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Title

Field of Application for:

The ESD Ac43 30 & 60 minute range of doorsets in timber based door frames

For 30 & 60 minutes Fire Resistance

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BMT/CNA/F14098 Revision B

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The version/revision stated on the front of this Field of Application supersedes all previous versions/revisions and must be used to manufacture doorsets from the stated validity date on this front cover. Previous revisions of the Field of Application cannot be used once an updated Field of Application has been issued under a new revision.

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1 Foreword

This Field of Application report has been commissioned by Enfield Speciality Doors and relates to the fire resistance of 30 and 60 minute fire resisting doorset designs.

The report is for national application and has been written in accordance with the general principles outlined in BS EN 15725.

This Field of Application (scope) uses established empirical methods of extrapolation and experience of fire testing similar doorsets, in order to extend the scope of application by determining the limits for the designs based on the tested constructions and performances obtained. The scope is an evaluation of the potential fire resistance performance, if the variations specified herein were to be tested in accordance with BS 476-22: 1987.

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

This Field of Application has been written using appropriate test evidence generated at UKAS accredited laboratories, to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturers stated door design and is summarised in section 3.

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

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

The drawings provided in this report are for guidance and illustrative purposes only. Please note that the written scope of application takes precedence.

2 Proposal

It is proposed to consider the fire resistance performance of the specified proprietary The ESD Ac43 30 & 60 minute range of doorset designs, for 30 and 60 minutes fire resistance integrity performance (and where appropriate insulation performance), if the doorset designs were to be tested to the requirements of BS 476-22: 1987, *Methods for determination of the fire resistance of non-loadbearing elements of construction.*

The construction of the doorset design contained herein is identical for both 30 and 60 minutes fire resistance performance. It has been possible to provide greater leaf dimensions for 30 minute applications which are outlined within section 4.5.5. all other parameters must remain as detailed within this document for 60 minutes fire resistance performance.

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

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.

2.1 Assumptions

- 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.

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 leaf, double leaf, latched and unlatched 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.

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 they have been used to provide the scope of application.

3.1.1 Test Report BMT/FEP/F13291

Date of Test:	28th February 2014	
Identification of Test Body:	Chiltern International Fire Ltd Now Trading As Warringtonfire Testing and Certification Ltd. UKAS No. 1762	
Sponsor:	Enfield Speciality Doors	
Tested Product:	Doorset A: Unlatched, Single Acting, Double Leaf, Doorset with Glazed Aperture. Doorset B: Unlatched, Single Acting, Single Leaf, Doorset with Glazed Aperture.	
Tested Orientation:	Both doorsets were installed opening in towards the heating conditions of the test.	
Test Standard:	BS 476-22: 1987 – Method 7	
Performance:	**Doorset A:**	**Integrity:** 61 minutes **Insulation:** 61 minutes
	Doorset B:	**Integrity:** 63 minutes **Insulation:** 63 minutes

3.1.2 Test Report BMT/FEP/F14207 Revision B

Date of Test:	14th August 2014	
Identification of Test Body:	Chiltern International Fire Ltd Now Trading As Warringtonfire Testing and Certification Ltd. UKAS No. 1762	
Sponsor:	Sealed Tight Solutions Ltd	
Tested Product:	Doorset A: Unlatched, Single Acting, Single Leaf, Doorset. Doorset B: Unlatched, Single Acting, Single Leaf, Doorset with Glazed Aperture.	
Tested Orientation:	Both doorsets were installed opening in towards the heating conditions of the test.	
Test Standard:	Doorset A: BS 476-22: 1987 – Method 6 Doorset B: BS 476-22: 1987 – Method 7	
Performance:	**Doorset A:**	**Integrity:** 65 minutes **Insulation:** 65 minutes
	Doorset B:	**Integrity:** 30 minutes **Insulation:** 30 minutes

This test report has been included to support the performance of the drop down seals being considered within the Enfield Speciality Doors doorset design. Doorset B was of a 30 minute fire resisting design.

3.1.3 Test Report BMT/FEP/F15288 Revision A

Date of Test:	09th November 2015	
Identification of Test Body:	Exova Warringtonfire Now Trading As Warringtonfire Testing and Certification Ltd. UKAS No. 1762	
Sponsor:	Sealed Tight Solutions	
Tested Product:	Doorset A: Latched, Single Acting, Single Leaf, Doorset with Glazed Aperture. Doorset B: Latched, Single Acting, Double Leaf, Doorset.	
Tested Orientation:	Both doorsets were installed opening in towards the heating conditions of the test.	
Test Standard:	Doorset A: BS 476-22: 1987 – Method 8 Doorset B: BS 476-22: 1987 – Method 6	
Performance:	**Doorset A:**	**Integrity:** 44 minutes **Insulation:** 0 minutes
	Doorset B:	**Integrity:** 83 minutes **Insulation:** 83 minutes

This test report has been included to support the performance of the drop down seals being considered within the Enfield Speciality Doors doorset design. Doorset A was observed to have failed at the fire stopping arrangement, no further failure was observed until 77 minutes of test duration.

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

The ESD Ac43 door leaf design can include various design features:

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

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

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

4.4 Door Frames

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.

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

4.5 Doorset Configurations & Maximum Leaf Sizes

4.5.1 General

The evaluation of the leaf size for the ESD Ac43 doorset design and doorset configuration is based on the tests listed in Section 3 and takes into account:

1. The margin of over performance above 30 or 60 minutes integrity performance 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 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 doorset with transomed overpanel is considered to perform comparably to a similar doorset without an overpanel. This is because the transom structurally separates the overpanel from the doorset.

The leaf size for each door leaf option and configuration is linked to the perimeter intumescent specification, the frame and the required fire resistance duration. The following section details the maximum leaf size for each door leaf option and configuration based on the intumescent specification, frame details tested and intended fire resistance duration.

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.

4.5.2 Configuration

The table below shows the permitted configurations for the ESD Ac43 doorset design, with the abbreviation and full description of each configuration.

The following sections details the assessed maximum leaf size envelopes for each permitted configuration based on the intumescent specification, door frame tested and intended fire resistance duration.

Doorset Configurations		
Depiction	Abbreviation	Description
	LSASD	Latched Single Acting Single Doorset
	ULSASD	Unlatched Single Acting Single Doorset
	LSADD	Latched Single Acting Double Doorset
	ULSADD	Unlatched 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, door frame and intended fire resistance duration.

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.

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 and intended fire resistance duration. These elements are not automatically interchangeable. The following sections present the envelopes for the ESD Ac43 leaf and 1 frame option. Each envelope is linked to a specific perimeter intumescent which is given a unique reference and is based directly on test evidence.

The envelopes are presented as follows:-

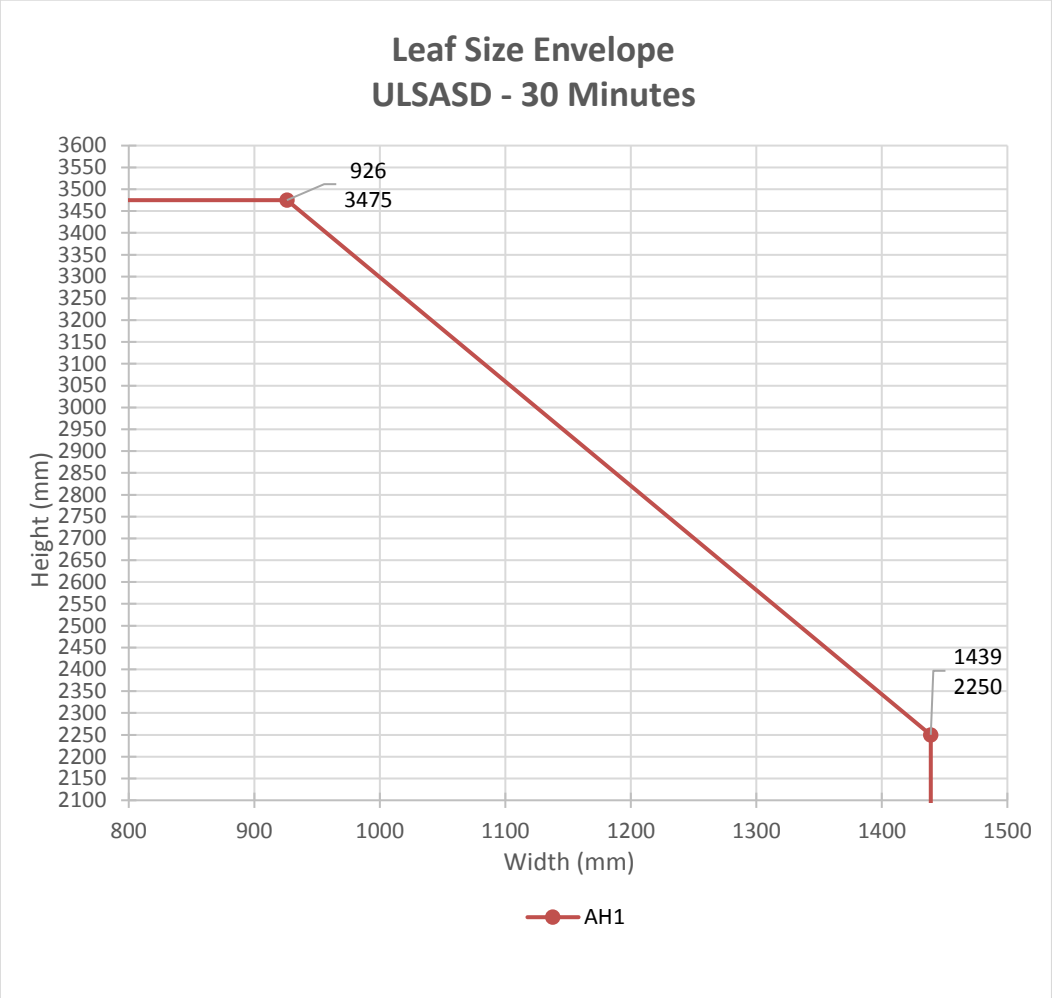
- for LSASD increasing in configuration complexity up to ULSADD
- for each configuration, the leaf type is considered separately
- for each configuration and leaf type, each frame type is considered separately
- for each configuration, leaf type, frame type and intumescent specification is considered 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 following envelopes are split into fire resistance durations, initially 30 minutes fire resistance performance and then 60 minutes fire resistance performance. Care should be taken to ensure that leaf sizes given within section 4.5.5 are not used for 60 minutes fire resistance performance.

4.5.5 30 Minutes Fire Resistance

4.5.5.1 LSASD Configuration: Leaf Sizes & Intumescent Specification

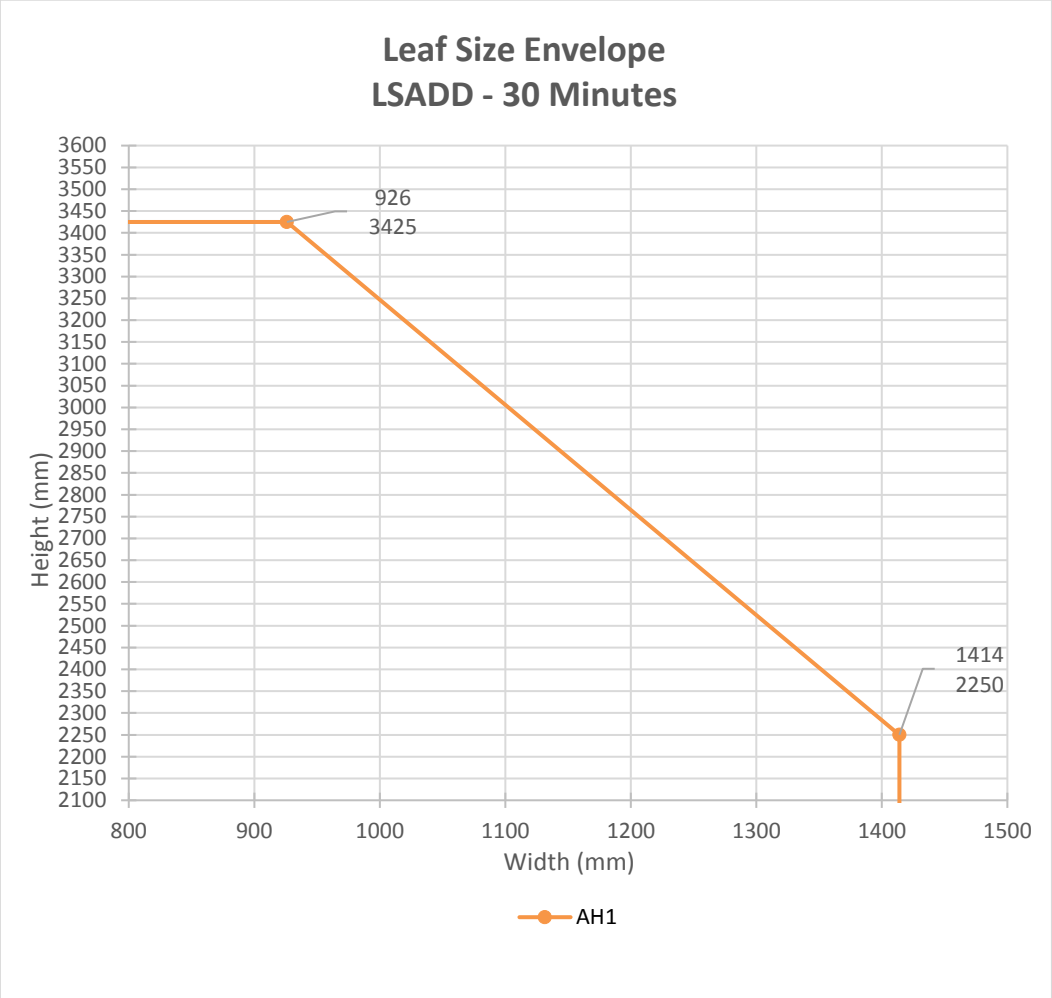
Intumescent Specification for LSASD			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH1 (BMT/FEP/F13291 – Doorset A)	DF 154TFB & 104FOW	Norseal	**Head & Jambs:** DF 154TFB (15mm x 4mm) fitted 7mm from the opening face of the leaf, 104FOW (10mm x 4mm) fitted 32mm from the opening face of the leaf.

4.5.5.2 ULSASD Configuration: Leaf Sizes & Intumescent Specification



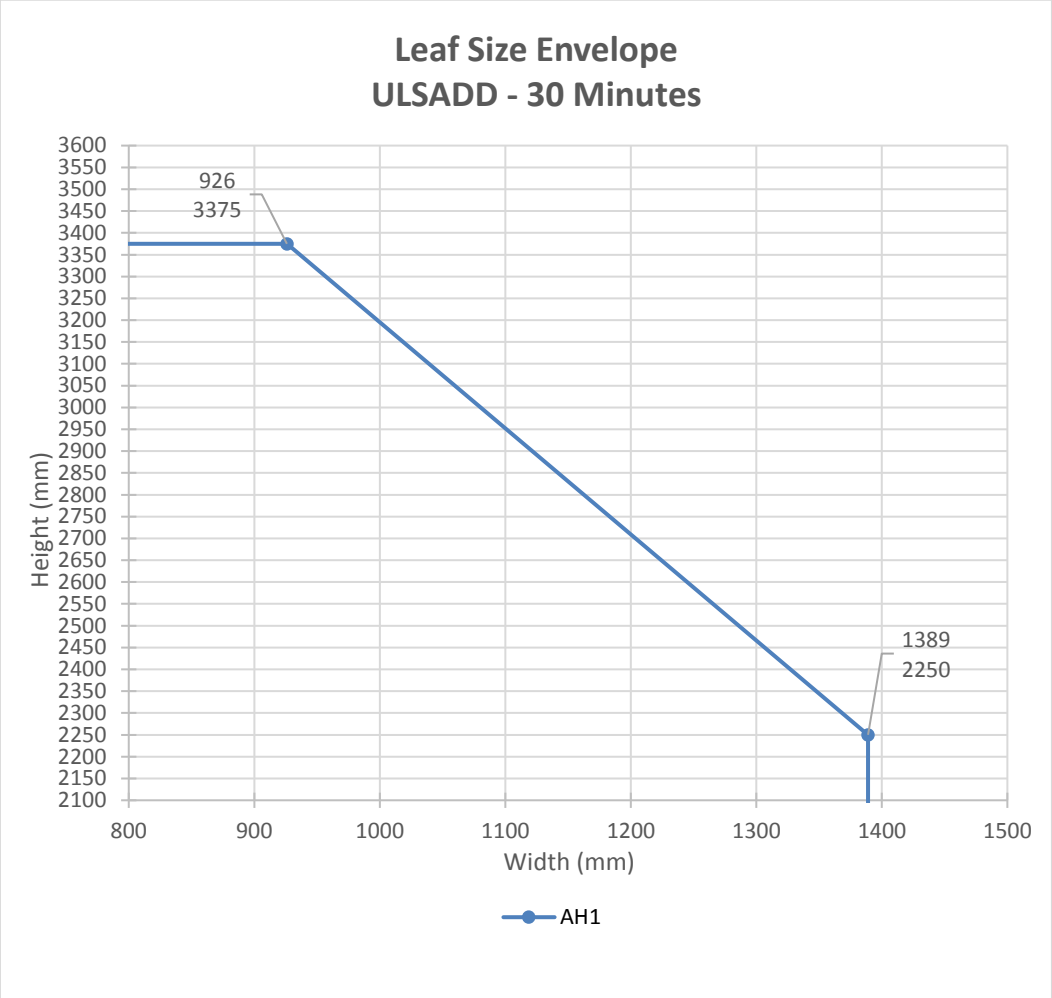
Intumescent Specification for ULSASD			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH1 (BMT/FEP/F13291 – Doorset A)	DF 154TFB & 104FOW	Norseal	**Head & Jambs:** DF 154TFB (15mm x 4mm) fitted 7mm from the opening face of the leaf, 104FOW (10mm x 4mm) fitted 32mm from the opening face of the leaf.

4.5.5.3 LSADD Configuration: Leaf Sizes & Intumescent Specification



Intumescent Specification for LSADD			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH1 (BMT/FEP/F13291 – Doorset A)	DF 154TFB & 104FOB & 104FOW	Norseal	**Head & Jambs:** DF 154TFB (15mm x 4mm) fitted 7mm from the opening face of the leaf, 104FOW (10mm x 4mm) fitted 32mm from the opening face of the leaf. **Meeting Edge:** DF 154TFB (15mm x 4mm) fitted 7mm from the opening face of the leaf, 104FOB (10mm x 4mm) fitted 32mm from the opening face of the leaf.

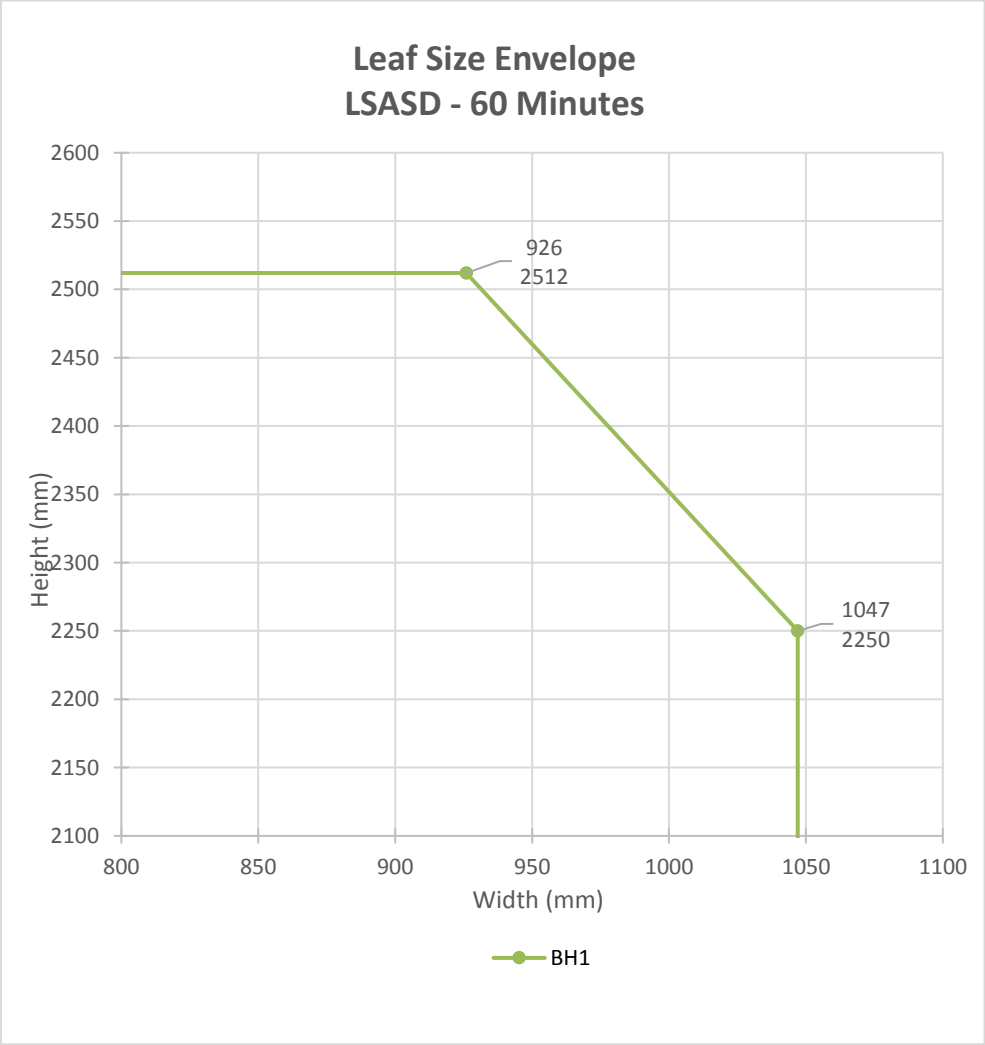
4.5.5.4 ULSADD Configuration: Leaf Sizes & Intumescent Specification



Intumescent Specification for ULSADD			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH1 (BMT/FEP/F13291 – Doorset A)	DF 154TFB & 104FOB & 104FOW	Norseal	**Head & Jambs:** DF 154TFB (15mm x 4mm) fitted 7mm from the opening face of the leaf, 104FOW (10mm x 4mm) fitted 32mm from the opening face of the leaf. **Meeting Edge:** DF 154TFB (15mm x 4mm) fitted 7mm from the opening face of the leaf, 104FOB (10mm x 4mm) fitted 32mm from the opening face of the leaf.

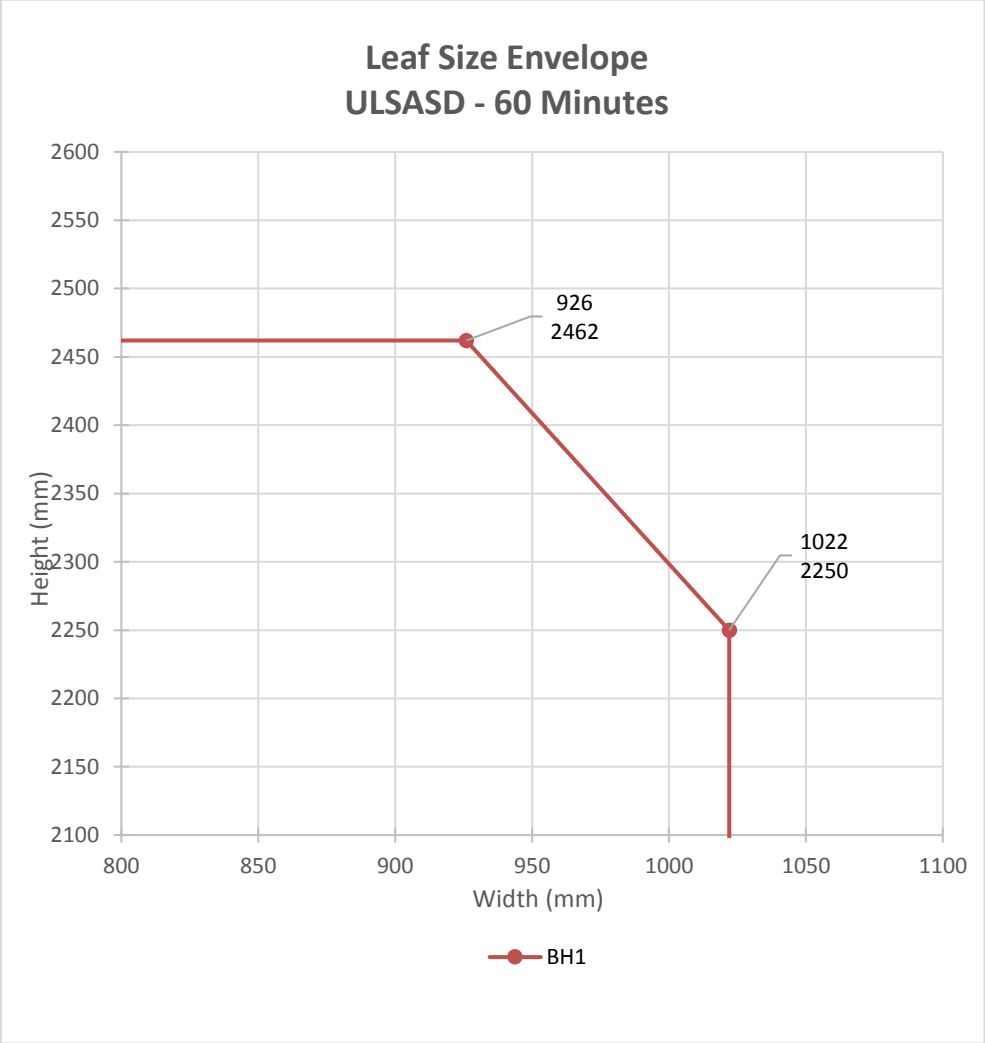
4.5.6 60 Minutes Fire Resistance

4.5.6.1 LSASD Configuration: Leaf Sizes & Intumescent Specification



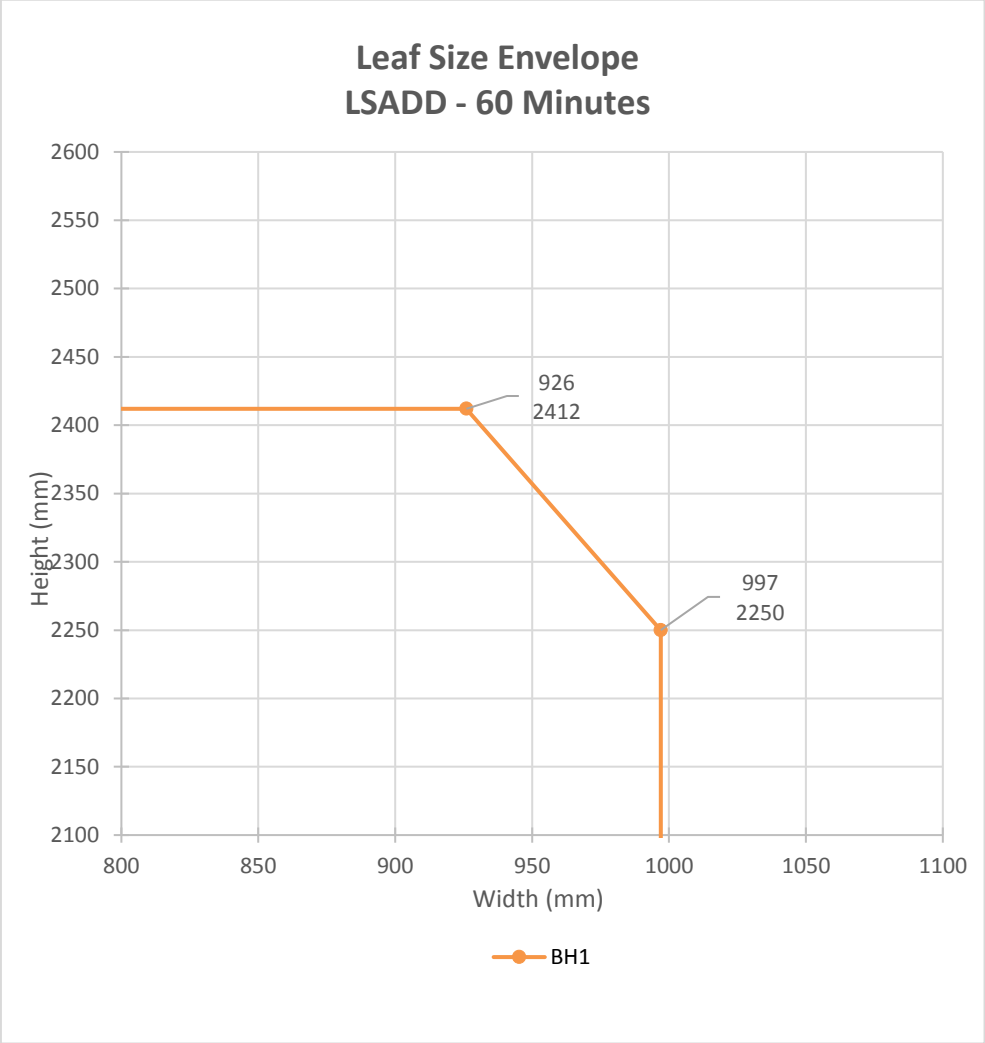
Intumescent Specification for LSASD			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BH1 (BMT/FEP/F13291 – Doorset A)	DF 154TFB & 104FOW	Norseal	**Head & Jambs:** DF 154TFB (15mm x 4mm) fitted 7mm from the opening face of the leaf, 104FOW (10mm x 4mm) fitted 32mm from the opening face of the leaf.

4.5.6.2 ULSASD Configuration: Leaf Sizes & Intumescent Specification



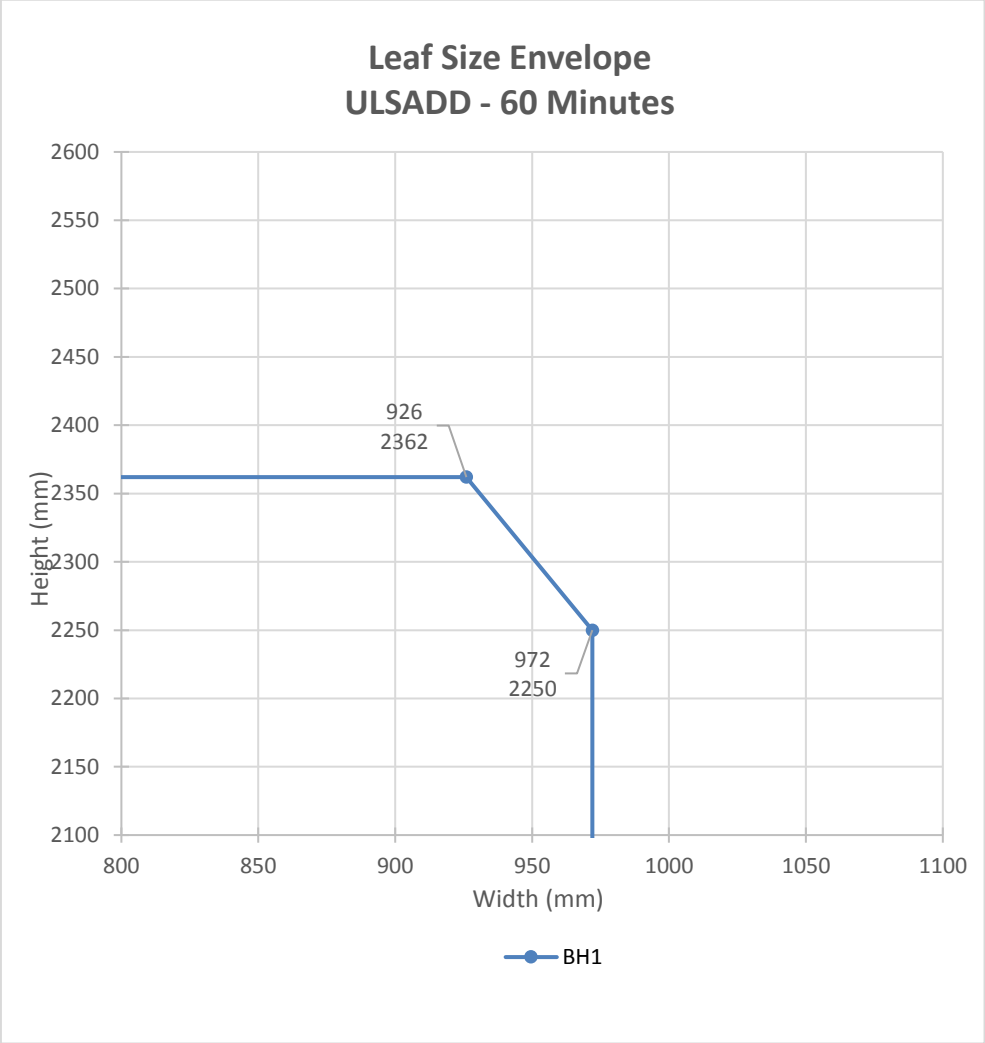
Intumescent Specification for ULSASD			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BH1 (BMT/FEP/F13291 – Doorset A)	DF 154TFB & 104FOW	Norseal	**Head & Jambs:** DF 154TFB (15mm x 4mm) fitted 7mm from the opening face of the leaf, 104FOW (10mm x 4mm) fitted 32mm from the opening face of the leaf.

4.5.6.3 LSADD Configuration: Leaf Sizes & Intumescent Specification



Intumescent Specification for LSADD			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BH1 (BMT/FEP/F13291 – Doorset A)	DF 154TFB & 104FOB & 104FOW	Norseal	**Head & Jambs:** DF 154TFB (15mm x 4mm) fitted 7mm from the opening face of the leaf, 104FOW (10mm x 4mm) fitted 32mm from the opening face of the leaf. **Meeting Edge:** DF 154TFB (15mm x 4mm) fitted 7mm from the opening face of the leaf, 104FOB (10mm x 4mm) fitted 32mm from the opening face of the leaf.

4.5.6.4 ULSADD Configuration: Leaf Sizes & Intumescent Specification



Intumescent Specification for ULSADD			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BH1 (BMT/FEP/F13291 – Doorset A)	DF 154TFB & 104FOB & 104FOW	Norseal	**Head & Jambs:** DF 154TFB (15mm x 4mm) fitted 7mm from the opening face of the leaf, 104FOW (10mm x 4mm) fitted 32mm from the opening face of the leaf. **Meeting Edge:** DF 154TFB (15mm x 4mm) fitted 7mm from the opening face of the leaf, 104FOB (10mm x 4mm) fitted 32mm from the opening face of the leaf.

5 General Description of Leaf Construction

5.1 Leaf Core Construction

The door leaf option is detailed below is approved by this assessment.

5.1.1 ESD Ac43 – 68mm thick

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

Element		Material (mm)	Dimensions (mm)	Minimum Density (kg/m^3)
Core	Inner	2 (t) rubber sandwiched between 9 (t) plasterboard	20 (t)	-
	Outer	Sauerland Spanplatte 14 (t) faced with 2 (t) cork oversailing the stiles and rails	18 (t)	-
Stiles & Rails		Sapele	59 (w) x 52 (t)	650
Facing		MDF	6 (t)	750

The leaf must be lipped as specified in section 5.3.

The minimum leaf thickness after calibration is 67mm (i.e. a maximum of 0.5mm from both sides).

The minimum leaf thickness after finishes applied is 68mm.

The core construction includes butt joints between materials, no more joints than demonstrated within the test evidence detailed within section 3.1 are permitted. Additionally, when jointed each of the joints must be staggered as tested and no joint shall be coincident with another.

5.2 Leaf Size Adjustment During Manufacturing

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

Pre-Machining Leaf Size Adjustment Specification	
Element	Reduction
Leaf	The size of the leaf may be reduced in height or width without restriction for manufacturing purposes, providing the finished leaf includes the above detailed stiles and rails and is lipped in accordance with section 5.3
Timber Lipping	The timber lipping thickness can be reduced after it has been glued in place, providing it is not reduced below the minimum stated in section 5.3

5.3 Timber Lipping

The testing documented in section 3 has generally been undertaken using 20mm thick lippings applied to the vertical and top edges of the leaf using Hardwood timber.

On the above basis, ESD Ac43 door leaves must be lipped with the following specification.

Timber Lipping Specification		
Material	Size (mm)	Min Density (kg/m^3)
Hardwood (not Beech *fagus species*)	Flat = 20 – 25 thick	640
	Rounded = Not permitted.	
	Rebated Edges (adjacent to frame head & jambs) Rebated = 20 (t) with 16 (d) x 12 (w) rebate Offset Rebated Meeting Edges Primary Leaf = 20 (t) with 16 (d) x 12 (w) rebate Secondary Leaf = 20 (t) with 56 (d) x 12 (w) rebate	

Notes:

1. All lippings are to be the same thickness as the door leaf.
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 only require lipping on the vertical and top edges of the leaf but may be additionally lipped on the bottom edge if required.
4. Lippings can be bonded with PU or cross linked PVA. These may be hand applied or may be applied using an edgebander. With either method it must be ensured that sufficient glue is applied to across the entire surface area between the 2No substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed, for either installation application.
5. 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 Decorative & Protective Facings

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

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

Decorative & Protective Facing Specification	
Facing Material	Maximum Permitted Thickness (mm)
Paint[5]	0.2
Timber veneers[3]	2
Plastic laminates[3]	2
PVC[3]	2
Cellulosic and non-metallic foils[3]	0.4

Notes:

1. Metallic facings are not permitted except for push plates and kick plates.
2. The door leaf thickness may be reduced on both sides by a maximum of 0.5mm for calibration purposes in order to accommodate the chosen finish. The minimum overall leaf thickness must remain at 68mm 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

6.1 General

The testing conducted on doorset design has demonstrated that they are capable of tolerating glazed apertures, whilst providing a margin of over performance, this is supported by the summarised test evidence within section 3.

Glazing is therefore acceptable within the following parameters.

Apertures must not be less than 252mm from top edges and 190mm from the side edges. (Supported by BMT/FER/F13291).

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 ESD Ac43 door leaves (BMT/FER/F13291)		
Maximum Height (mm)	Maximum Width (mm)	Maximum Area (m^2)
1812	348	0.54

Multiple apertures are not permitted.

The glass and glazing systems permitted must be as detailed within this assessment. Alternative glass and glazing systems are not permitted.

The subsequent sections within this report detail the permitted glass and glazing systems with their associated size ranges permitted within the ESD Ac43 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.

6.1.2 Double Glazed Units & Glazing Systems

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

The table below specifies the maximum assessed height, width & area of glazing for each permitted glass type and glazing system. The numerical figures in the main body of the table are the maximum area of glass (in m^2) that is considered acceptable for an individual glazed aperture, based upon the specific system.

The total area of all glazed apertures must not exceed that stated in section 6.1 above.

Test reference BMT/FER/F13291 was undertaken with both doorsets opening in towards the fire test conditions.

The double-glazed units fitted to each doorset design included a layer of Pyrostop EI30-10 and a layer of Optiphon glass. The Pyrostop was fitted to the exposed face of doorset A and unexposed face of doorset B. The Optiphon glass was tested at two thicknesses 9.1mm to the exposed face and 16.8mm to the unexposed face. Based on the testing undertaken it has been considered by Warringtonfire that the double glazed unit detailed below may be considered from both orientations providing the unit is constructed and installed as detailed below:

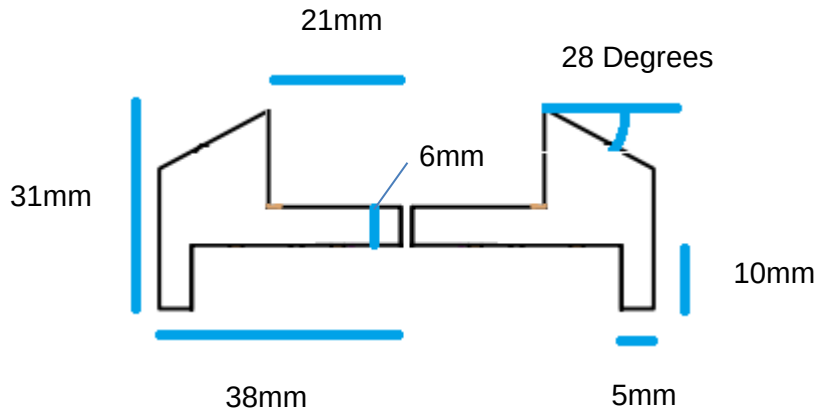
Glass & Glazing System Specification		**Maximum Assessed Area (m^2), Height & Width (m)**	
Glass Type Manufacturer		**System & Manufacturer →**	1
			Pyroglaze 30, 15mm wide x 2mm thick applied between the glass and the bead on both faces.
			Mann McGowan
		Fire Test Reference	BMT/FER/F13291
1	Pilkington Pyrostop EI30-10, 15mm thick & Pilkington Optiphon, 16.8mm thick Separated by a 8mm thick steel spacer.	BMT/FER/F13291	Area 0.54 Height: 1.812 Width:0. 348

Note:

1. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.

6.1.3 Glazing Beading Arrangement – Double Glazed Units

Permitted Glazing Systems (As defined in section 6.1.2)	**1**



- The above detailed bolection may be increased in thickness and height if required, with the dimensions shown being the minimum.
- The 38mm depth of bead detailed above must be increased subject to leaf thickness increases and the 21mm rebate must be adjusted to ensure the glazing system and glazing unit are supported as per the tested detail. When the dimensions are altered to incorporate a thicker leaf dimension both beads must be amended symmetrically.
- The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 650kg/m^3 density.
- Glazing beads must be retained in position with mechanical fixings with a minimum length of 50mm long steel pins or 50mm long No. 6-8 screws, inserted at 45º to the vertical.
- Fixings must be at 150mm maximum centres and no more than 45mm from each corner. Pneumatically fired pins are acceptable providing the pins meet the specification given in section 6.1.1 below.
- 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

6.1.1 Pneumatically Fired Pins

The following pin specification is permitted and has been considered suitable for applications requiring a pin fixing to glazing beads:

Option 1 – Round, Oval & Rectangular Pins

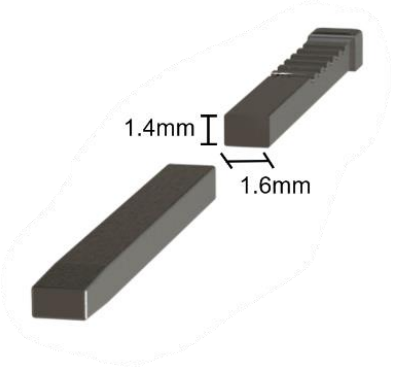
The following dimension of pin has been approved for round, oval and rectangular shaped pins which are hand applied:

- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.03mm^2.
- Minimum linear dimension of 1.6mm in any direction, see figure below. The maximum pin diameter or any linear dimensions may be no greater than 2.0mm.

Option 2 – Gun (Pneumatically) Fired Rectangular Pins

The following dimension of rectangular pin has been deemed suitable for gun (pneumatically) fired applications.

- Minimum Standard Wire Gauge (SWG) 16.
- Minimum cross section area of 2.24mm^2.
- Minimum linear dimensions as shown in the figure.
- The 1.6mm dimension is predominately oriented perpendicular to the glass, where possible.
- The maximum pin diameter or any linear dimensions may be no greater than 2.0mm.



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

7 Door Frame Construction

7.1 Details for Frame

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.

Frame specification		
Material	Minimum section size (mm)	Minimum density (kg/m^3)
Hardwood: The use of Beech (*Fagus species*) is NOT permitted.	Frame: 135 (d) x 44 (w) (excluding stop dimensions) Stop No.1: 63 (d) x 12 (w) Stop No.2: 38 (d) x 16 (w) (the two stops may be either integral or planted on)	650

Note:

In all instances the frame must include both stops as detailed above, as tested.

When the leaf includes only flat lippings, the frame stop may be constructed from a single piece of timber but the minimum width would be required to be 28mm.

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 & Fanlights

Overpanels and fanlights are permitted based on the testing as summarised within section 3, the following sections outline the constructional details of each of the permitted elements and limitations associated with each configuration.

8.1 General

The testing undertaken on the doorset design allows for the application of:

Solid overpanels with two framing options (Modular & Transomed).

Glazed fanlights with one framing option (Modular).

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

8.2 Framing

The following framing options as detailed below are permitted for the doorset design and are permitted depending on solid panel arrangement or glazed fanlight utilised. Information on the frame type permitted for the solid panel or glazed element is detailed in sections 8.2.1 – 8.2.2.

8.2.1 Modular Framing

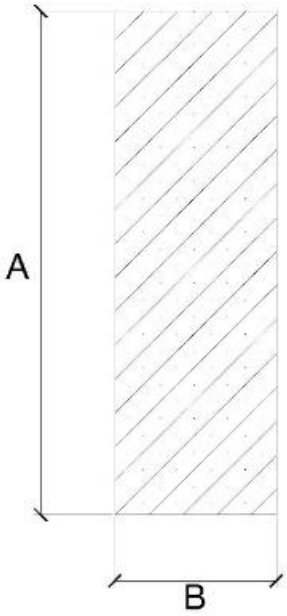
Modular framing for the purpose of this document is considered to be an element (glazing or panel) which is independently framed and fixed to the frame of a doorset design. An example of a modular framed solution is given below.

Single leaf doorset with glazed modular fanlight.

8.2.1.1 Standard Frame Detail (Modular Framing)

The frame listed below is the minimum size and density which has assessed by this report. The frame must be constructed to meet the following specification for modular units containing solid panels or glazing, the frame section shall meet this specification on all four edges.

Modular Frame specification		
Material	**Minimum section size (mm)**	**Minimum density (kg/m^3)**
Hardwood: (see section 2.1) The use of Beech (*Fagus species*) is NOT permitted.	Frame: 135 (d) x 44 (w) (excluding stop dimensions)	650



A: Frame depth = 135mm minimum

B: Frame width = 44mm minimum

Notes:

The depth of the modular frame and the door frame shall be equal, this may result in increasing the depth of the permitted door frame to match the modular frame dimension, or vice versa. In all cases the greater dimension shall be used.

8.2.1.2 Frame Jointing (Modular Framing)

Below are depictions of the framing joints that are deemed acceptable for corner jointing of modular framing. Please note that the drawings are provided as general illustrations of each type of frame joint; actual construction in terms of intumescent seal location and material, etc. must be as the text within this document specifies.

Double Rebated Joint

Mitre Joint

Mortice & Tenon Joint

Butt Joint

Trenched or Half Lapped Joint

The modular frame joints are required to be tight, with no gaps, and require mechanical fixing with steel screws which penetrate into the adjacent substrate by a minimum of 30mm. Frame joints may additionally be reinforced with the adhesives approved for the application of the lipping detailed within section 9.

8.2.1.3 Attachment Technique (Modular Framing)

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

Screws must be fixed between 50mm and 100mm from corners at maximum of 250mm centres from each face. Fixings shall penetrate approximately half of the depth of the adjacent timber section.

8.2.2 Shared framing (Transomed)

Shared framing (Transomed) for the purpose of this document is considered to be when an element (panel) is contained within the frame for the doorset and separated from the door leaf by a shared transom. An example of a transomed solution is given below, though the construction of doorsets shall be as the text in this document specifies.

8.2.2.1 Standard Frame Detail (Transomed)

The permitted frame detail for the doorset shall meet the minimum requirements as outlined in section 7, where applicable. The detail for the permitted transom can be found within section 8.2.2.2 below.

8.2.2.2 Detail for Transom (Transomed)

It is possible to include a transom to separate a panelled overpanel within a door frame from the door leaf. It is not permitted to include a mullion within a doorset which is constructed using the shared framing design. When applied the transom shall meet the following specification:

Modular Frame specification		
Material	**Minimum section size (mm)**	**Minimum density (kg/m^3)**
Hardwood: (see section 2.1) The use of Beech (*Fagus species*) is NOT permitted.	Frame: 135 (d) x 44 (w) (excluding stop and rebate dimensions)	650

Notes:

When the door leaf includes rebated lippings, the transom must include stops in the aperture which facilitates the door leaf of the following dimensions:

Stop No.1: 63 (d) x 12 (w)

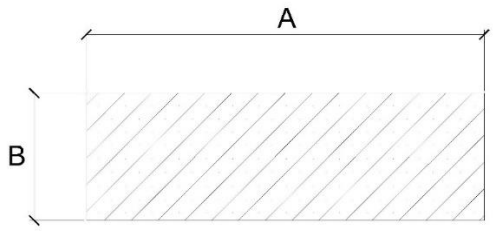
Stop No.2: 38 (d) x 16 (w)

(the two stops may be either integral or planted on)

When applied the material for the transom shall match the timber species used for the frame surrounding the door frame.

The transom when applied shall be mortice and tenon or butt jointed as depicted in section 8.2.1.2. The joints are required to be tight, with no gaps, and require mechanical fixing with steel screws which penetrate into the adjacent substrate by a minimum of 30mm.

Minimum Section Size



A: Transom depth = 135mm minimum

B: Transom width = 44mm minimum

8.2.2.3 Frame Jointing (Transomed)

Below are depictions of the framing joints that are deemed acceptable for corner jointing of transomed framing. Please note that the drawings are provided as general illustrations of each type of frame joint; actual construction in terms of intumescent seal location and material, etc. must be as the text within this document specifies.

Mortice & Tenon Joint

Butt Joint

The transom when applied shall be mortice and tenon or butt jointed as depicted above. The joints are required to be tight, with no gaps, and require mechanical fixing with steel screws which penetrate into the adjacent substrate by a minimum of 30mm..

8.3 Solid Panels

Solid overpanels are permitted for use with the modular framing option given in section 8.2.1 above (Modular Framing).

Solid overpanels are also permitted for use with the shared framing option given in section 8.2.2 above. (Shared Framing).

8.3.1 Solid Panel Construction (Side or Over Panels)

Based on the testing undertaken on the doorset design, it has been assessed to include the tested core construction as a solid fixed panel. This is because under test conditions the panel will be fixed within the perimeter framing limiting the deflection throughout the test duration and enhancing the expected fire resistance performance which was observed for the door leaf itself. Therefore, the following specification shall be met:

Element		Material (mm)	Dimensions (mm)	Minimum Density (kg/m^3)
Core	Inner	2 (t) rubber sandwiched between 9 (t) plasterboard	20 (t)	-
	Outer	Sauerland Spanplatte 14 (t) faced with 2 (t) cork oversailing the stiles and rails	18 (t)	-
Stiles & Rails		Sapele	59 (w) x 52 (t)	650
Facing		MDF	6 (t)	750

The panel must be lipped as specified in section 5.3, and the panel shall be constructed of a single board, joints are not permitted within any panels.

The minimum panel thickness after calibration is 67mm (i.e. a maximum of 0.5mm from both sides).

Decorative & protective facings may be applied to the surface of the solid panels in accordance with section 5.4.

The minimum panel thickness after finishes applied is 68mm.

In all cases the stop additional planted stops shall be positioned as detailed for the door leaf at the perimeter of the solid panel.

8.3.2 Intumescent Sealing Arrangement (Side or Over Panels)

Solid overpanels when included within a doorset design (in either modular or shared framing) shall include the same intumescent specification as utilised within the door leaf or frame reveal, fitted to the entire perimeter.

Permitted intumescent specifications are detailed in section 4.5.5 for 30 minute fire resistance performance and 4.5.6 for 60 minute fire resistance performance. Only one specification can be utilised with any single doorset, and the specification used shall match the specification used on the door leaf.

8.3.3 Fixing Arrangement (Side or Over Panels)

Solid panels must be fixed into the framing solution by steel screws appropriate for the timber-based substrates.

Screws shall be applied nominally centrally to the thickness of the solid panel, through the rear of the frame to all edges and transom reveal where applicable and shall penetrate into the solid panel by at least 30mm.

Fixings must be no more than 100mm from each corner and a maximum of 250mm centres in between.

When fitted the solid panel shall have no greater than 1mm between the panel edge and the adjacent framing element.

Where fitted within shared framing (transomed) the face of the solid overpanel shall be nominally in line with the face of the door leaf.

Where fitted within modular framing the panel may either be nominally in line with the face of the door leaf or centrally within the modular frame depth.

8.3.4 Maximum Dimensions (Side or Over Panels)

Based on the testing undertaken within the doorset design the following maximum dimensions are permitted for any single panel, subject to the doorset not exceeding 2950mm in width including outer framing dimensions.

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

The overall assembly shall form a rectilinear shape.

8.4 Glazed Fanlights

Based on the testing detailed within section 3, it has been possible to consider the use of glazed fanlights with the modular framing given in section 8.2.1 above.

It is possible to utilise glass and glazing systems with a Certifire certificate – Valid at the date of manufacture of the doorset which has been written in accordance with Warringtonfire Testing and Certification Ltd Technical Schedule 25. More information on the use of Certifire approved glass and glazing systems can be found within section 8.4.1.

The dimensions of the entire assembly shall not exceed 2950mm high for any single doorset including the dimension of the door frame, overpanels and fanlights.

8.4.1 Certifire Approved Glass & Glazing Systems

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 utilised to glaze fanlights for use with the doorset design, subject to the following.

- The chosen Certifire approved glass and glazing system must detail that it is suitable for use for 60 minutes fire resistance performance within a timber screen.
- Certifire approved glass and glazing systems may be utilised with the doorset design providing they are able to be applied in a self-contained modular frame.
- The modular frame must meet or exceed the specification for modular frames given within section 8.2.1 above, however, must be fixed to the doorset or adjacent modules in the manner specified in section 8.2.1.3.
- Where a Certifire certificate is utilised to justify fanlights, the full requirements given within that certificate for the frame (which may require an increase in dimensional requirements given in section 8.2.1 for example), glass type, glazing system and glass retention method and frame profile specified must be complied with.
- Parameters in section 8.4 above relating to the overall dimension of the doorset design including fanlight modules must not be exceeded.
- Bead Fixings - The required pin or screw specification as given in the supporting Certifire certificate must be used, alternatives fixing details are not permitted.
- The doorset assembly must remain rectilinear.

9 Adhesives

The following adhesives must be used in the construction of the doorsets. These may be hand applied or may be applied 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	Cross link PVA
Door blank facings	Cross link PVA
Decorative facings	PVA
Timber lipping	PU Purmelt 270/7 or Cross link PVA

10 Hardware

10.1 General

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

- Latches & locks: Test Standard EN 12209
- Single axis hinges: Test Standard EN 1935
- Controlled door closing devices: Test Standard EN 1154
- Door co-ordinators: Test Standard EN 1158
- Emergency exit hardware: Test Standard EN 179
- Panic exit hardware: Test Standard EN 1125.

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

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

- The component has been successfully tested to BS 476: Part 22: 1987 or BS EN 1634-1 in a suitably similar type of doorset e.g. timber leaf in timber frame.
- As a result of an assessment of the appropriateness of the item of hardware, based on test evidence not commissioned by Enfield Speciality Doors.
- 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

No item of hardware should be within 200mm of another item of hardware unless there is test evidence to demonstrated 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.

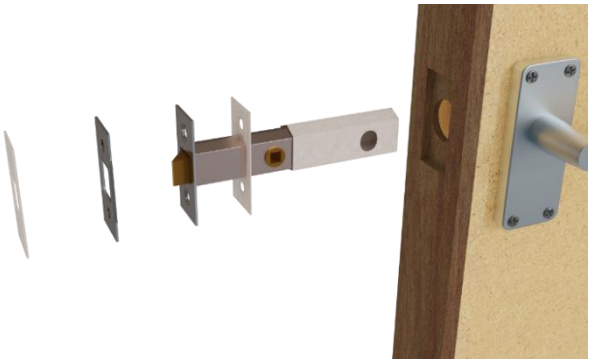
10.2 Intumescent to Hardware

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 each blade of the hinge.	1.5 (t) Norseal Graphite
Lock/latches	Under forend & keep and encasing the latch body within the leaf.	1 (t) Interdens ®
Handles & escutcheons	Lining the footprint of the handle and escutcheon.	1 (t) Interdens ®
Flush bolts	Encasing the entire body of the flush bolt including the back surface of the face plate	1 (t) 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.

Where it is stated that intumescent is not required for a particular element of hardware, it is permitted to use up to 2mm thick MAP, Interdens or graphite-based gasket tested for the particular application [as appropriate for the hardware]. It is the opinion of Warringtonfire that the additional protection will not detract from the fire resistance performance under test conditions.

10.3 Essential Hardware

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

Configuration	Hardware
LSASD	• Latch • Handle • Hinges • Self-closing device (closer)
ULSASD	• Hinges • Self-closing device (closer)
LSADD	• Latch • Handle • Hinges • Self-closing device (closer) • Flush bolt • Door Selector (where rebated meeting edges are used)
ULSADD	• Hinges • Self-closing device (closer) • Door Selector (where rebated meeting edges are used)

10.4 Latches & Locks

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

10.4.1 Single Point Engagement

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

Element	Manufacturer & Product Reference
Locks & latches	1. Union ASSA Abloy Optimus3 mortice lock / latch Ref. JLZE21R-SS60 – BMT/FER/F13291

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

Element	Specification
Maximum forend and strike plate dimensions	235mm high x 25mm wide x 4mm thick
Maximum body dimensions	165mm high x 100mm wide x 18mm thick
Intumescent protection	see section 10.2
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel, stainless steel or brass with a melting point ≥ 800^0 C

Notes:

1. In all instances the location of the handle must be between 825 – 1225mm from the threshold.

10.4.2 Cylinders

Components with the following specification are also deemed acceptable.

- Where required for use with single point latches, the cylinder must be constructed of either brass or steel with a melting point in excess of 800^{0}C.
- The cylinder must be compatible with the lock/latch.
- Cylinder dimensions may be up to 33mm high x 17mm wide at the maximum dimension and may be of euro profile or oval.
- Single and double cylinders, along with cylinder & turn are permitted.
- Door preparation for single cylinders shall penetrate only 2/3rds of the door thickness.
- Intumescent protection and tightness of fitting:
    - As 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

The table below details the tested handles that are approved.

Element	Manufacturer & Product Reference
Handles	1. Union ASSA Abloy Lever type handle Ref. J1000RR501-RR501 – BMT/FER/F13291

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 52mm
- Handle on back plate with a back plate size up to 243mm high x 52mm 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.

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

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

Element	Manufacturer & Product Reference
Hinges	1. Royde and Tucker H107 Lift off Hinges – BMT/FER/F13291

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

Element	Specification
Blade height:	90 - 120mm
Blade width (excluding knuckle):	30 - 41mm
Blade thickness	5 - 6mm
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	4 hinges are required:	Top	100-200mm 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	150 - 300mm from the foot of leaf to bottom of hinge
Intumescent protection:		See section 10.2	

10.7 Doorset Self Closing

Doorset automatic self-closing can be provided by:

- Overhead face fixed closers

Automatic doorset self-closing devices such as transom mounted, and offset pivots used with floor springs or concealed closers of any form are not considered acceptable for use with the ESD Ac43 doorset range.

10.7.1 Overhead Face Fixed Closer

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

Element	Manufacturer & Product Reference
Overhead face-fixed closers	1. ASSA Abloy DC200A – BMT/FER/F13291

Alternatively, 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.

10.8 Bolts

10.8.1 Flush Bolts

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

- 203mm long x 34mm deep x 20mm wide.

Flush bolts must be steel, and the mortice must be as tight to the mechanism as is compatible with its operation. All edges of the mortice of the keep and body must be protected with intumescent gaskets as specified in section 10.2. Alternatively, the hardware manufacturers tested gaskets may be used.

Flush bolt installation and intumescent protection

10.8.2 Surface Mounted Face Fixed Bolts

Surface mounted face fixed bolts constructed from steel, stainless steel 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 Pull Handles

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

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

10.9.2 Push Plates & Kick Plates

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.

10.9.3 Security Viewers

Up to 2no. viewers are permitted within a single door leaf, viewers are to be positioned no closer than 100mm to door edges, glazed apertures or any other hardware component.

Components with the following specification are deemed acceptable.

- Door security viewers with brass or steel bodies of a diameter less than or equal to 15mm may be used provided that the through-hole is bored tight to the case of the viewer (maximum tolerance +1 mm). Lenses must be glass and the item must be protected with a tested acrylic intumescent mastic and / or a 0.5 – 1.0mm thick graphite based intumescent wrap.

10.9.4 Door Selectors

These items are suitable in the following applications only:

Configurations: All double leaf door configurations

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

10.9.5 Environmental Seals

Two different environmental seals have been successfully tested as part of the ESD Ac43 doorset design. The Norseal 710 and Norseal 788 seals were both fitted and successfully tested in report BMT/FER/F13291.

On this basis, PVC & silicon based flame retardant acoustic, weather and dust seals (for example those referenced above) may be fitted to this doorset design without compromising the fire resistance performance, providing their fitting does not interfere with the activation of the intumescent seals or hinder the self-closing function of the leaves.

10.9.6 Threshold drop Seals

The below detailed drop seals were successfully tested in BMT/FEP/F14207 Revision B and BMT/FEP/15288 Revision A. Based on the successful testing of the drop down seals they have been considered acceptable for use with the ESD Ac43 doorset design. This is based on the fact that both drop down seals have demonstrated a performance over 60 minutes fire resistance performance in a door leaf which is thinner than that used within the ESD Ac43 doorset design. Therefore, the increased thickness of the ESD Ac43 doorset design is believed to in fact improve the fire resistance performance observed with the thinner door leaves. The evidence demonstrates the performance of the drop down seals without additional intumescent protection and therefore, it is not required.

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

Product	Manufacturer
ST422	Sealed Tight Solutions Ltd
ST422 GT	Sealed Tight Solutions Ltd

Alternative drop down seals are not permitted.

10.9.7 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.

10.9.8 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.

10.9.9 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.

10.9.10 Panic Hardware

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

The fitting of panic hardware is not considered to change the latching arrangement of the doorset and therefore the permitted leaf size shall be established using unlatched doorset configurations as detailed within section 4.5.5 or 4.5.6.

11 Installation

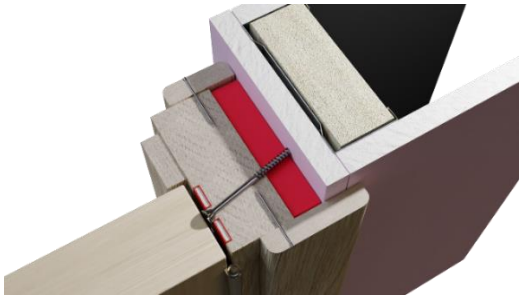
11.1 General

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

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

11.2 Door Frame Installation

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

Permitted Installations	
	Instances where the door frame and the wall of the same depth such that architraves are fitted flush to both faces. Note that the minimum door frame section size (width and depth) must be as per the requirements noted in this report – see door frame section. Architraves requirements are documented in the firestopping section of this report.
	Instances where the wall thickness is greater than the door frame depth. In this scenario timber architraves 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.

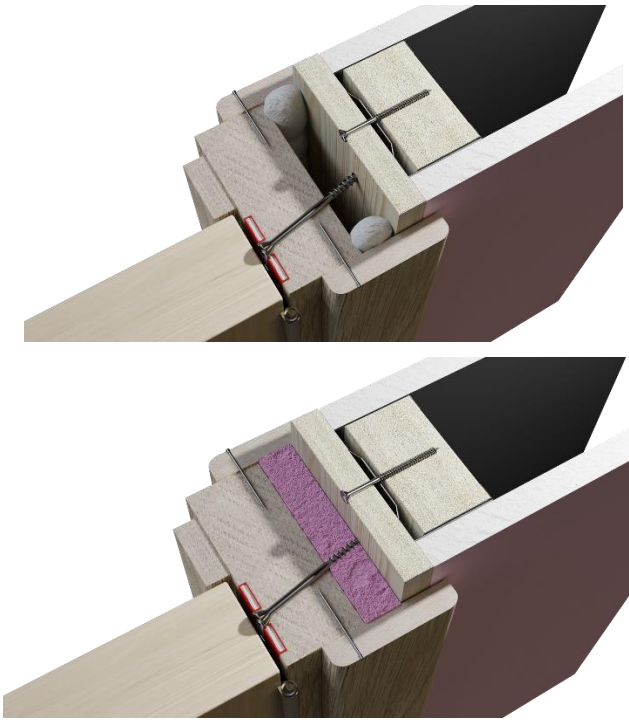
Note:

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 construction as detailed in section 11.5 the entire thickness of the leaf shall be within the thickness of the supporting construction.

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 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.	N/A
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	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.

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) Masonry 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.
- Masonry constructions are anticipated to be constructed of a solid block or brickwork to receive the fixings.

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

11.5.2 Structural Opening

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

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

11.5.3 Fixity

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

For single leaf doorset without sidepanels, the frame jambs only are to be fixed to the supporting construction using steel fixings at 600mm maximum centres and maximum of 150mm from 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 ESD Ac43 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, except where rebated lippings are used where no modification can be made.

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 / Bottom edge of the leaf This is the maximum tolerance for fire resistance only.	8mm between bottom of leaf and top of floor covering.

12 Insulation Performance

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

Insulation Performance Criteria	
Type	Details
Non-insulating	Doorsets incorporating a glazed fanlight
Fully insulating	Doorsets without a glazed fanlight

13 Conclusion

If the ESD Ac43 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 30 or 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: DocuSigned by: Jamie Cunningham 03FFF397C2BE4E4...

Name: Jamie Cunningham

Position: Compliance Manager

Date: 29-May-2024

For and on behalf of: Enfield Specialist Doors

15 Limitations

The following limitations apply to this assessment:

1) This field of application 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.
2) This field of application 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 evaluation is invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence.
3) This field of application has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.
4) Opinions and interpretation expressed herein are outside the scope of UKAS accreditation.
5) This field of application relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions, against the ISO 834 time/temperature curve that is 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 field of application, the element is suitable for its intended purpose.
6) This field of application report represents our opinion as to the performance likely to be demonstrated on a test in accordance with BS 476: Part 22: 1987, on the basis of the test evidence referred to in this report. We express no opinion as to whether that evidence, and/or this field of application 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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8) The version/revision stated on the front of this Field of Application supersedes all previous versions/revisions and must be used to manufacture doorsets from the stated validity date on this front cover. Previous revisions of the Field of Application cannot be used once an updated Field of Application has been issued under a new revision.

16 Validity

1) The assessment is initially valid for five years after which time it is recommended to be submitted to Warringtonfire for re-appraisal.
2) This assessment report is not valid unless it incorporates the declaration given in Section 14 duly signed by the applicant.

Position:	Assessor	Reviewer
Signature:	DocuSigned by: 43935C1A192A419...	DocuSigned by: 3A9C822F3E7F487...
Name:	**N Whitelock***	**C Newton***
Title:	Technical Manager, Doors & Smoke Leakage	Product Assessor

* For and on behalf of Warringtonfire

Appendix A: Revisions

Rev.	WF Ref.	Date	Description
A	WF413515	30.04.19	Technical review and revalidation for a further 5 years. Update to Warringtonfire branding and a reduction in 30 minute glazing aperture size from 1m to 0.6m.
B	WF543216	22.05.24	Technical review and revalidation for a further 5 years, inclusion of BMT/FEP/F14207 Revision B and BMT/FEP/F15288 Revision A to provide evidence of drop down seals.

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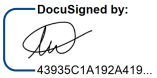
Nikolas Whitelock nikolas.whitelock@warringtonfire.com Security Level: Email, Account Authentication (None)	DocuSigned by:  43935C1A192A419... Signature Adoption: Uploaded Signature Image Using IP Address: 109.158.216.68	Sent: 23-05-24 | 14:39 Viewed: 23-05-24 | 14:46 Signed: 23-05-24 | 14:46
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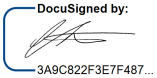
Chris Newton chris.newton@warringtonfire.com Security Level: Email, Account Authentication (None)	DocuSigned by:  3A9C822F3E7F487... Signature Adoption: Uploaded Signature Image Using IP Address: 86.157.69.168	Sent: 23-05-24 | 14:46 Viewed: 23-05-24 | 15:34 Signed: 23-05-24 | 15:36
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