, Technical Schedule TS25 - may be used to glaze the Pro 60 Ply Faced door design, subject to the following.

- The minimum thickness of glass permitted for alternative glass types is 7mm.
- The maximum thickness of glass permitted for alternative glass types is 23mm.
- Where a Certifire certificate is utilised to justify glazing the doorset, the full requirements given within that certificate for the glass and glazing system specified must be complied with.
- All parameters in section 6.1 above must take precedence over those in the supporting Certifire certificate, e.g. the glazed area, maximum height and width permitted in section 6.1 above may not be increased on the basis of the area, height and width permitted within the Certifire certificate. If the area, height and width in the proposed Certifire certificate is smaller than that in section 6.1, the smaller dimension will take precedence for the proposed glass or glazing system.
- The general requirements within the proposed Certifire certificate are still applicable, the Certifire certificate must include the option for the certificated glass and / or glazing system to be fitted within a timber / cellulosic based door leaf within a timber / cellulosic frame with a leaf thickness of 54mm.
- Where the Certifire certificate requires a timber aperture liner, these must always be fitted.
- Bead fixings – The required pin or screw specification as given in the supporting Certifire certificate must be used, alternatives fixing details are not permitted.

6.3 Single Pane Glass and Glazing Systems (Timber Beading)

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

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

The numerical figures in the main body of the table are the maximum height, width (m) & area of glass (in m^2) that is considered acceptable for an individual glazed aperture, based upon the specific system. Where a '-' is applied the glass type and glazing system has not been considered compatible.

Glass & Glazing System Specification			Maximum Assessed Area (m^2), Height & Width (m)		
Glass Type Manufacturer		Thickness	System & Manufacturer→	1	2
				Therm-A-Glaze 60 comprising 25x4mm Therm-A-Bead and 54x2mm Therm-A-Glaze 60 Liner	STS 105 GT-3 – 10x3mm Closed Cell Tape / ST302 – 30x2mm Glazing Liner
				Intumescent Seals Ltd	Sealed Tight Solutions Ltd
			Fire Test Reference	BMT/FEP/F15167 Revision A	WF430472 Issue 1
1	Pyrodur Pilkington UK Ltd.	7	BMT/FEP/F15167 Revision A Specimen B	Area: 0.41 Height: 0.774 Width: 0.606	-
2	Pyrobelite 12 AGC Flat Glass UK	12	WF430472 Issue 1	-	Area: 0.78 Height: 1.050 Width: 0.858
3	Pyroguard EI60 AGC Flat Glass UK	23	BMT/FEP/F15167 Revision A Specimen A	Area: 0.57 Height: 0.972 Width: 0.672	-

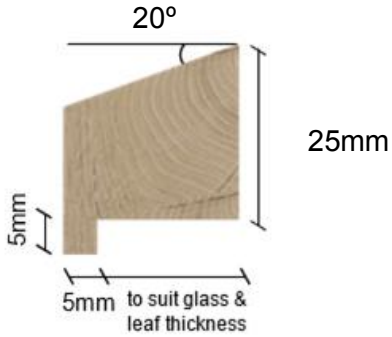
Note:

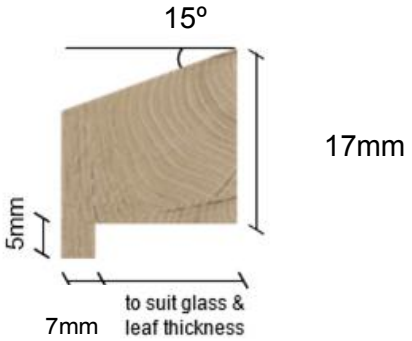
1. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.
2. Glass type 9 is fully insulating for 60 minutes in terms of the criteria set out BS 476: Part 20: 1987.

6.3.1 Permitted Glazing Beading and Glass Retention (Timber Beads)

The following sections detail the permitted glazing beading, aperture lining requirements and minimum fixing details for the above detailed glass and glazing systems. Each section deals with a specific type of glazing bead and indicates which glass and or glazing system it is applicable to. Glazing beads shall only be used with the permitted glass and glazing system as identified. The 3D models in the following sections are provided as a generalised illustration of the glazing installation only; actual installation must be as per the specific details noted within this document.

6.3.1.1 Chamfer Beads

Permitted Glazing System (Defined in Section 6.3)	1 (Therm-A-Glaze 60)
	
• The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. • The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density. • Glazing beads must be retained in position with minimum length 60mm long No. 6-8 screws, inserted at 35-40º to the vertical. • Fixings must be at 135mm maximum centres and no more than 45mm from each corner. • A 6 – 10mm thick square aperture liner is optionally permitted when used in conjunction with the Therm-A-Glaze 60 aperture liner, for use with the above bead providing it is constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive. • The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions. • Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires	

Permitted Glazing System (Defined in Section 6.3)	2 (STS 105 GT(3) & ST302)
	
• The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum. • The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density. • Glazing beads must be retained in position with minimum length of 50mm long No. 6-8 screws, inserted at 35-40º to the vertical. • Fixings must be at 150mm maximum centres and no more than 50mm from each corner. • A 6 – 10mm thick square aperture liner is optionally permitted when used in conjunction with the STS 302 aperture liner, for use with the above bead providing it is constructed from hardwood (not Beech *fagus species*) of minimum density 640kg/m^3 and glued in position using a UF, PVA or PU type adhesive. • The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions. • Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires	

6.3.1.2 Square Beads

Permitted Glazing System / Glass Type (Defined in Section 6.3)	1 (Therm-A-Glaze 60) / 3 (Pyroguard EI60)

- The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum.
- The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density.
- Glazing beads must be retained in position with minimum of 60mm long steel pins or 60mm long No. 6-8 screws, inserted at 35-40º to the vertical.
- Fixings must be at 135mm maximum centres and no more than 45mm from each corner.
- A 6 – 10mm thick square aperture liner is optionally permitted when used in conjunction with the Therm-A-Glaze 60 aperture liner, for use with the above bead providing it is constructed from hardwood (not Beech fagus species) of minimum density 640kg/m3 and glued in position using a UF, PVA or PU type adhesive.
- The fitting of the glazing seal between the bead and the glass should be in accordance with the manufacturer's instructions.
- Glass shall be aligned within the aperture using hardwood or non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires

7 Door Frame Construction

7.1 Details for Frame 1

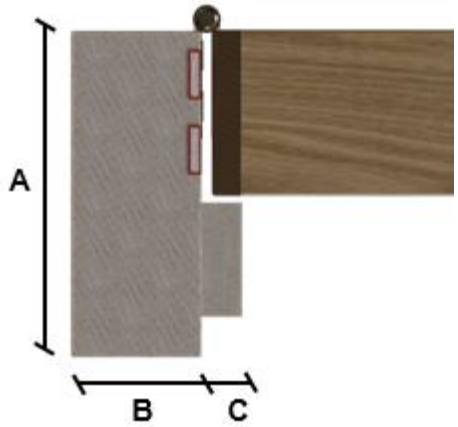
The door frames listed below are the minimum size and density which have been successfully tested and assessed by this report. The frame must be constructed to meet the following specification for single acting frames.

Frame specification				
Frame type	Material	Minimum section size (mm)	Minimum density (kg/m^3)	Acceptable leaf type
1	Hardwood: All door frame timber must meet or exceed class J30 as specified in BS EN 942: 2007 (subject to adequate repair of any defects). The use of Beech (*Fagus sylvatica*) is NOT permitted.	Frame: 70 (d) x 32 (w) (excluding stop) Stop: 12 (w) (integral or planted on)	640	Leaf 1 & 2

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

7.1.1 Standard frame detail

The diagram below shows detail of the standard frame construction.



A: Frame depth = 70mm minimum

B: Frame width = 32mm minimum

C: Stop width = 12mm minimum

NB; the minimum dimensions of the door frame must be increase to 75mm deep x 35mm wide when fitting a concealed closer, see section 10.7.2 for details.

See section 7.1.2 for minimum door frame dimensions and profile when fitted with stress grooves in the rear

7.1.2 Door frame profile with stress groove

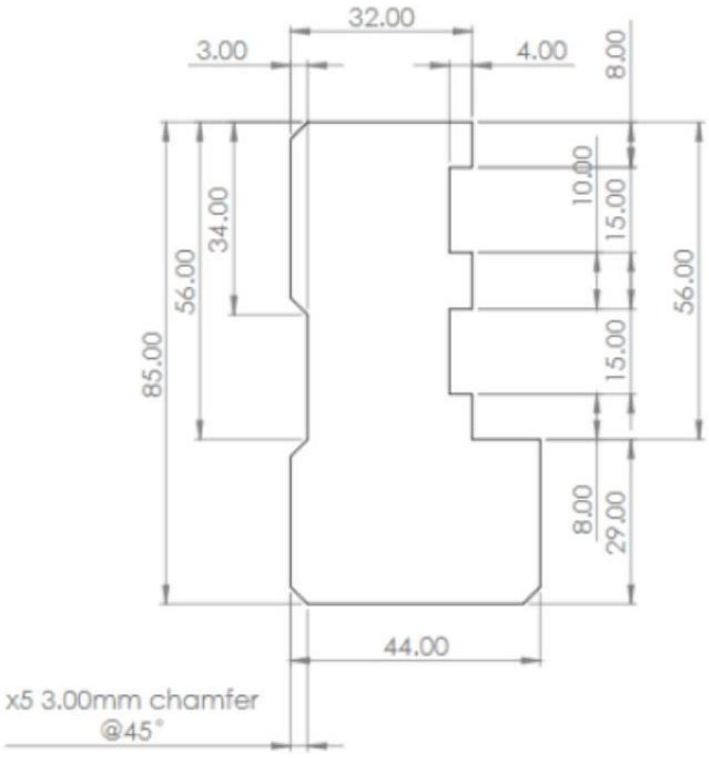
It is proposed to assess the inclusion of a 22mm wide x 3mm deep stress groove recessed centrally to the rear of the frame profile as depicted in the drawing below. This door frame profile is the minimum section that is to be used when using stress grooves. The inclusion of the stress groove reduces the thickness of the door frame local to that area, which could potentially reduce the stability of the frame, as the timber begins to char in fire test conditions.

However, in all cases the back of the frame must be suitably fire stopped in accordance with section 11.3 of this assessment. The fire stopping methods are designed and tested to prevent fire from tracking around the rear of the frame in test conditions, which if left unprotected, can lead to premature integrity failure. The fire stopping methods will therefore provide a suitable barrier to prevent flames attacking the rear of the frame where the stress groove is located, for the duration of test.

Furthermore, given the location of the stress groove in the frame, it is possible to use the char rates given within EN 1995-1-2:2004, for hardwood timber of that matching the frame density within this field of application report, to calculate whether the door frame would char back in fire test conditions to the depth at which the groove is located.

Using the char rates within EN 1995-1-2:2004, the timber would likely experience 0.50mm char rate per minute and therefore the door frame would be expected to char to a depth of 30mm within the required 60minutes fire resistance period of this assessment. Considering the minimum frame depth permitted for the door frame profile below is 85mm deep, and given the location of the stress groove within the approved profile the char depth would have only just reached the location of the stress groove after 60minutes.

For the above reasons, Warringtonfire has permitted the use of a stress groove centrally fitted to the rear of the frame in this assessment matching the specification in the drawing below. If the stress groove is used the doorset must be fitted with a face fixed closer. Concealed closers are not permitted with this frame design. Stress grooves cannot be used within transoms where solid over panels are used.



7.2 Door Frame Joints

Below are depictions of the door framing joints that are deemed acceptable. Please note that the drawings are provided as general illustrations of each type of door frame joint; actual construction in terms of intumescent seal location and material, etc. must be as the text within this document specifies. The door frame joints are required to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws. Frame joints may additionally be reinforced with any of the adhesives approved for the application of lippings, on the basis that the approved lipping adhesive has been proven to contribute to the positive fire resistance performance of the timber to timber junction at the door leaf edge.

Double Rebated Joint

Mitre Joint

Mortice & Tenon Joint

Butt Joint

Trenched or Half Lapped Joint

Approved door frame jointing options

7.3 Decorative Facings

Relatively thin facing materials are deemed to be decorative and their application is not considered to be of detriment to the overall stability or performance of the doorset design.

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

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

Notes:

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

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

8 Overpanels

8.1 Solid overpanels framed on all edges (transomed)

Overpanels of the same construction as the door leaf/leaves may be used when separated by a transom. In this application they are not required to be lipped on any specified edges. The overpanel must be fully contained within the door frame (see following diagram).

- A transom is required to separate the leaf head(s) from the overpanel and must be to the same specification as frame type 1, as described in the table in section 7.1.
- Transom joints must utilise one of the following methods: mortice and tenon joints or butt joints (see section 7.2). 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.
- Joints are required to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws.
- Solid overpanels must be fixed 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

8.1.1 Fitted in square edge frame sections (i.e. no rebate)

The intumescent seals specified for the jambs in section 4 must also be fitted to all four edges of the panel. The seals may be fitted either in the panel edges or alternatively in the frame reveal.

Maximum panel dimensions are given as below:

Assembly Element		**Height** (mm)	**Width** (mm)
Overpanel	Single Doorsets	2000	Overall doorset width
	Double Doorsets	1500	Overall doorset width

9 Adhesives

The following adhesives must be used in the construction of the doorsets. These may be hand applied or may be applied using an edgebander. With either method it must be ensured that sufficient glue is applied across the entire surface area between the 2No substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed, for either installation application used.

Element	Product/Material Type
Door blank core	WBP melamine
Top Rail	WBP melamine or MUF
Door blank facings	WBP melamine
Timber lipping & decorative facings	PU

10 Hardware

10.1 General

The following section details the permitted scope and constraints for fitting hardware to this door design. The following items of hardware must also bear the UKCA or CE Mark in addition to the requirements outlined in the following sections. The UKCA or CE mark must indicate that the hardware is suitable for fire doors in the classification code and declaration of performance issued by the hardware manufacturer:

- Latches & locks: Test Standard EN 12209
- Single axis hinges: Test Standard EN 1935
- Controlled door closing devices: Test Standard EN 1154
- Electrically powered hold-open devices: Test Standard EN 1155
- Emergency exit hardware: Test Standard EN 179
- Panic exit hardware: Test Standard EN 1125.

The following sections consider what tested and assessed alternative items of essential and non-essential hardware can be used on the doorset range.

Items of hardware have been considered and approved via the following means:

- The component has been successfully tested to BS 476: Part 22: 1987 or BS EN 1634-1 in a suitably similar type of doorset e.g. timber leaf in timber frame
- As a result of an assessment of the appropriateness of the item of hardware, based on test evidence not commissioned by Jiangsu Sainty Land Up Pro Trading Co. Ltd.
- As a result of the Certifire approval of the item of hardware

Each section will consider the named item of hardware and detail if there are any limitations associated with:

- Leaf size
- Configuration
- Intumescent seals
- Intumescent protection
- Frame configuration requirements

Hardware that is either morticed in or includes a through component or fixing may not be within 200mm of another item of hardware unless there is test evidence to demonstrate they can be in closer proximity.

Hardware items should generally be fitted in accordance with the manufacturer's instructions. However, the parameters and requirements of this assessment always take precedence, including specified protection such as hardware gaskets. Referenced Certifire approved hardware may be incorporated subject to the design, material and dimensional limitations identified within this assessment report and identified on the relevant Certifire certificate.

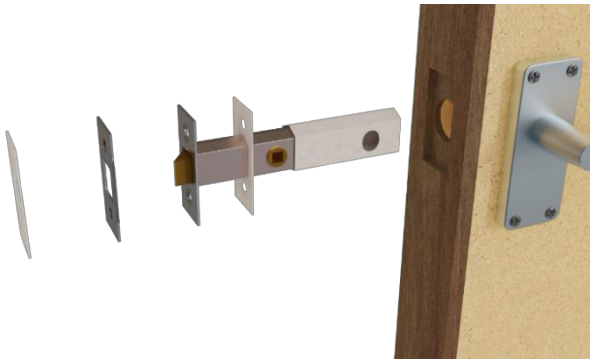
10.2 Intumescent to Hardware

The intumescent materials used to protect hardware that have been tested and assessed for this doorset design are detailed below. Note that any one of the product/manufacturer options listed in the table may be used in the specific application noted. However, only 1No manufacturer should be considered per doorset application.

The door gap perimeter intumescent seal specifications are documented in conjunction with the leaf envelope size limitations in section 4.

Hardware Intumescent Specification		
Item	**Location**	**Product/Manufacturer**
Hinges	Under both hinge blades	1mm thick Interdens - Mann McGowan Ltd
Lock/latches	Under latch & keep forend (Double doorset with locksets with a forend 65mm high or greater.)	2mm thick Interdens.
	Under latch & keep forend (Single doorset with locksets with a forend of maximum 65mm high)	1mm thick Interdens - Mann McGowan Ltd
Concealed overhead closers	Encasing the entire body of the concealed closer, behind forend face of mechanism in top of leaf and behind rebated slide rail body located in the frame.	2mm thick IP115 intumescent kit – Rutland Ltd
Drop Seal	Encasing drop seal body	1mm thick Interdens

Example of hinge protection detail



Example of lock & latch protection detail

Gaskets must be fitted where required by supporting evidence, for example, test evidence or Certifire certificates. If gaskets are not required by the supporting evidence but are within this Field of Application, the requirements of this Field of Application take precedence.

10.3 Essential Hardware

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

Configuration	Hardware
LSASD	• Latch • Handle • Hinges • Self-closing device (closer)
LSADD	• Latch • Handle • Hinges • Self-closing device (closer)

10.4 Latches & Locks

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

10.4.1 Single Point Engagement

These items are suitable in the following applications only:

Leaf types: 1 & 2

Frame types: 1

Configurations: LSASD & LSADD

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

Element	Manufacturer & Product Reference
Locks & latches	1. Easi-T mortice latch. (BMT/FEP/F15167 Revision A) 2. TL2 Steel tubular mortice latch – E*S Eurospec. (WF430472 Issue 1)

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

Leaf Type 1 doorsets

Element	Specification
Maximum forend and strike plate dimensions	215m high x 25mm wide x 4mm thick
Maximum body dimensions	150mm high x 70mm wide x 18mm thick
Intumescent protection	see section 10.2
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel, stainless steel or brass with a melting point ≥ 800ºC

Leaf Type 2 doorsets

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

Notes:

1. In all instances the location of the handle must be between 1000 – 1200mm from the threshold.

10.4.2 Cylinders

These items are suitable in the following applications only:

Leaf types: 1 & 2

Frame types: 1

Configurations: LSASD & LSADD

The components with the following specification are deemed acceptable.

- Where required for use with a single point latch, the cylinder must be constructed of either brass or steel with a melting point in excess of 8000C.
- The cylinder must be compatible with the lock/latch.
- Cylinder dimensions may be up to 33mm high x 17mm wide at the maximum dimension and may be of euro profile or oval.
- Single and double cylinders, along with cylinder & turn are permitted.
- Door preparation for single cylinders shall penetrate a maximum of 2/3rds of the door thickness.
- Intumescent protection and tightness of fitting:
    - If the lock body is not protected with an intumescent material, the maximum clearance between leaf and cylinder is 1mm to each edge.
    - If the lock body is protected with an intumescent material, maximum clearance between leaf and cylinder is 3mm to each edge.
    - 1mm thick MAP or non-pressure forming graphite intumescent around the cylinder is optionally permitted.

10.5 Handles

These items are suitable in the following applications only:

Leaf types: 1 & 2

Frame types: 1

Configurations: LSASD & LSADD

The table below details the tested handles that are approved.

Element	Manufacturer & Product Reference
Handles	1. Lever type handle – Zoo Hardware. (BMT/FEP/F15167 Revision A) 2. CH499.01.SSS Stainless steel lever type handle – Consort Architectural Hardware. (WF430472 Issue 1)

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

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

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

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

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

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

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

10.6 Butt Hinges

Leaf types: 1 & 2

Frame types: 1

Configurations: LSASD & LSADD

The table below details the tested butt hinge that is approved.

Element	Manufacturer & Product Reference
Hinges	• H101 Steel lift off type bearing hinges – Royde and Tucker (BMT/FEP/F15167 Revision A & WF430472 Issue 1))

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

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

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

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

Note:

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

10.7 Doorset Self Closing

Doorset automatic self-closing can be provided by:

- Overhead face fixed closers
- Concealed overhead closers

Automatic doorset self-closing devices such as jamb mounted, transom mounted and offset pivots used with floor springs are not considered acceptable for use with the Sainty-Fire / Sentry Pro 60 doorset range.

10.7.1 Overhead Face Fixed Closer

These items are suitable in the following applications only:

Leaf types: 1 & 2

Frame types: 1

Configurations: LSASD & LSADD

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

Element	Manufacturer & Product Reference
Overhead face-fixed closers	• TS3204 overhead surface mounted type closer – Rutland. (BMT/FEP/F15167 Revision A) • ETS.18314.SE overhead surface mounted closer – Rutland. (WF430472 Issue 1)

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

- CERTIFIRE approved overhead face-fixed closers for 60-minute fire resistance applications on 54mm thick timber door and timber frames

Note:

It must be ensured that the closer is of sufficient strength and power to ensure the door leaf/leaves fully engage into the frame reveal.

10.7.2 Concealed Overhead Self Closing Device

These items are suitable in the following applications only:

Leaf types: 1 & 2

Frame type: 1 (minimum 75mm deep x 35mm thick with minimum 12mm high stop)

Configurations: LSASD & LSADD

The table below details the tested concealed overhead closer that is approved.

Element	Manufacturer & Product Reference
Concealed overhead closer	• ITS 11205 concealed type closer – Rutland. (WF430472 Issue 1)

Note:

1. It must be ensured that the concealed overhead closer is of sufficient strength and power to ensure the door leaf/leaves fully engage into the frame reveal

2. For intumescent protection requirements, see section 10.2.

The ITS 11205 concealed closer was successfully tested in report WF430472 Doorset B. The concealed closer was installed into the frame head and the head of door type 2 which incorporated 9mm thick MDF facings with a density of 600kg/m³. Specimen A consisted of door type 1 with 9mm Plywood facings which was installed with a face fixed overhead type closer. The 2 specimens tested were latched, single acting, single doorsets measuring 2153mm high x 933mm wide x 54mm thick and incorporating the same frame design. The main differences between the tests where the perimeter seals, glazing, closer design and the facing material used. Disregarding the failure associated with the glazing at 62 minutes on doorset A, no other failures occurred to the doorset with the test terminating at 74 minutes. Doorset B failed at 73 minutes via a cotton pad located at the centre of the head on the door leaf. This demonstrates the door leaves ability to prevent burn through well exceeding 60 minutes fire resistance.

MDF is prone to delaminate and fall away when used as a facing material on timber door leaves in a fire situation more readily than Plywood facings. Considering Doorset A is of the same core construction, but incorporated Plywood faces of the same thickness as Doorset B, and that a considerable overrun was achieved, Warringtonfire has permitted the use of the ITS 11205 concealed close in door type 1. Additionally, the following requirements and installation instructions must be complied with;

- Permitted with Latched, Single Acting, Single Doorsets only.
- Permitted with door type 1 and door type 2.
- The door frame must be type 1 however the dimension must be increased to measure a minimum of 75mm deep x 35mm thick incorporating a minimum stop height of 12mm with a minimum density of 640kg/m³.
- Must be used in combination with Lorient Type 617 perimeter intumescent seals fitted in the frame head and jambs for both door types as per the specification given in section 4.5.5 referenced as AH1/3 and restricted to the maximum leaf sizes associated with that specification. Perimeter seals fitted in the door edges are not permitted with a concealed closer.
- For intumescent protection requirements, see section 10.2.
- The concealed closer must be installed into the leaf head and frame head tightly with no significant gaps also factoring in for the intumescent protection.
- The closer must be fitted a minimum 100mm from the hanging edge and a minimum of 200mm of core material must remain between the body of the closer and any glazed aperture or other item of hardware.
- The closer must be installed complying fully with the manufacturing instructions.

10.8 Bolts

10.8.1 Flush Bolts

Flush bolts have not been tested and are not permitted in this assessment.

10.8.2 Surface Mounted Face Fixed Bolts

These items where not specifically tested but are suitable in the following applications only:

Leaf options: 1 and 2

Frame options: 1

Configurations: LSADD

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

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

Intumescent protection is not required.

10.9 Non-Essential Hardware

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

10.9.1 Push Plates & Kick Plates

Leaf types: 1 & 2

Frame types: 1

Configurations: LSASD & LSADD

Components with the following specification are deemed acceptable as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted away from the edge of the door leaf, therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and therefore cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

Approved specification:

- Polymeric or metal face-fixed hardware such as push plates and kick plates up to 2mm thick may be surface fitted to the doorset. These items of hardware are permitted up to a maximum of 20% of the door leaf area if mechanically fixed and a maximum of 30% if bonded with a contact or other thermally softening adhesive.
- Plates must not return around the door edges.
- In all cases plates meeting the above specification shall not be applied under glazing beads or door stops.

10.9.2 Threshold drop Seals

These items are suitable in the following applications only:

Leaf types: 1 & 2

Frame types: 1

Configurations: LSASD & LSADD

An RP8Si aluminum Raven Seals drop seal was successfully tested in report WF430472 Issue 1 and is therefore acceptable for use in all door designs. The drop seal is permitted for use only when fitted centrally in the base of the leaf and includes the intumescent protection specified in section 10.2.

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

- Certifire approved threshold drop seals for 60-minute fire resistance applications on 54mm thick timber / cellulosic doors in timber / cellulosic frames.
- The threshold drop seal must not exceed:
    - Body dimensions of 35mm (h) x 14mm (t) and
    - Face plate dimensions of 57mm (h) x 21mm (w) x 1.5mm (t).
- The Certifire certificate shall be adhered to for intumescent protection and fitting requirements however a minimum 1mm thick intumescent must be installed per the tested design.

10.9.3 Knockers, Numerals & Signage

Components with the following specification are deemed acceptable as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted away from the edge of the door leaf, therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and therefore cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

Approved specifications:

Knockers:

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

Numerals & Signage:

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

10.9.4 Security Chains

Components with the following specification are deemed acceptable as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted with fixings positioned away from the edge of the door leaf and therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

Approved specification:

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

10.9.5 Fire Door Identification Plates

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

These may be required to identify the following:

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

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

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

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

10.9.6 Panic Hardware

These items are suitable in the following applications only:

Leaf types: 1 & 2

Frame types: 1

Configurations: LSASD & LSADD

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

The fitting of panic hardware is not considered to change the latching arrangement of the doorset.

11 Installation

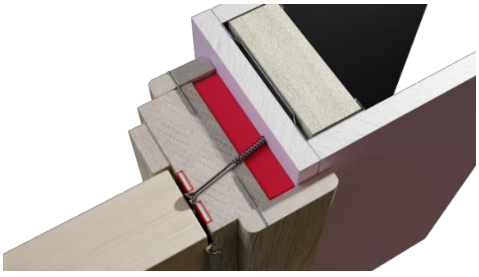
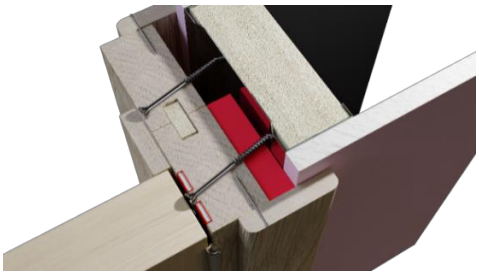
11.1 General

This section considers the installation of doorsets. This section considers:

- the door frame and architrave installation position relative to the wall
- the fire stopping between the frame and the wall
- the fixing requirement including packers
- the requirements for door edge gaps
- the trimming of door edges

11.2 Door Frame Installation

The following figures indicate the acceptable door frame installations. Please note that the firestopping element is provided in the below 3D models as a generic red coloured seal. For further clarification of the approved firestopping systems see section 11.3.

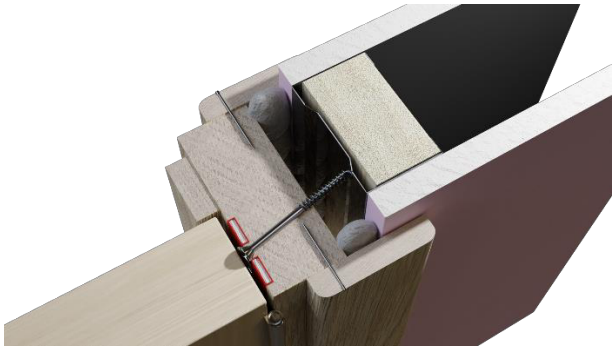
Permitted Installations	
	Instances where the door frame and the wall of the same depth such that architraves are fitted flush to both faces. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see door frame section. Architraves requirements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

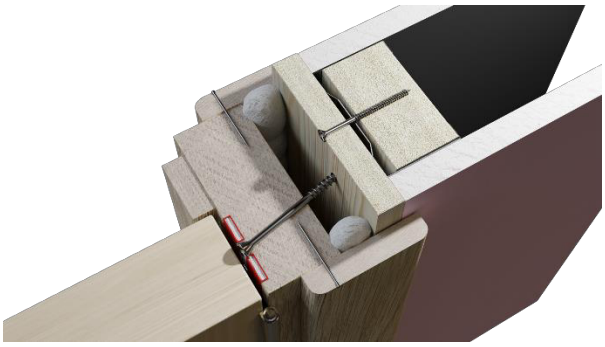
Note:

1. The drawings are provided as a generalised illustration of the door frame installation only; actual installation must be as per the text within this document specifies.
2. When fitted within a masonry construction as detailed in section 11.5 the entire thickness of the leaf shall be within the thickness of the masonry element.

11.3 Firestopping

The firestopping requirements between the back of frame and wall are dependent on the gap size between the substrates. The table below provides the requirements based upon the gaps size. Please note that in the 3D depictions noted below show the application where a door frame is of the same depth as the overall wall thickness.

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

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

11.4 Packers

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

Packers must be present local to each fixing position.

11.5 Wall Types, Structural Opening & Fixity

11.5.1 Wall Types

The following wall types are approved for this doorset design:

a) Plasterboard clad timber stud partitions
b) Plasterboard clad steel stud partitions including timber lining
c) Blockwork, masonry or homogenous concrete constructions.

Wall types a & b above must have supporting fire resistance test evidence which demonstrates that it is capable of staying in place and intact for a minimum of 60 minutes supporting a doorset design.

Wall type c above must be determined to be able to provide at least the same level of fire resistance of the doorset design.

All wall types detailed above shall provide a suitable medium to permit adequate fixity, it is anticipated that for:

- Plasterboard clad timber stud partitions, the timber stud will be of sufficient dimensions such that the fixing for the door frame penetrates into solid timber.
- Plasterboard clad steel stud partitions will include a timber lining of sufficient dimensions such that the fixing for the door frame penetrates into solid timber.
- Blockwork, masonry or homogenous concrete constructions are anticipated to be solid to receive the fixings.

Note: Other tested solutions to achieve adequate fixity may be detailed within the above noted supporting fire resistance test evidence.

11.5.2 Structural Opening

For all wall types the structural opening shall be square, plumb and provide a flat surface for installation of the doorset

For flexible wall types such as steel and timber stud partitions the structural opening must be prepared in line with the test evidence provided by the wall manufacturer.

11.5.3 Fixity

In all instances the fixing position must be such that it provides adequate restraint to the element of construction throughout the exposure to fire. This may therefore sometimes necessitate a twin line of fixings.

For single leaf doorset, the frame jambs only are to be fixed to the supporting construction using steel fixings at 600mm maximum centres and maximum of 150mm from corner. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm. It is not necessary to fix the frame head, although packers must be inserted.

For all other configurations of doorset, the upper horizontal framing section abutting the structural opening must also be secured to the wall using steel fixings at 600mm maximum centres and maximum of 150mm from corner. The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm.

11.6 Post Production (Onsite) Leaf Size Adjustment

The Sainty-Fire / Sentry Pro 60 range of doorsets may be altered as follows:

Leaf Size Adjustment Specification	
Element	Reduction
Lipping	The post-production lipping thickness may be reduced by 1mm for fitting purposes, providing that the door gaps and intumescent conditions remain as required by this assessment and the minimum limitation in terms of lipping thickness is still maintained

11.7 Door Gaps

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

Door Gap & Alignment Tolerance Specification	
Location	Dimension
Door edge gaps	A minimum of 2mm and a maximum of 4mm
Alignment tolerances	Leaves must not be proud of each other or from the door frame by more than 1mm.
Threshold	8mm between bottom of leaf and top of floor covering. This is the maximum tolerance for fire resistance only.

12 Insulation Performance

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

Insulation Performance Criteria		
Type		Details
Partially insulating		Doorsets incorporating up to 20% of non-insulating glazing
Fully insulating	Timber frames	Unglazed doorsets or doorsets including 60-minute insulating glazing

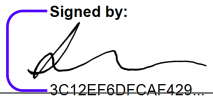
13 Conclusion

If Sainty-Fire / Sentry Pro 60 doorsets constructed in accordance with the specification documented in this field of application were to be tested in accordance with BS 476: Part 22: 1987, it is our opinion that they would provide a minimum of 60 minutes integrity and insulation (subject to section 12).

14 Declaration by the Applicant

1) We the undersigned confirm that we have read and comply with obligations placed on us by the Passive Fire Protection Forum (PFPF) Guide to undertaking technical assessments and engineering evaluations based on fire test evidence 2021 Industry Standard Procedure
2) We confirm that any changes to a component or element of structure which are the subject of this assessment have not to our knowledge been tested to the standard against which this assessment has been made.
3) We agree to withdraw this assessment from circulation should the component or element of structure, or any of its component parts be the subject of a failed fire resistance test to the standard against which this assessment is being made.
4) We understand that this assessment is based on test evidence and will be withdrawn should evidence become available that causes the conclusion to be questioned. In that case, we accept that new test evidence may be required.
5) We are not aware of any information that could affect the conclusions of this assessment. If we subsequently become aware of any such information, we agree to ask the assessing authority to withdraw the assessment.

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

Signed: 

Name: Alan Romaine

Position: UK Principal

Date: 04-Feb-2026

For and on behalf of: Jiangsu Sainty Land Up Pro Trading Co. Ltd.

15 Limitations

This assessment report:

- Does not provide an endorsement by Warringtonfire of actual products supplied.
- Has been prepared based on information provided by the Applicant. Warringtonfire has not verified the accuracy or completeness of that information and will not be responsible for any errors or omissions that might be incorporated into this report as a result.
- Any figures included in this report are provided for illustrative purposes only and may not fully reflect the actual scope being assessed. Warringtonfire cannot guarantee the accuracy of the drawings against the scope being assessed. The scope of this report is limited to assessments of the modifications to the tested systems as described herein.
- This report addresses itself solely to the elements and subjects discussed and do not cover any other criteria or modifications. All other details not specifically referred to should remain as tested or assessed.
- This report is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available to Warringtonfire, the assessment will be unconditionally withdrawn, and the applicant will be notified in writing. Similarly, the assessment should be re-evaluated if the assessed construction is subsequently tested since actual test data is deemed to take precedence.
- This assessment has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.
- Opinions and interpretation expressed herein are outside the scope of UKAS accreditation.
- This assessment report relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions that are stipulated in the standard this assessment concludes to. It does not purport to be a complete specification ensuring fitness for purpose and long-term serviceability. It is the responsibility of the client to ensure that the element conforms to recognised good practice in all other respects and that, with the incorporation of the guidance given in this assessment, the element is suitable for its intended purpose.
- This report represents our opinion as to the performance likely to be demonstrated on a test in accordance with the standard to which this assessment concludes, on the basis of the test evidence referred to in this report. We express no opinion as to whether that evidence, and/or this report would be regarded by any Building Control authorities or any other third parties as sufficient for that or any other purpose.
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16 Validity

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

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

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