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Title

Field of Application for:
Halspan® 90 Doorsets

For 90 Minutes Fire Resistance

Report No.:

Chilt/A05151 Revision L

Issue Date:

06th November 2024

Valid Until:

06th November 2029

Job Reference:

WF530654

Prepared for:

Halspan Limited
Regent House,
Regent Centre,
West Lothian,
EH49 7HU
United Kingdom

Written permission must be obtained from Halspan Limited in order to manufacture doorsets within the scope of this assessment.

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 Halspan Limited. and relates to the fire resistance of 90 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 Field of Application has been written using appropriate test evidence generated at UKAS accredited laboratories[1], 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.

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

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 Halspan® 90 doorset designs, for 90 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 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.

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 Halspan® 90 doorset designs if tested in accordance with BS 476: Part 22: 1987.

As this document is intended for use within the Q-Mark 3rd Party Certification Scheme, evidence of sampled testing is required. An audit test (test reference WF547081) to the principles of BS476 Part 22 was conducted for Timbmet Door Solutions Private Ltd on 4th November 2024 with test confirmation of the specimen achieving 101 minutes integrity performance. The tested specimen was sampled on 3rd September 2024 under BM Trada sampling contract reference SC23332A, which states the specimen was a Halspan 90 doorset built in accordance with Chilt/A05151 Rev K. This test has not been utilised to support the scope of this document.

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 Chilt/RF04037

Date of Test:	30th April 2004
Identification of Test Body:	Chiltern International Fire Ltd. UKAS No. 1762 (Now trading as: Warringtonfire Testing and Certification Ltd)
Sponsor:	Halspan Ltd
Tested Product:	Unlatched, Single Acting, Double Leaf Doorset (A) and an Unlatched, Single Acting, Single Leaf Doorset (B) – ULSADD & ULSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	Doorset A: BS 476: Part 22: 1987, Method 7 Doorset B: BS 476: Part 22: 1987, Method 6
Performance:	**Integrity A:** 77 minutes **Integrity B:** 110 minutes **Insulation A:** 77 minutes **Insulation B:** 110 minutes
Reason for Use:	For use as primary evidence for: • Hardware • Hardware intumescent The 77-minute integrity failure at the glazing has been ignored as the glass and glazing system for rectangular apertures used within the test has not been included within this assessment.
Failure Mode:	Initial Failure: Doorset A, Continuous flaming at left hand leaf glazing perimeter at 77 minutes. No further failure until in excess of 93 minutes of elapsed test duration.

3.1.2 Test Report Chilt/RF06048B

Date of Test:	25th April 2006
Identification of Test Body:	Chiltern International Fire Ltd. UKAS No. 1762 (Now trading as: Warringtonfire Testing and Certification Ltd)
Sponsor:	Halspan Ltd
Tested Product:	Unlatched, Single Acting, Single Leaf Doorset – ULSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 95 minutes **Insulation:** 95 minutes
Reason for Use:	For use as primary evidence for: • Frame 2 – Steel • Perimeter intumescent, Leaf Sizes & Configurations • Hardware • Hardware intumescent • Installation

3.1.3 Test Report Chilt/RF09056

Date of Test:	7th May 2009
Identification of Test Body:	Chiltern International Fire Ltd. UKAS No. 1762 (Now trading as: Warringtonfire Testing and Certification Ltd)
Sponsor:	Halspan Ltd
Tested Product:	2No. Unlatched, Single Acting, Single Leaf Doorsets – ULSASD doorset B including a glazed aperture
Tested Orientation:	Both hung opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	Doorset A: BS 476: Part 22: 1987, Method 6 Doorset B: BS 476: Part 22: 1987, Method 7
Performance:	**Integrity A:** 92 minutes **Integrity B:** 95 minutes **Insulation A:** 92 minutes **Insulation B:** 95 minutes
Reason for Use:	For use as primary evidence for: • Frame 1 • PVC Lippings • Perimeter intumescent, Leaf Sizes & Configurations • Glazing within the leaf • Hardware • Hardware intumescent

3.1.4 Test Report Chilt/RF10078

Date of Test:	29th June 2010
Identification of Test Body:	Chiltern International Fire Ltd. UKAS No. 1762 (Now trading as: Warringtonfire Testing and Certification Ltd)
Sponsor:	Halspan Ltd
Tested Product:	Doorset A: Unlatched, Single Acting, Single Leaf Doorset – ULSASD Doorset B: Double Acting, Single Leaf Doorset – DASD
Tested Orientation:	Both hung opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	Doorset A: BS 476: Part 22: 1987, Method 6 Doorset B: BS 476: Part 22: 1987, Method 7
Performance:	**Integrity A:** 95 minutes **Integrity B:** 83 minutes **Insulation A:** 95 minutes **Insulation B:** 83 minutes
Reason for Use:	For use as primary evidence for: • Frame 1 • Perimeter intumescent, Leaf Sizes & Configurations • Hardware The 83-minute integrity failure at the leaf edge was observed in a double acting arrangement with steel frames, based on this failure the intumescent specification and configuration are not considered acceptable herein.
Failure Mode:	Initial Failure: Doorset B, Continuous flaming at 450mm down from the top closing corner at 83 minutes. No further failure until in excess of 91 minutes of elapsed test duration.

3.1.5 Test Report CFR1103311 Rev 2 LH

Date of Test:	31st March 2011
Identification of Test Body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Halspan Ltd
Tested Product:	Unlatched, Single Acting, Single Leaf Doorset – ULSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 90 minutes **Insulation:** 90 minutes
Reason for Use:	For use as primary evidence for: • Frame 1 • Perimeter intumescent, Leaf Sizes & Configurations • Hardware

3.1.6 Test Report CFR1203271/01

Date of Test:	27th March 2011
Identification of Test Body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Halspan Ltd
Tested Product:	Unlatched, Single Acting, Single Leaf Doorset – ULSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 83 minutes **Insulation:** 83 minutes
Reason for Use:	For use as primary evidence for: • Drop Down Seals The 83-minute integrity failure at the lock position and subsequent failure at 89 minutes at the top closing corner have been taken into consideration resulting in a limitation of the permitted leaf sizes within this assessment.
Failure Mode:	Initial Failure: Cotton pad test 100mm above the latch position at 83 minutes and further failure observed by means of a cotton pad test at the top closing corner at 89 minutes. No further failure until in excess of 91 minutes of elapsed test duration.

3.1.7 Test Report WF372528

Date of Test:	10th November 2016
Identification of Test Body:	Exova Ltd. UKAS No. 1762 (Now trading as: Warringtonfire Testing and Certification Limited)
Sponsor:	Halspan Ltd
Tested Product:	2No. Latched, Single Acting, Single Leaf Doorsets – LSASD
Tested Orientation:	Both hung opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 8
Performance:	**Integrity A:** 91 minutes **Integrity B:** 100 minutes **Insulation A:** 0 minutes **Insulation B:** 0 minutes
Reason for Use:	For use as primary evidence for: • Frame 1 • Perimeter intumescent, Leaf Sizes & Configurations • Glazing within the leaf • Glass and Glazing Systems • Firestopping

3.1.8 Test Report WF386186 (Doorset A)

Date of Test:	17th August 2017
Identification of Test Body:	Exova Ltd. UKAS No. 1762 (Now trading as: Warringtonfire Testing and Certification Limited)
Sponsor:	Halspan Ltd
Tested Product:	Latched, Single Acting, Single Leaf Doorset – LSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 7
Performance:	**Integrity:** 67 minutes **Insulation:** 67 minutes
Reason for Use:	For use as primary evidence for: • Frame 1 • Perimeter intumescent, Leaf Sizes & Configurations • Jointing Core Material • Firestopping The 67-minute integrity failure at the glazing has been ignored as the glass and glazing system for rectangular apertures used within the test has not been included within this assessment.
Failure Mode:	Initial Failure: Continuous flaming at the perimeter of the glazing at 67 minutes. No further failure until in excess of 97 minutes of elapsed test duration.

3.1.9 Test Report UB128-1A

Date of Test:	22nd July 2020
Identification of Test Body:	Thomas Bell-Wright International Consultants (TBWIC), UKAS No. 4439
Sponsor:	Halspan Limited
Tested Product:	Latched, Single Acting, Single Leaf Doorset – LSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	Intertek Middle East (Certification Body), G1058977, 14th July 2020
Test Standard:	EN 1634-1:2014+A1:2018
Performance:	**Integrity:** 95 minutes **Insulation:** 95 minutes
Reason for use:	For use as primary evidence for: • Frame 1 • Hardware • Firestopping

3.1.10 Test Report FRR – 2008/5507

Date of Test:	27th August 2020
Identification of Test Body:	Material Lab Testing Services L.L.C., Dubai ILAC (EIAC – Emirates International Accreditation Centre): 008-LB-TEST
Sponsor:	Halspan Limited
Tested Product:	Latched, Single Acting, Single Leaf Doorset – LSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 7
Performance:	**Integrity:** 93 minutes **Insulation:** 93 minutes
Reason for use:	For use as primary evidence for: • Glass and Glazing Systems • Hardware

3.1.11 Test Report FRR – 2009/1221 Doorset B

Date of Test:	9th September 2020
Identification of Test Body:	Material Lab Testing Services L.L.C., Dubai ILAC (EIAC – Emirates International Accreditation Centre): 008-LB-TEST
Sponsor:	Halspan Limited
Tested Product:	Latched, Single Acting, Single Leaf Doorset – LSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 103 minutes **Insulation:** 103 minutes
Reason for use:	For use as primary evidence for: • Frame 1 • Perimeter intumescent, Leaf Sizes & Configurations • Feature Grooves • Hardware

3.1.12 Test Report FRR – 2009/2359

Date of Test:	10th September 2020
Identification of Test Body:	Material Lab Testing Services L.L.C., Dubai ILAC (EIAC – Emirates International Accreditation Centre): 008-LB-TEST
Sponsor:	Halspan Limited
Tested Product:	Unlatched, Single Acting, Double Leaf Doorset – ULSADD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 90 minutes **Insulation:** 90 minutes
Reason for use:	For use as primary evidence for: • Frame 1 • Perimeter intumescent, Leaf Sizes & Configurations • Feature Grooves • Hardware

3.1.13 Test Report UI082-A (Rev. 01)

Date of Test:	27th October 2020
Identification of Test Body:	Thomas Bell-Wright International Consultants (TBWIC), UKAS No. 4439
Sponsor:	Halspan Limited
Tested Product:	Latched, Single Acting, Double Leaf Doorset – LSADD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 104 minutes **Insulation:** 104 minutes
Reason for use:	For use as primary evidence for: • Frame 1 • Perimeter intumescent, Leaf Sizes & Configurations • Feature Grooves • Astragals • Hardware intumescent • Hardware

3.1.14 Test Report FRR – 2110/1497

Date of Test:	13th October 2021
Identification of Test Body:	Material Lab Testing Services L.L.C., Dubai ILAC (EIAC – Emirates International Accreditation Centre): 008-LB-TEST
Sponsor:	Halspan Limited
Tested Product:	Latched, Single Acting, Single Leaf Doorset – LSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 99 minutes **Insulation:** 99 minutes
Reason for use:	For use as primary evidence for: • Hardware

3.1.15 Test Report FRR – 2110/1496

Date of Test:	14th October 2021
Identification of Test Body:	Material Lab Testing Services L.L.C., Dubai ILAC (EIAC – Emirates International Accreditation Centre): 008-LB-TEST
Sponsor:	Halspan Limited
Tested Product:	Latched, Single Acting, Double Leaf Doorset – LSADD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 92 minutes **Insulation:** 92 minutes
Reason for use:	For use as primary evidence for: • Hardware Intumescent • Hardware

3.1.16 Test Report FRR – 2112/1350

Date of Test:	9th December 2021
Identification of Test Body:	Material Lab Testing Services L.L.C., Dubai ILAC (EIAC – Emirates International Accreditation Centre): 008-LB-TEST
Sponsor:	Halspan Limited
Tested Product:	Latched, Single Acting, Double Leaf Doorset – LSADD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 7
Performance:	**Integrity:** 96 minutes **Insulation:** 96 minutes
Reason for use:	For use as primary evidence for: • Glass and Glazing Systems • Hardware Intumescent • Hardware

3.1.17 Test Report VH061-1A&2A

Date of Test:	17th February 2022
Identification of Test Body:	Thomas Bell-Wright International Consultants (TBWIC), UKAS No. 4439
Sponsor:	Halspan Limited
Tested Product:	2No. Latched, Single Acting, Single Leaf Doorsets – LSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity A:** 94 minutes **Integrity B:** 100 minutes **Insulation A:** 94 minutes **Insulation B:** 100 minutes
Reason for use:	For use as primary evidence for: • Hardware

3.1.18 Test Report CFR1509241_A LH

Date of Test:	24th September 2015
Identification of Test Body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Halspan Limited
Tested Product:	Latched, Single Acting, Single Leaf Doorset – LSASD
Tested Orientation:	Opening in towards the heating conditions
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 92 minutes **Insulation:** 92 minutes
Reason for Use	For use as primary evidence for: • Glass and Glazing Systems

3.1.19 Test Report BMT/FEP/F16046 AR1 (Doorset A)

Date of Test:	9th January 2014
Identification of Test Body:	Exova Ltd. UKAS No. 1762 (Now trading as: Warringtonfire Testing and Certification Limited)
Sponsor:	Halspan Ltd
Tested Product:	Latched, Single Acting, Single Leaf Doorset – LSASD
Tested Orientation:	Opening in towards the heating conditions
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 7
Performance:	**Integrity:** 92 minutes **Insulation:** 92 minutes
Reason for Use	For use as primary evidence for: • Glass and Glazing Systems

3.1.20 Test Report WF384941 AR1

Date of Test:	20th June 2017
Identification of Test Body:	Exova Ltd. UKAS No. 1762 (Now trading as: Warringtonfire Testing and Certification Limited)
Sponsor:	Halspan Ltd
Tested Product:	Doorset A: Latched, Single Acting, Single Leaf Doorset – LSASD Doorset B: Latched, Single Acting, Single Leaf Doorset – LSASD
Tested Orientation:	Opening in towards the heating conditions
Sampling information:	No sampling report included
Test Standard:	Doorset A: BS 476: Part 22: 1987, Method 7 Doorset B: BS 476: Part 22: 1987, Method 7
Performance:	**Integrity A:** 94 minutes **Integrity B:** 91 minutes **Insulation A:** 94 minutes **Insulation B:** 91 minutes
Reason for Use	For use as primary evidence for: • Glass and Glazing Systems • Door Gaps

3.1.21 Test Report DFR0503171

Date of Test:	17th March 2005
Identification of Test Body:	Dixon Internal Group Limited
Sponsor:	TDSL
Tested Product:	Indicative leaf blank with a glazed aperture and 2No. flush handles.
Tested Orientation:	Symmetrical glazing system, Not Applicable
Sampling information:	No sampling report included
Test Standard:	To the principles of BS 476: Part 22: 1987.
Performance:	**Integrity:** 92 minutes **Insulation:** 79 minutes
Reason for Use	For use as primary evidence for: • Hardware

3.1.22 Test Report CFR1003181 Rev 2

Date of Test:	18th March 2010
Identification of Test Body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Halspan Limited
Tested Product:	An unlatched, single acting, single leaf doorset - ULSASD.
Tested Orientation:	Opening in towards the heating conditions
Sampling information:	No sampling report included
Test Standard:	BS EN 1634-1:2008
Performance:	**Integrity:** 91 minutes **Insulation:** 91 minutes
Reason for Use	For use as primary evidence for: • PVC Lippings

3.1.23 Test Report BMT/FEI/F13127

Date of Test:	9th January 2014
Identification of Test Body:	BM TRADA (Now trading as Warringtonfire Testing and Certification Ltd)
Sponsor:	Pilkington Deutschland AG
Tested Product:	Indicative top half of a doorset with a glazed aperture.
Tested Orientation:	Opening in towards the heating conditions
Sampling information:	No sampling report included
Test Standard:	To the principles of BS 476: Part 22: 1987.
Performance:	**Integrity:** 110 minutes
Reason for Use	For use as primary evidence for: • Glass and Glazing Systems

3.1.24 Test Report WF369731

Date of Test:	29th July 2016
Identification of Test Body:	Exova Ltd. (Now trading as: Warringtonfire Testing and Certification Limited)
Sponsor:	Halspan Limited
Tested Product:	Indicative top half of a doorset with a concealed closer.
Tested Orientation:	Opening in towards the heating conditions
Sampling information:	No sampling report included
Test Standard:	To the principles of BS 476: Part 22: 1987.
Performance:	**Integrity:** 100 minutes
Reason for Use	For use as primary evidence for: • Hardware

3.1.25 Test Report CFR1405291

Date of Test:	29th May 2014
Identification of Test Body:	Cambridge Fire Research
Sponsor:	Intumescent Seals, A division of Dixon International Group Ltd
Tested Product:	Indicative leaf blank with 2No glazed apertures.
Tested Orientation:	Symmetrical glazing system, Not Applicable
Sampling information:	No sampling report included
Test Standard:	To the principles of BS 476: Part 22: 1987.
Performance:	**Integrity:** 65 minutes **Insulation:** 18 minutes
Reason for Use:	For use as primary evidence for: • Glass and Glazing Systems The 65-minute integrity failure at one of the glazing apertures has been ignored as the glass and glazing system for rectangular apertures used within the test has not been included within this assessment.
Failure Mode:	Initial Failure: 25mm gap gauge failure observed at 65 minutes with subsequent failure of continuous flaming occurring at 71 minutes, both failures were observed on the right aperture. No further failure until in excess of 110 minutes of elapsed test duration.

3.1.26 Test Report CFR1405301

Date of Test:	30th May 2014
Identification of Test Body:	Cambridge Fire Research
Sponsor:	Intumescent Seals, A division of Dixon International Group Ltd
Tested Product:	Indicative leaf blank with 2No glazed apertures.
Tested Orientation:	Symmetrical glazing system, Not Applicable
Sampling information:	No sampling report included
Test Standard:	To the principles of BS 476: Part 22: 1987.
Performance:	**Integrity:** 56 minutes **Insulation:** 16 minutes
Reason for Use:	For use as primary evidence for: • Glass and Glazing Systems The 56-minute integrity failure at one of the glazing apertures has been ignored as the glass and glazing system for rectangular apertures used within the test has not been included within this assessment.
Failure Mode:	Initial Failure: Cotton pad test failure observed at 56 minutes with subsequent failure of continuous flaming occurring at 73 minutes, both failures were observed on the right aperture. No further failure until in excess of 93 minutes of elapsed test duration.

3.1.27 Test Report CFR1507271_A LH

Date of test	27th July 2015
Identification of test body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Halspan Limited
Tested Product:	Latched, Single Acting, Single Leaf Doorset – LSASD
Tested Orientation:	Doorset orientated to open toward heating conditions.
Test Standard:	BS 476: Part 22: 1987, Method 7
Performance	**Integrity:** 89 minutes **Insulation:** 89 minutes
Failure Mode:	Doorset LH Initial Failure: Sustained Flaming at the head of the leaf at 89 minutes No Further failures, with test terminated at 105 minutes. Flashing observed at latch from 97 minutes
Reason for use:	For use as primary evidence for: • Glass and Glazing Systems • Hardware Intumescent • Hardware The 89-minute integrity failure across the head has been taken into consideration and the intumescent specification given in this test must not be utilised within this doorset design.
Failure Mode:	Initial Failure: Continuous flaming failure observed at 89 minutes across the head of the leaf. No further failure until in excess of 105 minutes of elapsed test duration.

3.1.28 Test Report CFR1203271/02 RH

Date of Test:	27th March 2011
Identification of Test Body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Halspan Limited
Tested Product:	Unlatched, Single Acting, Single Leaf Doorset – ULSASD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 85 minutes **Insulation:** 85 minutes
Reason for Use:	For use as primary evidence for: • Drop Down Seals The 85-minute integrity failure at the lock position has been taken into consideration resulting in a limitation of the permitted leaf sizes of ULSASD within this assessment.
Failure Mode:	Initial Failure: Cotton pad test 100mm above the latch position at 85 minutes No further failure until in excess of 93 minutes of elapsed test duration.

3.1.29 Test Report Chilt/RF04096

Date of Test:	6th December 2004
Identification of Test Body:	Chiltern International Fire Ltd. UKAS No. 1762 (Now trading as: Warringtonfire Testing and Certification Ltd)
Sponsor:	Halspan Ltd
Tested Product:	Unlatched, Single Acting, Double Leaf Doorset – ULSADD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 85 minutes **Insulation:** 85 minutes
Reason for Use:	For use as primary evidence for: • Hardware The 85-minute integrity failure at the lock position has been taken into consideration resulting in a limitation of the permitted leaf sizes within this assessment.
Failure Mode:	Initial Failure: Continuous flaming across the head of the leaves was observed at 85 minutes subsequently a cotton pad test at the latch position after 88 minutes, followed by continuous flaming at 89 minutes also at the latch location. No further failure until in excess of 94 minutes of elapsed test duration.

3.1.30 Test Report WF156775

Date of Test:	26th January 2006
Identification of Test Body:	Warringtonfire Global Safety UKAS No. 0249 (Now trading as: Warringtonfire Testing and Certification Ltd)
Sponsor:	Halspan Limited
Tested Product:	Unlatched, Single Acting, Double Leaf Doorset – ULSADD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 86 minutes **Insulation:** 86 minutes
Reason for Use:	For use as primary evidence for: • Hardware The 86-minute integrity failure has been taken into consideration resulting in a limitation of the permitted leaf sizes within this assessment.
Failure Mode:	Initial Failure: Cotton pad test at the head of the meeting edges after 86 minutes, followed by continuous flaming at 89 minutes at the top right hanging corner. No further failure until in excess of 92 minutes of elapsed test duration.

3.1.31 Test Report WF375153 AR1 Doorset A

Date of Test:	22nd December 2016
Identification of Test Body:	Exova Ltd. UKAS No. 1762 (Now trading as: Warringtonfire Testing and Certification Limited)
Sponsor:	Halspan Ltd
Tested Product:	Latched, Single Acting, Double Leaf Doorset – LSADD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance:	**Integrity:** 107 minutes **Insulation:** 107 minutes
Reason for Use:	For use as primary evidence for: • Frame 1 – Hardwood • Perimeter intumescent, Leaf Sizes & Configurations

3.1.32 Test Report WF376585 AR1 Doorset A

Date of Test:	04th January 2017
Identification of Test Body:	Exova Ltd. UKAS No. 1762 (Now trading as: Warringtonfire Testing and Certification Limited)
Sponsor:	Halspan Ltd
Tested Product:	Latched, Single Acting, Double Leaf Doorset – LSADD
Tested Orientation:	Opening in towards heating condition
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 7
Performance:	**Integrity:** 100 minutes **Insulation:** 100 minutes
Reason for Use:	For use as primary evidence for: • Glass and Glazing Systems

3.1.33 Test Report CFR1507091_A RH Doorset

Date of test	09th July 2015
Identification of test body:	Cambridge Fire Research Ltd. UKAS No. 4319
Sponsor:	Halspan Limited
Tested Product:	Latched, Single Acting, Single Leaf Doorset – LSASD
Tested Orientation:	Doorset orientated to open toward heating conditions.
Sampling information:	No sampling report included
Test Standard:	BS 476: Part 22: 1987, Method 6
Performance	**Integrity:** 94 minutes **Insulation:** 72 minutes
Reason for use:	For use as primary evidence for: • Glass and Glazing Systems

4 Technical Specification

4.1 General

The technical specification for the proposed door assembly 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 Halspan® 90 door design can include various design features:

1. Glazing
2. Feature Grooves including insert materials
3. Decorative facings
4. PVC lippings
5. Decorative planted on timber mouldings
6. Various hardware options

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

Doorsets constructed using different frame options can include various design features as summarised below.

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

Specific installation details relating to frame types can be found within section 10 which must be complied with.

4.4.1 Frame 1 – Hardwood Timber

The construction of the Frame 1 door frame is hardwood (not Beech, *fagus species)* with minimum frame dimensions fitted flush to wall or within the wall thickness.

For further information on the specification and construction of the door frames see section 7.

4.4.2 Frame 2 – Steel

The construction of the Frame 2 door frame is steel with minimum frame dimensions and material thickness. 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 frame option and doorset configuration is based on the tests listed in Section 3 and takes into account:

1. The margin of over performance above 90 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 configurations 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.

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

4.5.2 Configuration

The table below shows the permitted configurations for the Halspan® 90 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 and door frame tested.

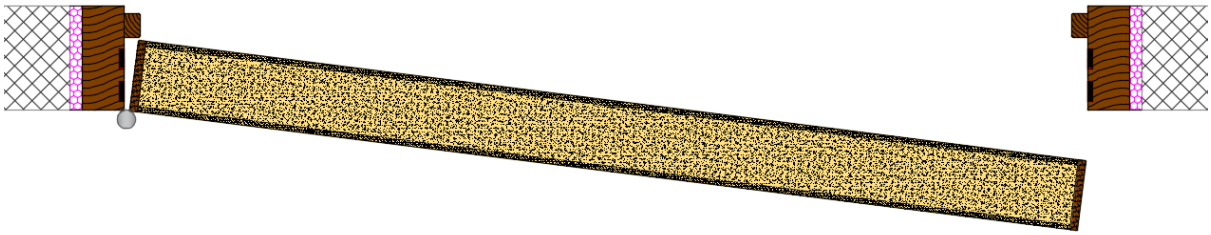
Doorset Configurations		
Depiction	Abbreviation	Description
	LSASD	Latched Single Acting Single Doorset
	ULSASD	Unlatched Single Acting Single Doorset
	LSADD	Latched Single Acting Double Doorset
	ULSADD	Unlatched Single Acting Double Doorset

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.

The report may refer to the opening or closing face of the door, for clarity the following drawing defines which face is the opening face.

Closing Face



Opening Face

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 with no restriction on the smaller leaf dimensions providing it does not exceed the relevant leaf size envelope and is not smaller in width 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 9.3 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 unless stated otherwise.
- Intumescent seals may be interrupted at hardware locations unless stated otherwise, in all cases any interruption shall be kept to a minimum.
- 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.
- Inclusion of specific design details for example hardware may require a specific intumescent seal specification which must be used. 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 Halspan SLS is given as the required seal type, only leaf configurations and sizes approved for Halspan SLS seals can be used).

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 Halspan® 90 leaf and 2No. frame types (hardwood and steel). 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, each frame type is considered separately.
- for each configuration and frame type, intumescent specification is considered separately, and a unique envelope of permitted leaf sizes is presented based on the configuration, frame type and intumescent and the envelope is directly linked to a unique test.

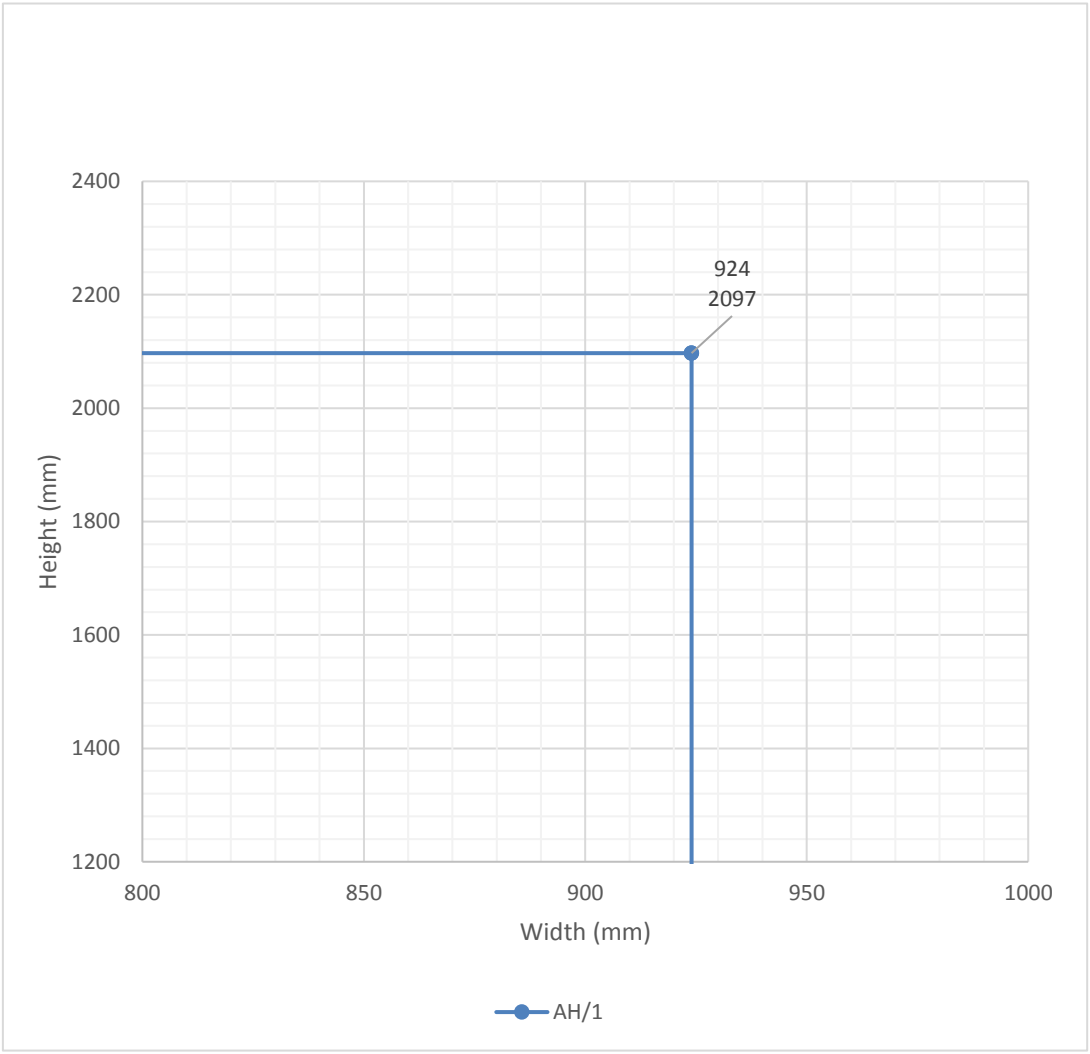
4.5.4.3 Summary of Permitted Configuration for Halspan® 90 leaf with each frame option

Permitted Configurations with frame types 1-2 with Halspan® 90 leaf					
Frame		Configuration			
		LSASD	ULSASD	LSADD	ULSADD
1	Hardwood frame*	Yes	Yes	Yes	Yes
2	Steel frame*	Yes	Yes	No	No

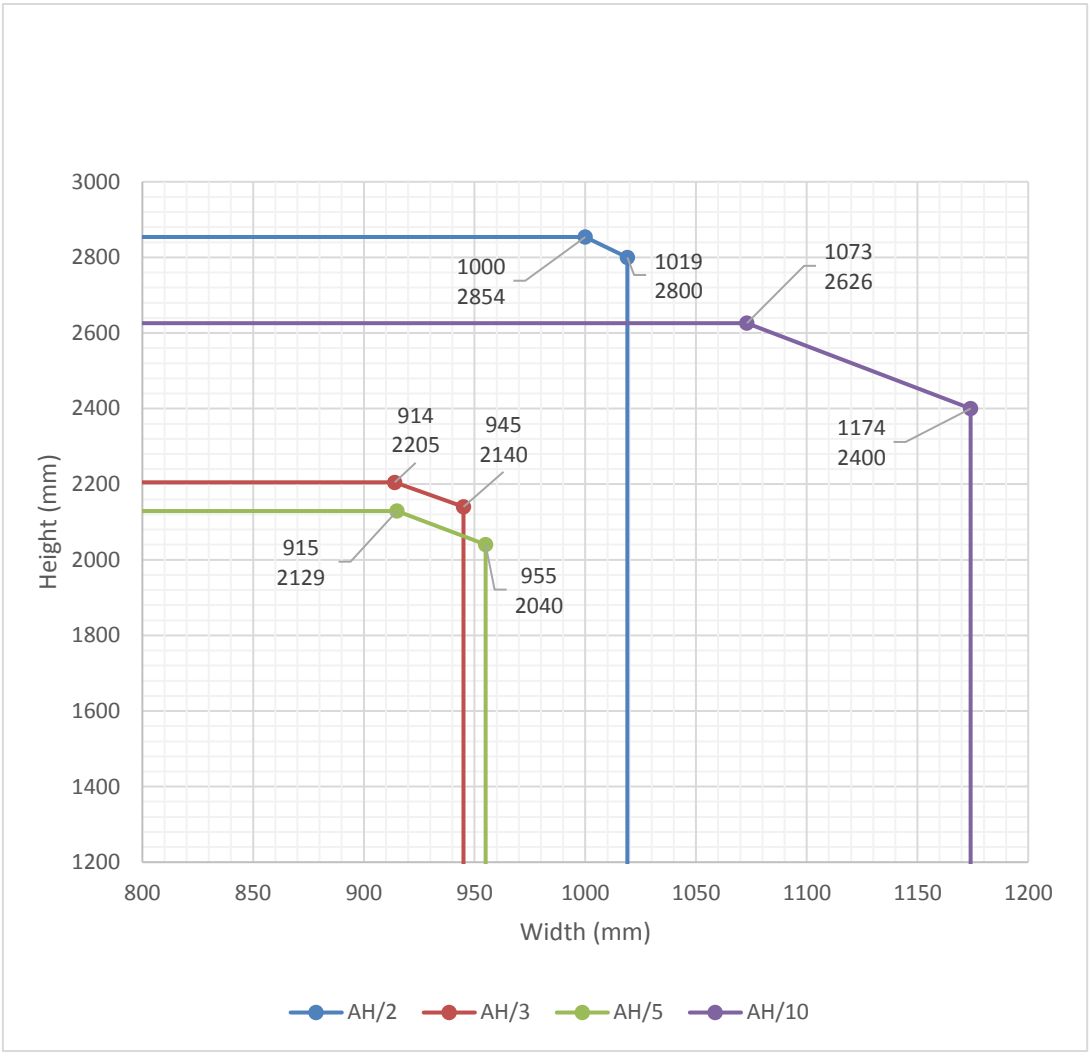
* See Section 7 for specific limitations with respect to the framing types

4.5.5 LSASD Configuration: Leaf Sizes & Intumescent Specification

Doorset created with frame option 1 (Hardwood)



Intumescent Specification for LSASD Halspan® 90 with Frame 1 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH/1 (CFR1103311 Revision 2 LH)	SLS-KIT-501	Halspan Limited	**Frame, Head & Jambs:** 25mm x 4mm fitted 8mm from the opening face. **Leaf Head & Vertical Edges:** 15mm x 4mm fitted 38mm from the opening face. **Bottom of Leaf:** 50mm x 2mm fitted centrally.


3000
2800
2600
2400
2200
2000
1800
1600
1400
1200
Height (mm)
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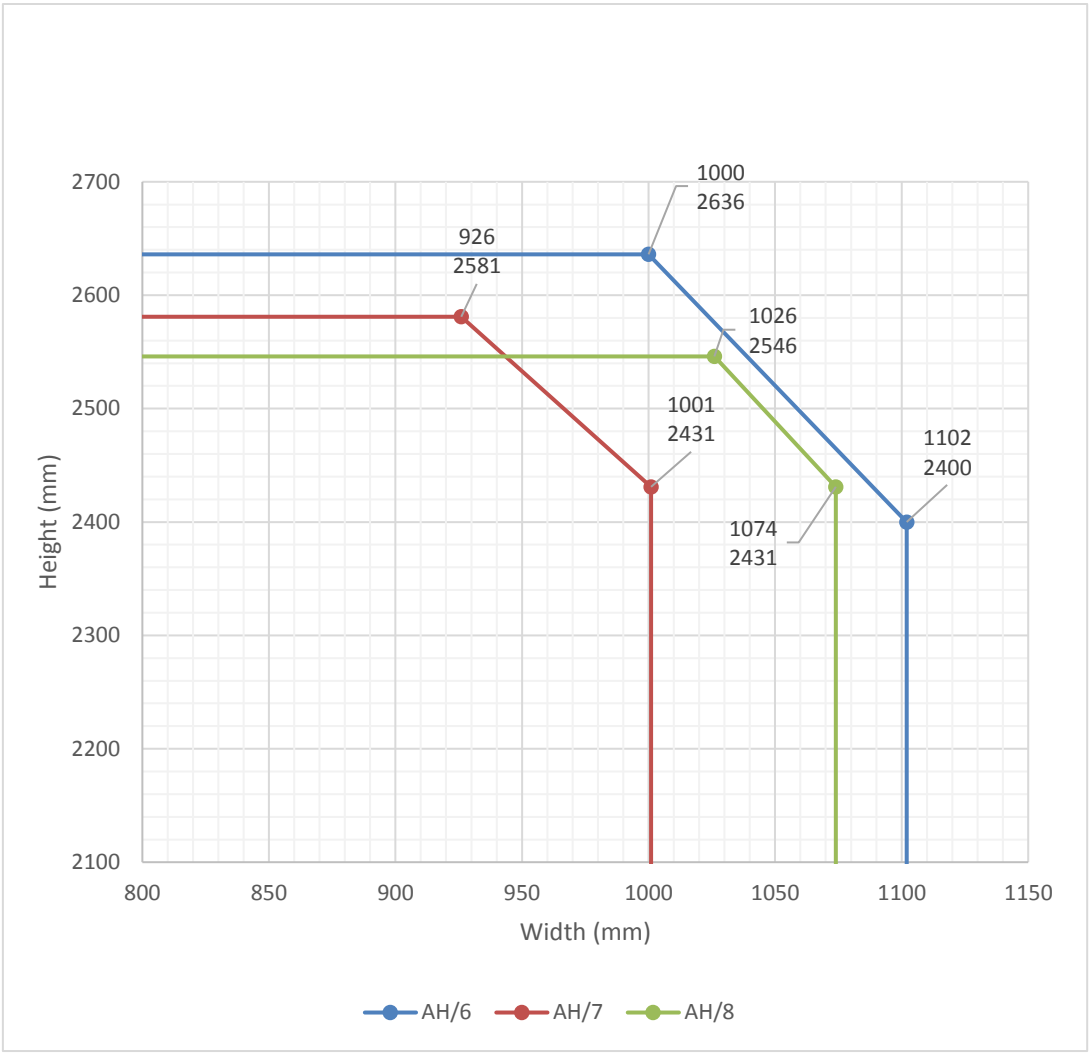
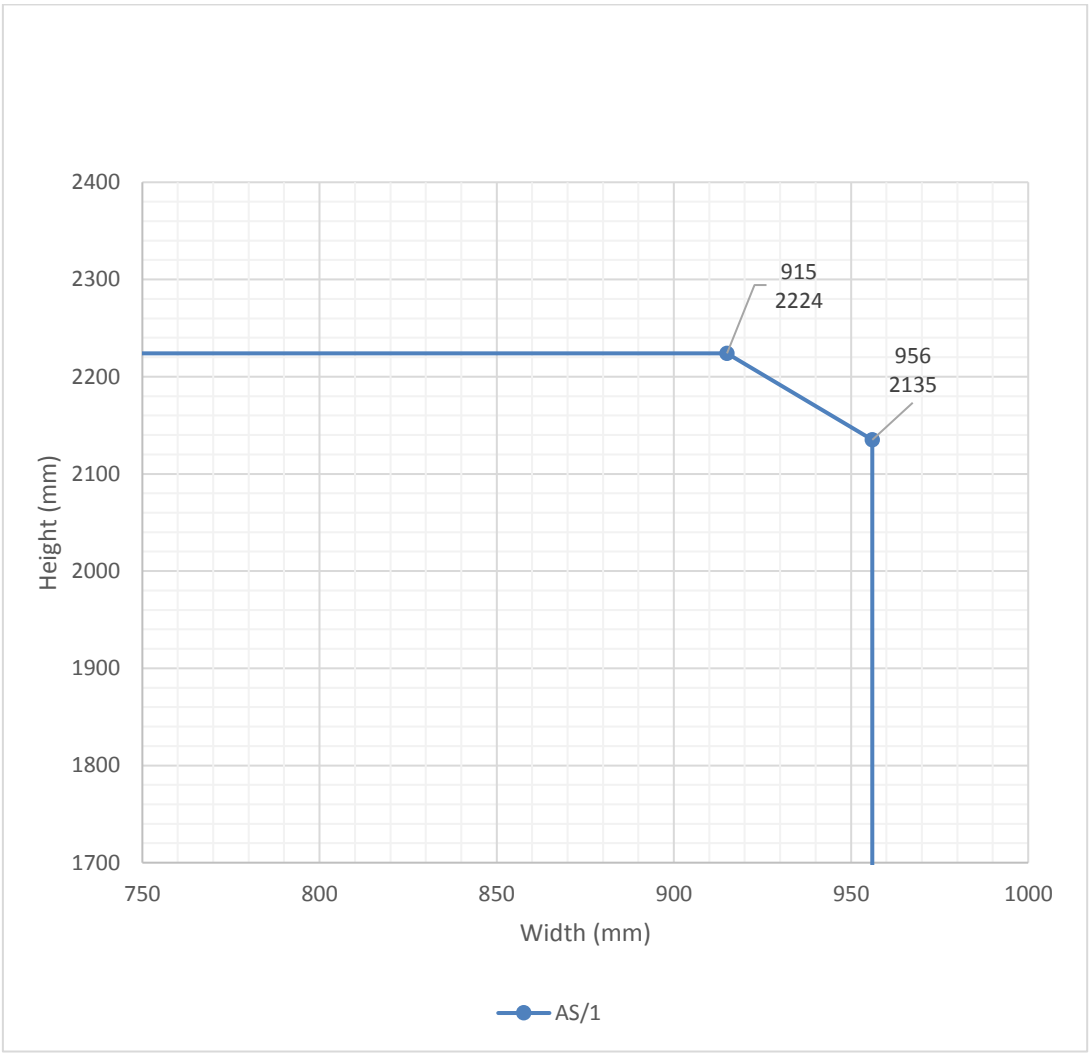
850
900
950
1000
1050
1100
1150
1200
Width (mm)
1000
2854
1019
2800
1073
2626
1174
2400
914
2205
945
2140
915
2129
955
2040
AH/2
AH/3
AH/5
AH/10

Intumescent Specification for LSASD Halspan® 90 with Frame 1 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH/2 (WF386186 A)	SLS-TKS-90	Halspan Limited	**Frame, Head & Jambs:** 25mm x 6mm fitted 8mm from the opening face. **Leaf Head & Vertical Edges:** 15mm x 6mm fitted 40mm from the opening face. **Bottom of Leaf:** 50mm x 2mm fitted centrally.
AH/3 (Chilt/RF09056)	SLS-TKS-90	Halspan Limited	**Frame, Head & Jambs:** 25mm x 6mm fitted 8mm from the opening face. **Leaf Head & Vertical Edges:** 15mm x 6mm, fitted 40mm from the opening face. **Bottom of Leaf:** 50mm x 2mm fitted centrally.
AH/5 (WF372528 Doorset A)	SLS-TKS-90 (Reversed Positioning)	Halspan Limited	**Frame, Head & Jambs:** 15mm x 6mm fitted 40mm from the opening face. **Leaf Head & Vertical Edges:** 25mm x 6mm fitted 8mm from the opening face. **Bottom of Leaf:** 50mm x 2mm fitted centrally.
AH/10 (WF375153 AR1 Doorset A)	SLS-TKS-90	Halspan Limited	**Frame, Head & Jambs:** 25mm x 6mm fitted 8mm from the opening face. **Leaf Head & Vertical Edges:** 15mm x 6mm fitted 40mm from the opening face. **Bottom of Leaf:** 50mm x 2mm fitted centrally.


2700
2600
2500
2400
2300
2200
2100
Height (mm)
800
850
900
950
1000
1050
1100
1150
Width (mm)
1000
2636
926
2581
1026
2546
1001
2431
1102
2400
1074
2431
AH/6
AH/7
AH/8

Intumescent Specification for LSASD Halspan® 90 with Frame 1 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AH/6 UI082-A (Rev.01)	SLS-TKS-E90	Halspan Limited	**Frame, Head & Jambs:** 2No. 20mm x 4mm centrally fitted, 20mm apart. **Leaf Head & Vertical Edges:** 1No. 20mm x 4mm centrally fitted. **Bottom of Leaf:** 50mm x 2mm centrally fitted.
AH/7 (FRR-2009/2359)	SLS-TKS-90-256	Halspan Limited	**Frame, Head & Jambs:** 2No. 25mm x 6mm fitted 5mm from the opening face, 5mm apart. **Leaf Head & Vertical Edges:** 25mm x 6mm fitted centrally. **Bottom of Leaf:** 50mm x 2mm fitted centrally.
AH/8 (FRR-2009/1221)	SLS-TKS-90-256	Halspan Limited	**Frame, Head & Jambs:** 2No. 25mm x 6mm fitted 5mm from the opening face, 5mm apart. **Leaf Head & Vertical Edges:** 25mm x 6mm fitted centrally. **Bottom of Leaf:** 50mm x 2mm fitted centrally.

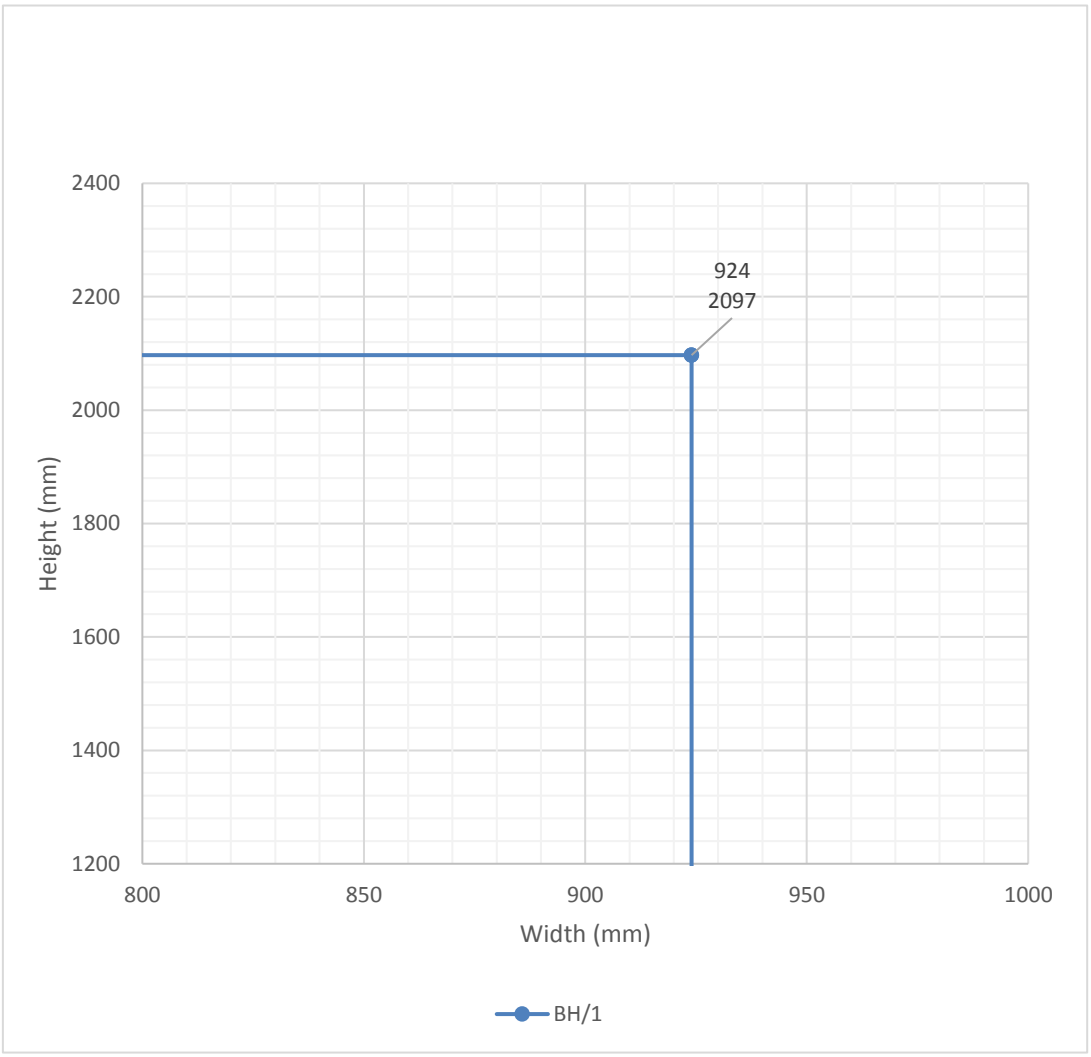
Doorset created with frame option 2 (steel)



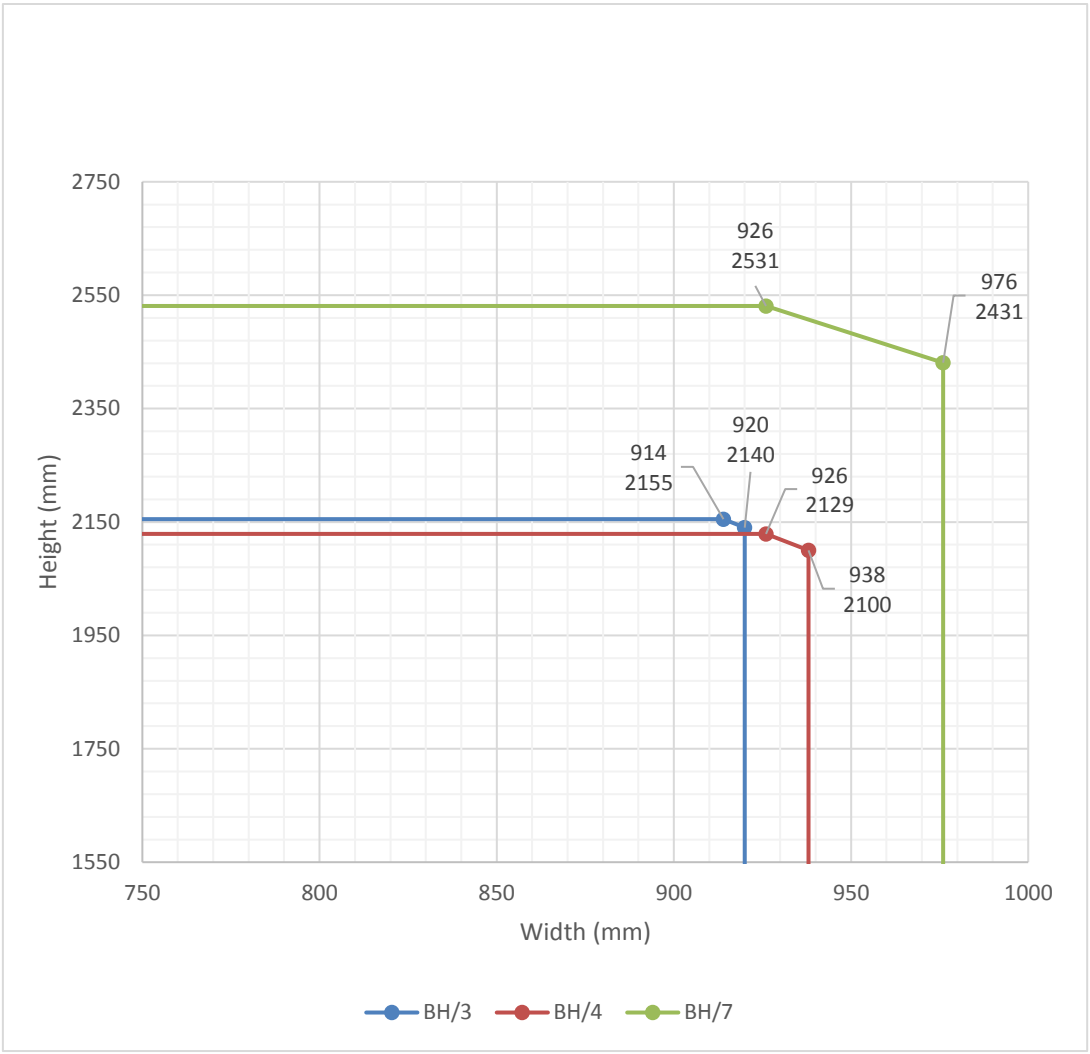
Intumescent Specification for LSASD Halspan® 90 with Frame 2 (Steel)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
AS/1 (Chilt/RF06048B)	SLS-SKS-90	Halspan Limited	**Frame, Head & Jambs:** 1No. 60 x 1mm fitted to the face of the reveal against the stop. **Bottom of Leaf:** 50mm x 2mm fitted centrally.

4.5.6 ULSASD Configuration: Leaf Sizes & Intumescent Specification

Doorset created with frame option 1 (Hardwood)

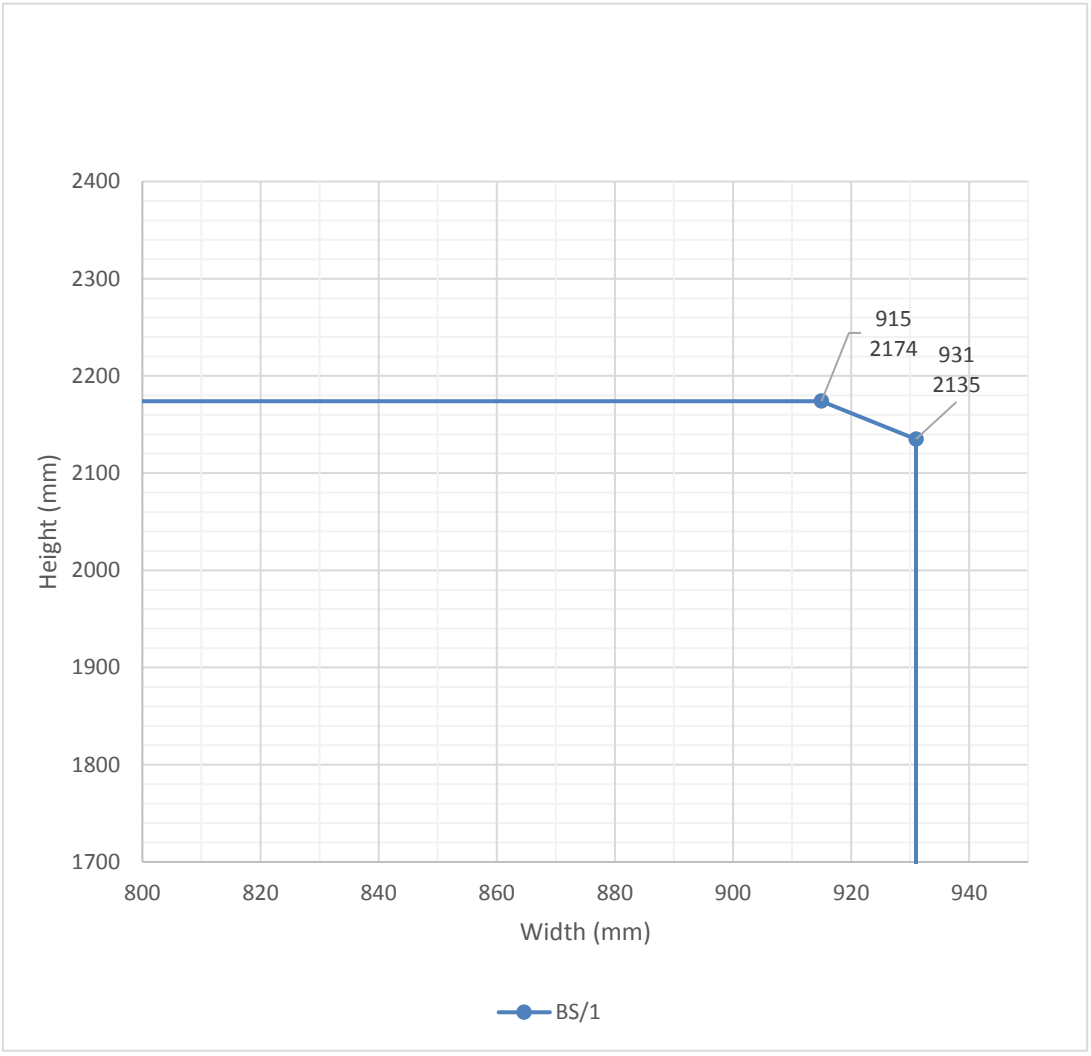


Intumescent Specification for ULSASD Halspan® 90 with Frame 1 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BH/1 (CFR1103311 Revision 2 LH)	SLS-KIT-501	Halspan Limited	**Frame, Head & Jambs:** 25mm x 4mm fitted 8mm from the opening face. **Leaf Head & Vertical Edges:** 15mm x 4mm, fitted 38mm from the opening face. **Bottom of Leaf:** 50mm x 2mm fitted centrally.


2750
2550
2350
2150
1950
1750
1550
Height (mm)
750
800
850
900
950
1000
Width (mm)
926
2531
976
2431
920
2140
914
2155
926
2129
938
2100
BH/3
BH/4
BH/7

Intumescent Specification for ULSASD Halspan® 90 with Frame 1 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BH/3 (Chilt/RF09056)	SLS-TKS-90	Halspan Limited	**Frame, Head & Jambs:** 25mm x 6mm fitted 8mm from the opening face. **Leaf Head & Vertical Edges:** 15mm x 6mm, fitted 40mm from the opening face. **Bottom of Leaf:** 50mm x 2mm fitted centrally.
BH/4 (Chilt/RF10078)	SLS-TKS-90	Halspan Limited	**Frame, Head & Jambs:** 25mm x 6mm fitted 8mm from the opening face. **Leaf Head & Vertical Edges:** 15mm x 6mm, fitted 40mm from the opening face. **Bottom of Leaf:** 50mm x 2mm fitted centrally.
BH/7 (FRR-2009/2359)	SLS-TKS-90-256	Halspan Limited	**Frame, Head & Jambs:** 2No. 25mm x 6mm fitted 5mm from the opening face, 5mm apart. **Leaf Head & Vertical Edges:** 25mm x 6mm fitted centrally. **Bottom of Leaf:** 50mm x 2mm fitted centrally.

Doorset created with frame option 2 (steel)



Intumescent Specification for ULSASD Halspan® 90 with Frame 2 (Steel)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
BS/1 (Chilt/RF06048B)	SLS-SKS-90	Halspan Limited	**Frame, Head & Jambs:** 1No. 60 x 1mm fitted to the face of the reveal against the stop. **Bottom of Leaf:** 50 x 2mm fitted centrally.

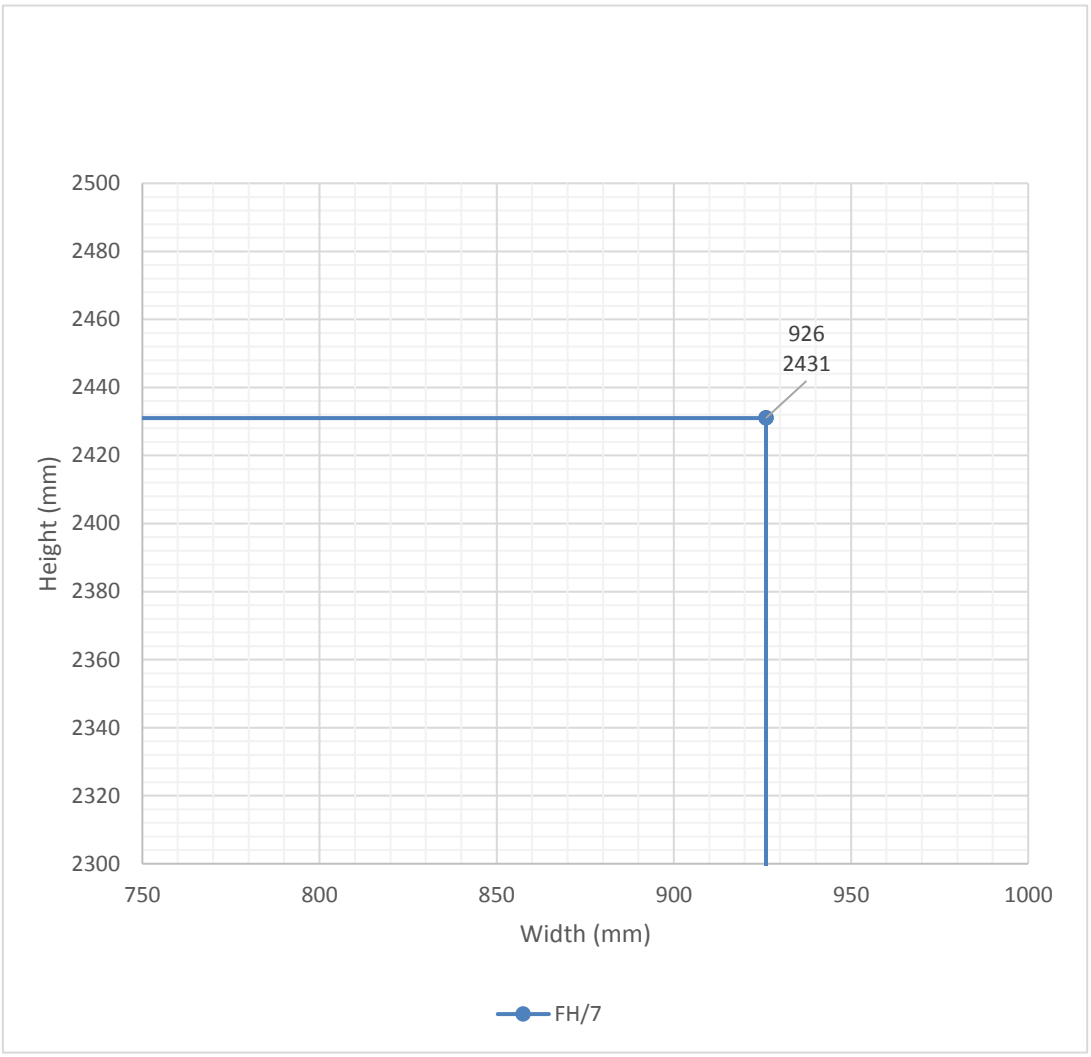
4.5.7 LSADD Configuration: Leaf Sizes & Intumescent Specification

Doorset created with frame option 1 (Hardwood)

Intumescent Specification for LSADD Halspan® 90 with Frame 1 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
EH/6 UI082-A (Rev.01) **See Section 5.7 for mandatory Astragal Requirements.**	SLS-TKD-E90	Halspan Limited	**Frame, Head & Jambs:** 2No. 20mm x 4mm centrally fitted, 20mm apart. **Leaf Head & Hanging Edges:** 1No. 20mm x 4mm centrally fitted. **Bottom of Leaf:** 50mm x 2mm centrally fitted. **Leaf Meeting Edges:** Primary Leaf: 2No. 20mm x 4mm centrally fitted, 16 mm apart Secondary Leaf: 1No. 20mm x 4mm centrally fitted.
EH/7 (FRR-2009/2359)	SLS-TKD-90-256	Halspan Limited	**Frame, Head & Jambs:** 2No. 25mm x 6mm fitted 5mm from the opening face, 5mm apart. **Leaf Head & Vertical Edges:** 25mm x 6mm fitted centrally. **Bottom of Leaf:** 50mm x 2mm fitted centrally. **Leaf Meeting Edges:** Primary Leaf: 2No. 25mm x 6mm centrally fitted, 5 mm apart Secondary Leaf: 1No. 25mm x 6mm centrally fitted.

4.5.8 ULSADD Configuration: Leaf Sizes & Intumescent Specification

Doorset created with frame option 1 (Hardwood)



Intumescent Specification for ULSADD Halspan® 90 with Frame 1 (Hardwood)			
Intumescent Spec. Reference & (Test Reference)	Make / Type	Manufacturer / Supplier	Location & Size
FH/7 (FRR-2009/2359)	SLS-TKD-90-256	Halspan Limited	**Frame, Head & Jambs:** 2No. 25mm x 6mm fitted 5mm from the opening face, 5mm apart. **Leaf Head & Vertical Edges:** 25mm x 6mm fitted centrally. **Bottom of Leaf:** 50mm x 2mm fitted centrally **Leaf Meeting Edges:** Primary Leaf: 2No. 25mm x 6mm centrally fitted, 5 mm apart Secondary Leaf: 1No. 25mm x 6mm centrally fitted.

5 General Description of Leaf Construction

5.1 Leaf Core Construction

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

5.1.1 Halspan® 90 – 64mm thick

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

Element	Material	Dimensions (mm)	Minimum Density (kg/m^3)
Core	Halspan ® 90, 3 layer solid core particleboard	64 (t)	630 ±10%

The leaf must be lipped as specified in section 5.3.

The minimum leaf thickness after calibration is 63mm (i.e. a maximum of 0.5mm from both sides).

The minimum leaf thickness after finishes applied is 64mm.

5.1.2 Jointing of door leaves

Within the testing summarised within section 3, the application of a horizontal joint within the core material has been determined to not influence the performance of the Halspan ® 90 doorset design as tested within WF386186 A. The below specific requirements must be adhered to as variations to the below design have demonstrated they may influence the performance of the doorset under test conditions:

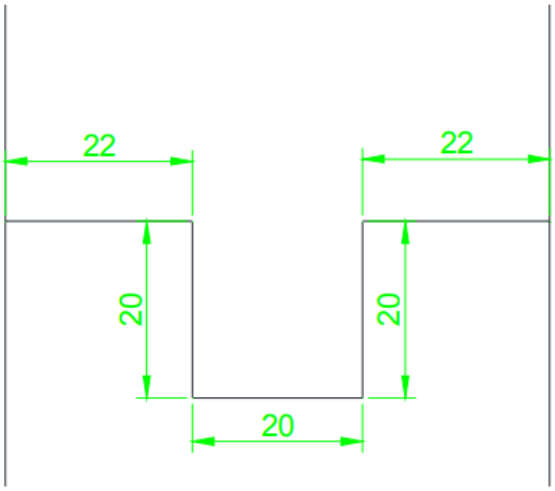
Joints within door leaves are permitted in the following applications only:

Frame options: Frame 1.

Configurations: LSASD.

Approved specification:

- The leaf must be hung on a minimum of 4No. hinges.
- A maximum of 1No. horizontal joint may be included within any individual door leaf.
- The joint must be positioned between 550mm and 800mm from the bottom edge of the leaf.
- A minimum distance of 200mm between the joint and any morticed items of hardware (including hinges), glazed apertures and grooves within the leaf face must be maintained.
- The joint design must be as tested, including the following requirements:
    - Joint must be formed from a mortice and tenon arrangement, tenon dimensions of 20mm (h) x 20mm (w) must be centrally located in the top section of the leaf.
    - The mortice must be tightly fitting to accommodate the tenon in the bottom section of leaf material.
    - The joint must be adhered with PU adhesive as tested.
- Vertical joints in the core material are not permitted.



Vertical Cross-Section of Permitted Horizontal Joint Detail

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 is lipped in accordance with section 5.3.
Lipping	Where lippings are required, these must not be reduced below the dimensions specified in section 5.3.

In all cases, the required intumescent identified within section 4.5 must be present.

5.3 Lipping

The following sections detail the permitted lippings for the Halspan® 90 doorset design covered herein.

5.3.1 Hardwood Timber Lipping (Excluding Beech)

The testing documented in section 3 has generally been undertaken using 3-4mm thick flat lippings applied to either vertical edges or all edges using hardwood of various species at varying densities. A number of different adhesives have also been used to bond the lippings to the core.

On the above basis, Halspan® 90 door blanks must be lipped with the following specification.

Timber Lipping Specification for Halspan® 90 door blanks		
Material	Size (mm)	Min Density (kg/m^3)
Hardwood (not Beech *fagus species*)	Flat = 3-4 thick	640

Notes:

1. All lippings are to be the same thickness as the door leaf either prior to the application of decorative facing materials or once they have been applied.
2. Single and double doorsets only require lipping on the vertical edges but may be additionally lipped on the top edge, if required. The bottom edge must remain unlipped with the intumescent as defined within section 4.5 exposed.
3. Lippings can be bonded with UF, PU, PUR, PVA or PVAc. 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.
4. For flat lippings it is permitted to apply maximum 3mm radius to the corners of the lipping at vertical edges to create a maximum 3mm edge profiling.

5.3.2 PVC Lipping

PVC lipping to all edges of the leaf has been successfully tested in test reference Chilt/RF09056 and CFR1003181 Rev 2. On the basis of this testing PVC lippings are suitable in the following applications only:

5.3.2.1 Directly to Core Material

Frame options: 1

Configurations & Intumescent Specification (Defined in Section 4.5):

LSASD: AH/3

ULSASD: BH/3

Lipping Specification		
Material	Maximum Size (mm)	Min Density (kg/m^3)
PVC	3 thick	-

Notes:

1. PVC lippings when applied must be fitted directly to the core material.
2. All lippings are to be the same thickness as the door leaf either prior to the application of decorative facing materials or once they have been applied.
3. Single doorsets only require lipping on the vertical edges but may be additionally lipped on the top and bottom edges if required.
4. PVC Lippings must be bonded with contact adhesive or PU, as tested.

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 and paper[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 64mm 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.
6. Decorative finishes listed above may be painted within the limits for paint finish, above.
7. The decorative facings are bonded using the decorative facing adhesives listed in the table in section 8.

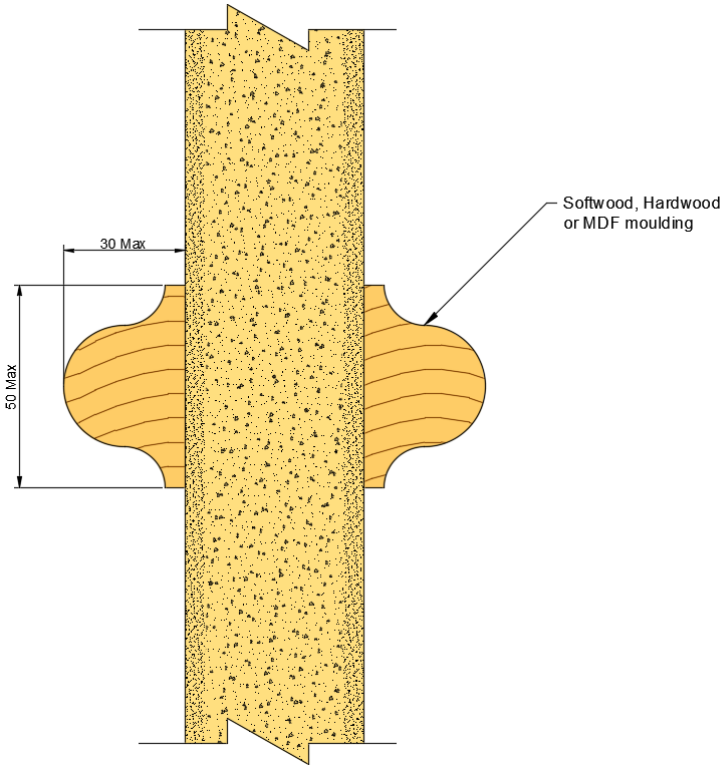
5.5 Decorative Planted on Timber Mouldings

On the basis that decorative timber planted on mouldings would not be expected to have a negative effect on the burn through of the leaf, it is the opinion of Warringtonfire that decorative mouldings can be applied to the Halspan® 90 door leaf providing the following criteria is adhered to:-

Decorative mouldings can be applied to the leaf providing the following criteria is adhered to:

The mouldings:

1. Are surface applied to the door
2. Are no higher than 30mm i.e. proud of the door
3. Are no wider than 50mm
4. Cover no more than 20% of the door leaf area
5. Are no closer than 80mm to the door leaf edge or apertures within the leaf.
6. Are bonded into position and small pins may be used up to 12mm penetration into the door core.
7. Are bonded using any glue which is suitable for bonding the lipping of the door.



5.6 Feature Grooves

Feature grooves were included within test references FRR – 2009/1221 Doorset B, FRR – 2009/2359 and UI082-A (Rev.01) without being of detriment to the overall performance of the doorset. The doorsets they were included within achieved 103, 90 and 104 minutes integrity performance respectively.

Both sides of the door leaves may be grooved to the following specifications, which also provide limitations on the application of the desired groove option.

Feature grooves cannot be located within 20mm of any mortice for hardware (i.e. any item which requires material to be removed from the door), glazed apertures or joints in the core material.

Grooves may not coincide with glazed apertures.

Where maximum leaf dimensions and / or specific intumescent specifications are given in the details for feature grooving below the guidance in section 4.5 must be followed.

Note for the following sections:

- Grooves which are in the same linear plane but are not continuous are considered to count as one single groove.
- Feature Grooves may only be applied within Frame 1 (Hardwood).

The following sections detail the tested grooving arrangement, and the limitations associated with each groove option.

5.6.1 Groove Option A

Groove Option A		
Element	**Details**	
Maximum groove size (mm)	5mm wide x 5mm deep	
Inserts	Not required. Full depth inserts are optionally permitted to provide a decorative detail if required. Inserts, if fitted, must be Hardwood (minimum density 640kg/m³). The insert may be grooved when applied subject to restrictions given below.	
Adhesive	See Section 8 (Adhesives)	
Maximum number of grooves	10No. grooves divided between horizontal and vertical orientations as required.	
Proximity to door edges (mm)	Horizontal Grooves	No closer than 100mm to top or bottom edge of leaf. May extend full width
	Vertical Grooves	No closer than 100mm to vertical edge of leaf. May extend full height
Groove spacing (mm)	No insert applied or insert includes grooving	No closer than 100mm apart. Vertical and horizontal grooves may intersect each other.
	Full depth hardwood insert applied	No closer than 100mm apart. Vertical and horizontal grooves may intersect each other.
Orientation	Horizontal or Vertical	
Configurations	LSASD, ULSASD, LSADD, ULSADD	
Maximum Leaf size (mm)	No specified limit.	
Permitted perimeter intumescent seal dimensions (mm)	LSASD: AH/6, AH/7 or AH/8 ULSASD: BH/7 LSADD: EH/6 or EH/7 ULSADD: FH/7	

5.6.2 Groove Option B

Groove Option B		
Element	**Details**	
Maximum groove size (mm)	10mm wide x 8mm deep	
Inserts	Full depth inserts are required to be fitted. Inserts must be Hardwood (minimum density 640kg/m³). The insert may be grooved when applied up to a maximum of 5mm wide x 4mm deep.	
Adhesive	See Section 8 (Adhesives)	
Maximum number of grooves	10No. grooves divided between horizontal and vertical orientations as required.	
Proximity to door edges (mm)	Horizontal Grooves	No closer than 100mm to top or bottom edge of leaf. May extend full width
	Vertical Grooves	No closer than 100mm to vertical edge of leaf. May extend full height
Groove spacing (mm)	Full depth hardwood insert applied	No closer than 100mm apart. Vertical and horizontal grooves may intersect each other.
Orientation	Horizontal or Vertical	
Configurations	LSASD, LSADD	
Maximum Leaf size (mm)	No specified limit.	
Permitted perimeter intumescent seal dimensions (mm)	LSASD: AH/6, AH/7 or AH/8 LSADD: EH/6 or EH/7	

5.7 Astragals

Based on the testing summarised within section 3, specifically UI082-A (Rev.01), the inclusion of timber astragals is permitted and may in fact be required. When fitted astragals must meet the following specification:

- The astragal shall consist of Hardwood (excluding Beech *Fagus species*) with a minimum density of 640kg/m^3.
- The astragal shall be mechanically fixed using steel screws at no greater than 250mm centres, the screws shall penetrate into the substrate by at least 15mm and no greater than ½ the thickness of the substrate.
- The astragal shall measure a minimum of 60mm wide x 15mm thick and shall be positioned centrally over the junction. Dimensions greater than those defined above are permitted up to a maximum increase of 100%.

Other materials or dimensions of astragals except those detailed above are not permitted.

It has been considered possible to include the above specified astragal based on the fact that the effective rebate of the doorset design will remain unchanged. The addition of the astragal element will provide further protection at the perimeter gaps increasing the time at which failure modes may develop.

Astragals are:

- Required to be fitted to both faces of the doorset when utilising leaf envelope EH/6 as defined within section 4.5.7, to align with the tested specification.
- Optionally permitted at meeting edges of double leaf doorsets.

Astragals may be fitted to one or both sides of any individual doorset design, with care being maintained to ensure the functionality of the doorset is not hindered.

When fitted to the meeting edges of double leaf doorsets, a door selector as defined within section 9.13 **must** be fitted to the doorset to ensure functionality.

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 145mm from top and side edges and 200mm from the bottom edge. (Supported by Chilt/RF09056).

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 Halspan® 90 door leaves		
Maximum Height (mm) **(WF372528)**	Maximum Width (mm) **(Chilt/RF09056)**	Maximum Area (m^2) **(WF372528)**
1450	610	0.551

Multiple apertures are acceptable within the permitted total assessed aperture area, with a minimum dimension of 175mm of core between apertures. (As demonstrated in WF372528.)

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

Minimum glass thickness permitted is 5mm, as tested and may not be reduced.

Glass manufacturers thickness tolerances may vary, information must be sought from the glass manufacturer.

The subsequent sections within this report detail the permitted glass and glazing systems with their associated size ranges permitted within the 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 Halspan® 90 door design, subject to the following.

- The minimum thickness of glass permitted for alternative glass types is 5mm.
- 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 64mm.
- 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.

Glazing Systems

Glass & Glazing System Specification			Maximum Assessed Area (m^2), Height & Width (m)				
Glass Type Manufacturer		Thickness	System & Manufacturer →	1	2	3	4	5
				Glazing Strip SLS-GLZ-104, 25x2 between glass and bead & Glazing Liner SLS-GLZ-104, 64x2 lining perimeter of the aperture & Glazing Compound SLS-GLZ-104, between glass perimeter and adjacent aperture	Glazing mastic SLS-GLZ-102, 2 x 25 between glass and bead & Glazing Liner SLS-GLZ-102, 62 x 2 lining perimeter of the aperture	Glazing strip SLS-GLZ-105, 25 x 2 between the glass and the bead & Glazing Liner SLS-GLZ-105, 63 x 2 lining perimeter of the aperture	Glazing strip SLS-GLZ-106, 25 x 2 between the glass and the bead & Glazing Liner SLS-GLZ-106, 63 x 2 lining perimeter of the aperture	Glazing strip Therm-A-Bead 25x4 between the glass and the bead & Glazing Liner Therm-A-Line, 63 x 2 lining perimeter of the aperture & Sealmaster Fireglaze Compound between glass perimeter and adjacent aperture
				Halspan Limited	Halspan Limited	Halspan Limited	Halspan Limited	Intumescent Seals & Sealmaster
			Fire Test Reference	WF372528 B (Lower) & CFR1509241_A & CFR1507091_A	BMT/FEP/F16046 AR1	BMT/FEI/F13127	WF372528 A (Upper)	CFR1405301, CFR1405291
1	Pyrodur 60-10 Pilkington UK Ltd	10	CFR1405301, CFR1405291 WF372528 A	-	-	-	Area: 0.275 Height: 0.725 Width: 0.380	Area: 0.396 Height: 1.45 Width: 0.270
2	Pyrostop EI60 Pilkington UK Ltd	23	WF372528 B (Lower), BMT/FEI/F13127	Area: 0.275 Height: 0.725 Width: 0.380	Area: 0.36 Height: 0.60 Width: 0.60	Area: 0.551 Height: 0.926 Width: 0.610	Area: 0.275 Height: 0.725 Width: 0.380	Area: 0.275 Height: 0.725 Width: 0.380
3	Pyroguard EI60 Pyroguard UK Ltd	23	CFR1509241_A BMT/FEP/F16046 AR1 & CFR1507091_A	Area: 0.311 Height: 0.856 Width: 0.364 Or Area: 0.364 Height: 0.604 Width: 0.604	Area: 0.36 Height: 0.60 Width: 0.60	-	Area: 0.275 Height: 0.725 Width: 0.364	Area: 0.275 Height: 0.725 Width: 0.364

Note:

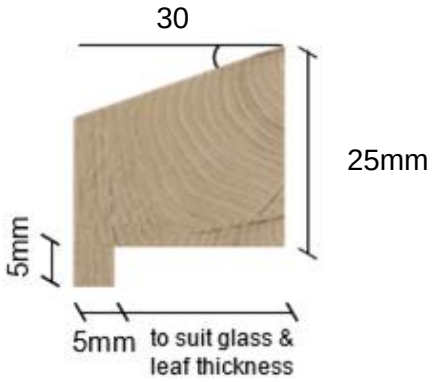
1. All glass types must be fitted fully in accordance with the manufacturers' tested details/installation requirements, particularly with respect to edge cover and expansion tolerances.
2. Glass type 2 is fully insulating for 90 minutes in terms of the criteria set out BS 476: Part 20: 1987.

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.

6.3.1.1 Chamfer Beads Option 1

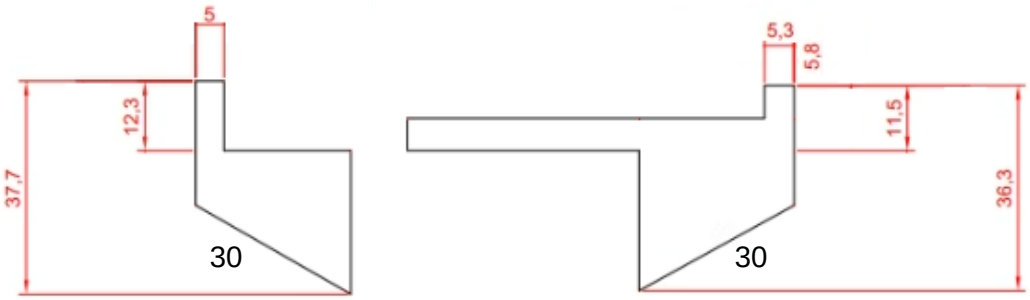
Permitted Glazing System (Defined in Section 6.3)	**1, 2, 3, 4 & 5**



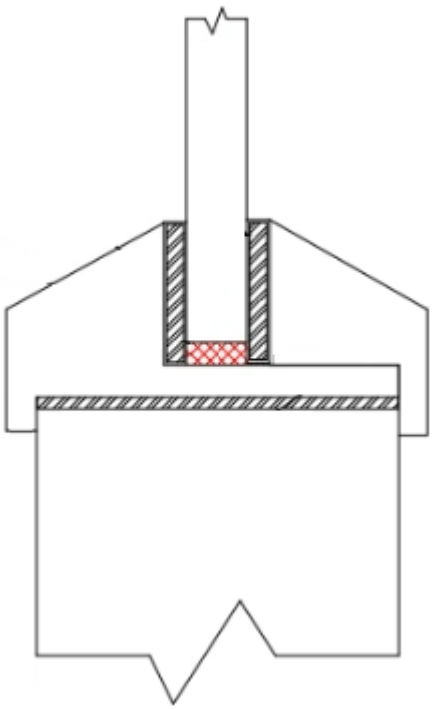
- The above detailed bolection may be increased in thickness and height if required, with the dimensions shown for the bolection being the minimum.
- The glazing beads must be created from hardwood (not Beech *fagus species*) of a minimum 640kg/m^3 density.
- Glazing beads must be retained in position with minimum length of 70mm long steel screws, inserted at 30-40º to the vertical. Pins are not permitted.
- 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 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 or sections of intumescent liner placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires.

6.3.1.2 Chamfer Beads Option 2

Permitted Glass Type (Defined in Section 6.3)	5



- The above detailed bolection may be increased in thickness and height if required, with the dimensions shown for the bolection 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 75mm long steel screws, inserted at 25-30º to the vertical. Pins are not permitted.
- Fixings must be at 150mm maximum centres and no more than 50mm from each corner.
- An additional timber aperture liner is not permitted.
- 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 or sections of intumescent liner placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires



6.4 Single Pane Glass and Glazing Systems (Steel 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 & 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	3
				Glazing Mastic SLS-GLZ-103, 2 thick, filling the glazing pocket & Glazing liner SLS-GLZ-103, 63 x 2 lining perimeter of the aperture	Glazing Mastic SLS-GLZ-102, 4 thick, filling the glazing pocket & Glazing liner SLS-GLZ-102, 63 x 2 lining perimeter of the aperture	Glazing Strip SLS-GLZ-109, 25 x 5 between bead and glass & Glazing liner SLS-GLZ-109, 62 x 2 lining perimeter of the aperture & Glazing Strip SLS-GLZ-109, 20 x 1 between the bead and the leaf face
				Halspan Limited	Halspan Limited	Halspan Limited
			Fire Test Reference	WF372528 B (Upper)	CFR1507271_A, WF384941, WF376585 AR1	FRR-2008/5507 & FRR-2112/1350
1	FireLite Ceramic Glass LTD	5	WF372528 B (Upper), CFR1507271_A A & CFR1507271_A B & WF376585 AR1	Area: 0.275 Height: 0.725 Width: 0.380	Area: 0.12 Height: 0.600 Width: 0.200 Or Area: 0.11 Height: 0.345 Width: 0.345	Area: 0.189 Height: 0.610 Width: 0.310 Or Area: 0.380 Height: 1.450 Width: 0.260
2	PYRAN S Schott	6	WF384941	-	Area: 0.201 Height: 0.840 Width: 0.240	-

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.

6.4.1 Permitted Glazing Beading and Glass Retention (Steel 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.

6.4.1.1 Steel 'Z' Beads

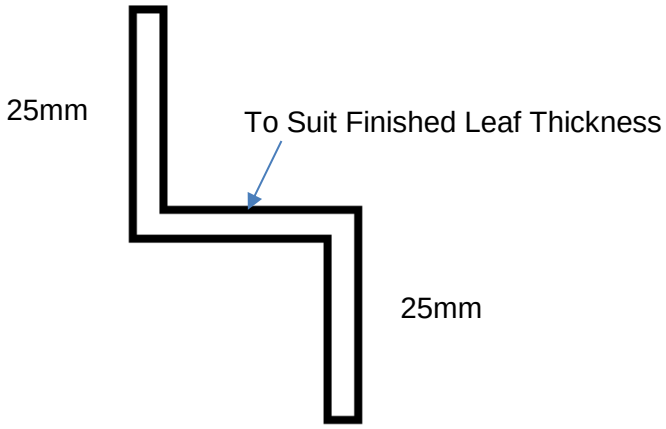
Each of the tested glass types and glazing systems when tested used a steel 'Z' profiled beading. The tables in the following sections provides the minimum dimensional details for each of the above tested glass types and glazing systems.

When using the below detailed glazing beads, the overall thickness of the finished door leaf under the 'Z' bead needs to be considered when specifying the glazing bead depth to ensure adequate compression of the glazing seals.

The dimension shown as 'To Suit Finished Leaf Thickness' in the subsequent sections will depend on the finished leaf thickness.

6.4.1.1.1 Steel 'Z' Bead Option 1

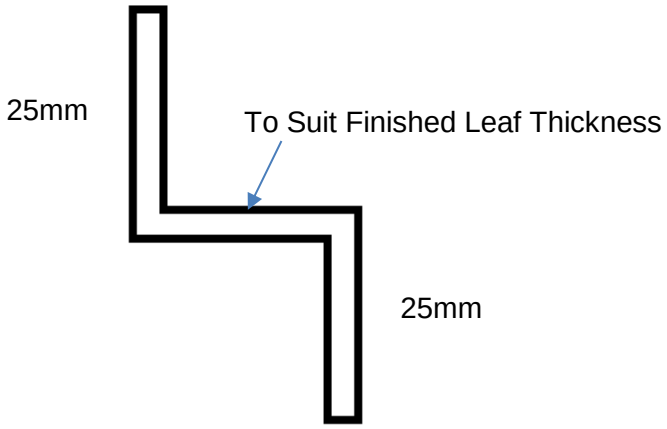
Permitted Glazing Systems (Defined in Section 6.4)	1 & 2



- The glazing beads must be created from steel with a thickness of 1.5mm – 2mm with fully welded corners.
- Glazing beads must be retained in position with minimum length of 38 - 59mm long steel screws, inserted at 90º to the face of the glass into the leaf face a minimum of 10mm from the glazed aperture.
- Fixings must be at 140mm maximum centres and no more than 27mm from each corner.
- 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 non-combustible setting blocks placed at the bottom horizontal edge only, sized to provide edge cover and expansion allowance as the specific system requires.

6.4.1.1.2 Steel 'Z' Bead Option 2

Permitted Glazing Systems (Defined in Section 6.4)	3



- The glazing beads must be created from steel with a thickness of 1.5mm – 2mm with fully welded corners.
- Glazing beads must be retained in position with Ø5mm steel through bolts, inserted at 90º to the face of the glass into the leaf face a minimum of 10mm from the glazed aperture.
- Fixings must be at 140mm maximum centres and no more than 15mm from each internal corner.
- 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 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 (Hardwood)

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

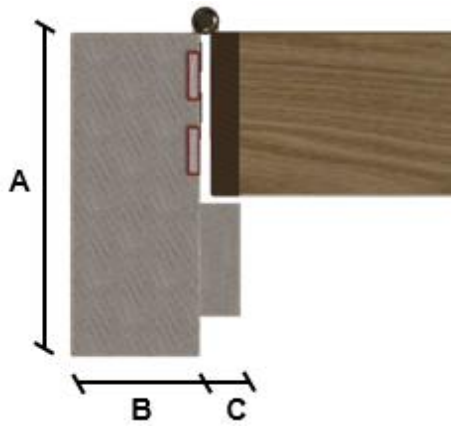
Frame specification			
Frame type	Material	Minimum section size (mm)	Minimum density (kg/m^3)
1	Hardwood: The use of Beech (*Fagus species*) is NOT permitted.	Frame: 90 (d) x 44 (w) (excluding stop) Stop: 18 (w) (integral or planted on)	640

Note:

1. Minimum section size is subject to size of hardware as defined within the relevant sub-sections in section 9.
2. Frame joints must be mortice and tenoned, mechanically fixed with the appropriate size ring shank nails or screws and with no gaps.

7.1.1 Standard frame detail

The diagram below shows detail of the standard frame construction. Minimum section is permitted in below subject to hardware size. Any radius to the lipping must comply with section 5.3.



A: Frame depth = 90mm minimum

B: Frame width = 44mm minimum

C: Stop width = 18mm minimum

7.2 Details for Frame 2 (Steel)

The door frame listed below are the minimum size and composition which has been successfully tested and assessed by this report (Chilt/RF06048B). The frame must be constructed to meet the following specification for single acting frames.

Frame specification		
Frame type	Primary Material	Description
2	1.5mm thick Steel	The frame is made from profiled steel and must be installed such that the frame is contained within the thickness of the wall. The frame includes an integral stop in the form of a single rebate. When installed the frame must be backfilled with cement mortar.

Note:

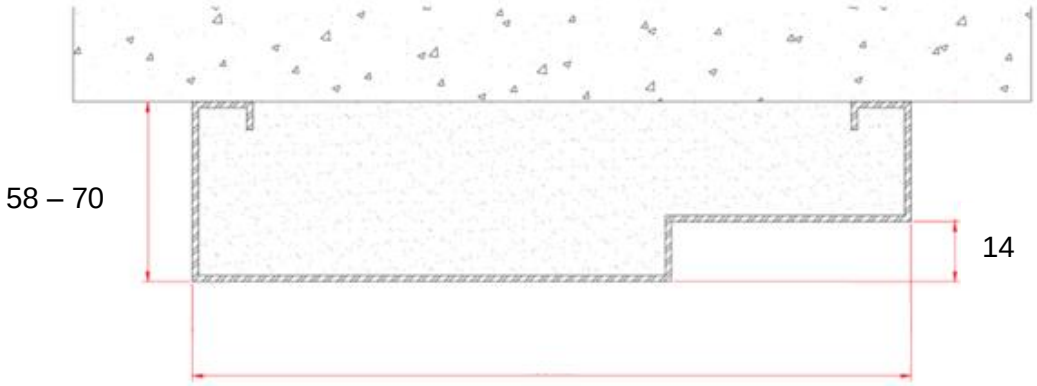
Permitted sizes associated with Frame 2 construction are detailed below.

The frame itself must include steel 'U' brackets which suit the overall depth of the frame to facilitate frame fixings. The bracket must be welded to the frame such that movement cannot occur. More information on required fixings is found within section 10.5.3.2.

The frame may be single (as depicted) or double rebated, the door leaf when in the closed position must finish flush within the frame reveal.

Frame 2 (Steel)

Dimensions in 'mm'



7.3 Door Frame Joints

The following sub-sections define the tested and therefore permitted jointing method for the Halspan® 90 doorset design.

7.3.1 Frame 1 – Hardwood

Below are depictions of the door framing joints that are deemed acceptable for Frame 1 (Hardwood). Please note that the drawing is provided as a general illustration of the 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 and additionally may be glued using with any of the adhesives identified for this application in Section 8.

Mortice & Tenon Joint

Approved door frame jointing options

7.3.2 Frame 2 – Steel

Frame 2 must be manufactured with mitred or butt joints local to the junction between the jambs and the head frame members. In all instances the joint must be fully welded across the joint.

Fixing locations through the stop may be capped with steel or plastic grommets without compromising the fire resistance performance of the doorset design as the frame itself must be fully backfilled with cement mortar.

7.4 Decorative Facings – Frames

Relatively thin facing materials are deemed to be decorative, their application is not considered to be of detriment to the overall stability or performance of the doorset design. On this basis the following sections define the permitted decorative facings permitted to be applied to each of the considered frame types.

7.4.1 Frame 1 – Hardwood

The following additional facing materials are therefore permitted to Frame 1 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 for this frame type.
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.

7.4.2 Frame 2 – Steel

The following additional facing materials are therefore permitted to Frame 2 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

Notes:

1. Facing materials not listed above are not permitted for this frame type.
2. For all options, materials must not conceal intumescent strips.
3. Intumescent paints are not permitted; however, powder coating is permitted.

8 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
Timber lippings	UF, PU, PUR, PVA or PVAc
PVC lippings	Contact adhesive or PU
Hardwood inserts in feature grooves	UF, PU or PVA
Frame Jointing (Frame 1 Hardwood)	UF, PU or PVA
Decorative & Protective Facings	UF, PU, PUR, PVA or PVAc

9 Hardware

9.1 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
- 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 or steel frame (as applicable).
- As a result of an assessment of the appropriateness of the item of hardware, based on test evidence not commissioned by Halspan Limited.
- 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.

9.2 Intumescent to Hardware

The intumescent materials used to protect hardware that have been tested and assessed for this doorset design are detailed below.

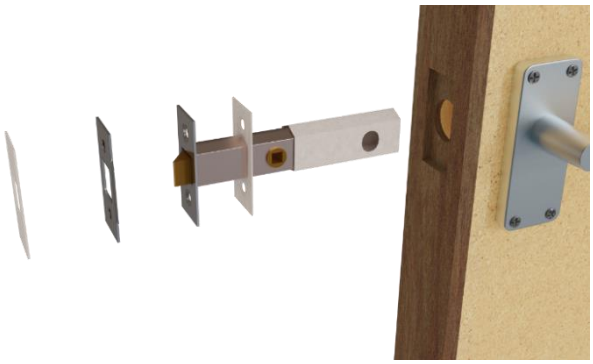
The door gap perimeter intumescent seal specifications are documented in conjunction with the leaf envelope size limitations in section 4.5.

Hardware Intumescent Specification			
Item	**Frame Type**	**Location**	**Product/Manufacturer (mm)**
Hinges	Frame 1 – Hardwood	Fitted under both hinge blades.	2 (t) SLS-PAD-123, Halspan Limited (Chilt/RF09056) 2 (t) Therm-A-Strip, Intumescent Seals (Chilt/RF04037) 2 (t) MAP, Lorient Polyproducts Ltd (FRR – 2112/1350)
	Frame 2 – Steel		2 (t) SLS-PAD-102, Halspan Limited (CFR1507271_A) 2 (t) Therm-A-Strip, Intumescent Seals (Chilt/RF06048B)
Lock/latches	Frame 1 – Hardwood	Under latch forend, under latch keep and encasing the latch body	2 (t) Therm-A-Strip, Intumescent Seals (Chilt/RF04037) 2 (t) SLS-PAD-105, Halspan Limited (Chilt/RF09056) 2 (t) SLS-PAD-116, Halspan Limited (UI082-A (Rev.02)
	Frame 2 – Steel	Under latch forend and encasing the latch body	2 (t) SLS-PAD-105, Halspan Limited (CFR1507271_A) 2 (t) Therm-A-Strip, Intumescent Seals (Chilt/RF06048B)
Flush bolts	Frame 1 – Hardwood	Encasing the entire body of the flush bolt including the back surface of the face plate and under the keep, where fitted.	2 (t) MAP, Lorient Polyproducts Ltd (FRR-2110/1496)
	Frame 2 – Steel	Not permitted.	

Hardware Intumescent Specification			
Item	**Frame Type**	**Location**	**Product/Manufacturer (mm)**
Rebated threshold drop seals (see section 9.15)	As defined within section 9.15, specific to the tested drop seal design		
Concealed overhead closers	As defined within section 9.7.2, specific to the tested closer design		
Concealed hinges	As defined within section 9.6.2, specific to the tested hinge design		

Note: Specific items of hardware which are not listed above, may in fact require intumescent protection to align with their tested details. Where this is the case, the required intumescent protection is defined within the specific section for the item of hardware.

Example of hinge protection detail



Example of lock & latch protection detail

Example Flush bolt installation and intumescent protection

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.

9.3 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 or surface-fixed bolt • Door Selector if meeting edge astragal present
ULSADD	• Hinges • Self-closing device (closer) • Door Selector if meeting edge astragal present

9.4 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.

9.4.1 Single Point Engagement

The following sub-sections define the permitted locksets which are permitted for the Halspan® 90 doorset design. The sub-sections are broken down into frame types relevant to the test evidence which is summarised in section 3 and supports the performance of the doorset design.

9.4.1.1 Frame 1 – Hardwood

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

Element	Manufacturer & Product Reference (Test reference)
Locks & latches	1. Halspan Limited BOM-LCK-102 mortise latch / lock (Chilt/RF09056) 2. Halspan Limited LCK-BSS-104 (UI082-A) 3. Allgood 7581 series mortise latch/lock (Chilt/04037) 4. Union 3 lever mortise lock/latch (Chilt/RF04096) 5. Hafele 911.02.145 (FRR – 2110/1497) 6. Simplex (885572Z) stainless steel (FRR – 2112/1350)

Alternatively, Certifire approved components certified for use within 90-minute fire resistance applications on 64mm thick timber door and timber frames with the following specification are also deemed acceptable for both single and double leaf doorsets.

Element	Specification
Maximum forend dimensions	235mm high x 25mm wide x 4mm thick
Maximum body dimensions	165mm high x 100mm wide x 15mm thick
Intumescent protection	see section 9.2
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 800 – 1200mm from the threshold.

9.4.1.2 Frame 2 – Steel

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

Element	Manufacturer & Product Reference (Test reference)
Locks & latches	1. E*S tubular mortise latch (Chilt/RF06048B) 2. Halspan Limited BOM-LCK-102 (CFR1507271_A & WF156775)

Alternatively, Certifire approved components certified for use within 90-minute fire resistance applications on 64mm thick timber door and metal frames with the following specification are also deemed acceptable for single doorsets.

Element	Specification
Maximum forend dimensions	235mm high x 25mm wide x 4mm thick
Maximum body dimensions	165mm high x 100mm wide x 14mm thick
Intumescent protection	see section 9.2
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. When fitted within Frame 2 – Steel, the lock keep must be fitted underneath the intumescent material applied to the frame reveal as specified in section 4.5, as depicted below.
2. In all instances the location of the handle must be between 800 – 1200mm from the threshold.

9.4.1.3 Halspan Suite of Latches & Locks

Based on the testing undertaken on the Halspan® 90 doorset design as summarised within section 3, the following suite of latches and locks have been positively appraised for use within the Halspan® 90 range of doorset designs.

Product Reference	Product Code	Product Description	Halspan Limited Reference (BOM Code)
Halspan 90 Lock Case	LCK-BSS-102	Sashlock & Deadlock	BOM-LCK-102
Lock Intumescent	SLS-PAD-105	2mm (t) lock protection kit	
DIN Sashlock	LCK-BSS-104	Halspan 90 DIN standard radius sashlock	BOM-LCK-112
Lock Intumescent	SLS-PAD-116	Halspan 90 2mm DIN lock protection kit	
DIN Escape Sashlock	LCK-BSS-106	Halspan 90 DIN standard radius escape sashlock	BOM-LCK-113
Lock Intumescent	SLS-PAD-116	Halspan 90 2mm DIN lock protection kit	
DIN Mortice Nightlatch	LCK-BSS-105	Halspan 90 DIN standard radius mortice nightlatch	BOM-LCK-114
Lock Intumescent	SLS-PAD-116	Halspan 90 2mm DIN lock protection kit	
DIN Mortice Latch	LCK-BSS-107	Halspan 90 DIN standard radius mortice latch	BOM-LCK-115
Lock Intumescent	SLS-PAD-116	Halspan 90 2mm DIN lock protection kit	
DIN Deadlock	LCK-BSS-102	Halspan 90 DIN standard radius deadlock	BOM-LCK-116
Lock Intumescent	SLS-PAD-116	Halspan 90 2mm DIN lock protection kit	

It has been possible to consider the above latches and locks, complete with their associated intumescent specifications by either direct test evidence, or alternatively as their material properties and dimensions fall within the permitted specification for alternative latches and locks given above.

9.4.2 Cylinders

The table below details the tested cylinders that are approved.

Element	Manufacturer & Product Reference (Test Reference)
Cylinder	• Euroart CYD290 (UB128-1A) • Zoo Architectural Hardware, V5 Double Cylinder l V5EP90DSCE (UI082-A Rev.1) • Hafele 916.96.027, 80mm (FRR – 2110/1497) • Simplex, 1915E.90.K01 (FRR – 2122/1350)

Alternatively, 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 800^0C.
- 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:
    - As the lock body must be 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.

9.5 Handles & Escutcheons

The table below details the tested handles that are approved.

Element	Manufacturer & Product Reference (Test Reference)
Handles	• Halspan LCK-MSC-200 (VH061-1A&2A)
	• Magnet Victorian 0220 (WF156775)
	• E*S stainless steel lever type handle, Ø48mm (Chilt/RF09056)
	• The Dale Collection 2AS Sandal Lever ref. 5706 (CFR1103311 Rev 2)
	• ScrewFix Direct Limited SKU 25619-0001 (CFR1103311 Rev 2)
	• Euroart LRS101 (UB128-1A)
	• Eurolever SS2300 (FRR – 2009/2359)
	• Zoo Architectural Hardware ZCA030SA (UI081-A (Rev.01))
	• Hafele LDH 2170 (FRR – 2110/1497)
	• Carlisle Design Group SAA22/BP (CFR1507271_A (LH doorset))

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 1mm 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 53mm.
- Handle on back plate with a back plate size up to 260mm high x 53mm wide.
- 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 1mm clearance between the hole and the fixing.
- The escutcheon may be up to Ø53mm overall and up to 10mm thick.

9.6 Hinges

Hinges tested and permitted for use with the Halspan® 90 doorset design are detailed in the following sections. The following sub-sections detail the type of hinges permitted as well as the type frame the hinge type is permitted with.

9.6.1 Butt Hinges

The following sub-sections detail the permitted butt hinges with each frame type as appropriate.

9.6.1.1 Frame 1 – Hardwood

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

Element	Manufacturer & Product Reference (Test Reference)
Hinges	• Halspan Limited, BOM-HIN-102 (UI082-A (Rev.01)) Includes SLS-PAD-123
	• Halspan Limited, HIN-BSS-104 (VH061-1A&2A) **BOM-HIN-103** when paired with SLS-PAD-123
	• Royde & Tucker, H107 (Chilt/RF04037)
	• Euroart HINBB433/304/SSS (FRR – 2008/5507)
	• Eurolever SS5 (FRR – 2009/1221 Doorset B)

Alternatively, Certifire approved components certified for use within 90-minute fire resistance applications on 64mm thick timber door and timber frames with the following specification are also deemed acceptable for both single and double leaf doorsets.

Element	Specification
Blade height:	90 - 110mm
Blade width (excluding knuckle):	30 - 35mm (Fitted within the leaf frame) (See note 1)
Blade thickness	2.5 - 3mm
Fixings:	Minimum of 4No. 32mm long No. 8 or No.10 steel wood screws to the frame and a minimum of 4No. 50mm long No. 8 or No.10 steel wood screws to the leaf.
Materials:	Steel or stainless steel or brass with a melting point of greater than 800 degrees Celsius.

Intumescent protection shall be as defined in section 9.2 in all instances.

Note:

1. Projection hinges with blade widths greater than the widths detailed above are permitted providing that no more than 35mm of each blade is rebated within the leaf edge or frame.

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

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

Leaves less than 1200mm (h) can be hung on a minimum of 2 hinges located 150mm from the top and bottom of the door leaf (top hinge location is measured from the top of the hinge blade to the top of the door leaf and bottom hinge location is measured from the bottom of the hinge to the bottom of the door leaf).

Element		Specification	
Hinge positions:	If 3 hinges are required:	Top	100 –180mm from the head to top of hinge
		2nd	Minimum 200mm from top hinge or centrally fitted between top and bottom hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
	If 4 hinges are required:	Top	100-180mm from the head to top of hinge
		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 - 250mm from the foot of leaf to bottom of hinge
Intumescent protection:		See section 9.2	

Additional hinges may be added providing the requirement of 200mm between adjacent items of hardware is maintained.

9.6.1.2 Frame 2 – Steel

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

Element	Manufacturer & Product Reference (Test Reference)
Hinges	• Halspan Limited, BOM-HIN-102 or BOM-HIN-103 (CFR1507271_A LH Doorset) • Royde & Tucker H107 lift off type (Chilt/RF06048B)

The above detailed BOM-HIN-102 and BOM-HIN-103 hinges are dimensionally and physically the same, except for the presence of a radius applied to the corner of the hinge blade. As the presence of this radius is not likely to influence the fire resistance performance of the doorset design both of the proposed hinges are considered permitted.

Alternatively, Certifire approved components certified for use within 90-minute fire resistance applications on 64mm thick timber door and metal frames with the following specification are also deemed acceptable for single leaf doorsets.

Element	Specification
Blade height:	90 - 110mm
Blade width (excluding knuckle):	30 - 35mm (Fitted within the leaf frame) (See note 1)
Blade thickness	2.5 - 3mm
Fixings:	Minimum of 4No. M5 steel machine screws to the frame and a minimum of 4No. 50mm long No. 8 or No.10 steel wood screws to the leaf
Materials:	Steel or stainless steel or brass with a melting point of greater than 800 degrees Celsius.

Intumescent protection shall be as defined in section 9.2 in all instances.

Note:

1. When fitted within Frame 2 – Steel, the hinge blade must be fitted underneath the intumescent material applied to the frame reveal as specified in section 4.5.
2. Projection hinges with blade widths greater than the widths detailed above are permitted providing that no more than 35mm of each blade is rebated within the leaf edge or frame.

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

Leaves must be hung on a minimum of 3 hinges, optionally 4No. hinges are permitted.

Leaves less than 1200mm (h) can be hung on a minimum of 2 hinges located 150mm from the top and bottom of the door leaf (top hinge location is measured from the top of the hinge blade to the top of the door leaf and bottom hinge location is measured from the bottom of the hinge to the bottom of the door leaf).

Element		Specification	
Hinge positions:	If 3 hinges are required:	Top	100 –180mm from the head to top of hinge
		2nd	Minimum 200mm from top hinge or centrally fitted between top and bottom hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
	If 4 hinges are required:	Top	100-180mm from the head to top of hinge
		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 - 250mm from the foot of leaf to bottom of hinge
Intumescent protection:		See section 9.2	

Additional hinges may be added providing the requirement of 200mm between adjacent items of hardware is maintained.

9.6.2 Concealed Hinges

The following sub-sections detail the permitted concealed hinges with each frame type as appropriate.

9.6.2.1 Frame 1 – Hardwood

The concealed hinges detailed in the following section have been successfully tested with the Halspan® 90 in conjunction with a hardwood frame:

Test Evidence (Tested configuration)	Hinge (Dimensions)	Intumescent Protection (mm)	Minimum Perimeter Intumescent (Specified in Section 4.5)	Minimum Number of Hinges
FRR – 2110/1497 (LSASD)	Simonswerk, Tectus TE 540 3D (200mm high x 32mm wide each blade excluding knuckle)	2 (t) MAP applied encasing the morticed body of the hinge within the leaf and frame.	LSASD: AH/6, AH/7 & AH/8 ULSASD: BH/7 LSADD: EH/6 & EH/7 ULSADD: FH/7	4
FRR – 2110/1496 (LSADD)				4
FRR – 2112/1350 (LSADD)	Halspan CEAM, Art Stars 1131 (160mm x 64mm overall dimensions as reported)	2 (t) Lorient Polyproducts MAP applied encasing the morticed body of the hinge within the leaf and frame.		3

Based on the test evidence the above tested and assessed concealed hinges are permitted for use with the doorset design subject to the following parameters:

Configurations: LSASD, ULSASD, LSADD, ULSADD

- All doorsets must be hung on the minimum number of hinges detailed in the table above, as applicable for the hinge utilised.
- Regard should be paid to the maximum door mass and it is permitted to increase the number of hinges above the assessed minimum quantity where required up to a maximum of 4.
- Intumescent protection to the concealed hinges used must be as tested and identified within the table above.
- Alternative concealed hinges are not permitted.

Concealed hinge positions shall meet the following specification:

Element		Specification	
Hinge positions:	If 3 hinges are required:	Top	110 –150mm from the head to top of the hinge
		2nd	Centrally fitted between top and bottom hinges
		Bottom	110 – 150mm from the foot of leaf to bottom of the hinge
	If 4 hinges are required:	Top	110 -150mm from the head to top of the hinge
		2nd	2nd hinge 200 - 250mm from the top hinge
		3rd	3rd hinge equally spaced between 2nd and bottom hinges
		Bottom	110 - 150mm from the foot of leaf to bottom of the hinge

9.6.2.2 Frame 2 – Steel

Concealed hinges are not permitted for use with the Halspan® 90 doorset design when hung within Frame 2 – Steel.

9.7 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 concealed jamb mounted, floor springs with top pivots and bottom straps, transom mounted, and offset pivots used with floor springs are not considered acceptable for use with the Halspan® 90 doorset range.

9.7.1 Overhead Face Fixed Closer

The overhead face fixed closers tested and detailed below are permitted with both Frame 1 – Hardwood and Frame 2 – Steel.

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

Element	Manufacturer & Product Reference (Test Reference)
Overhead face-fixed closers	• Dorma Door Controls Ltd TS83 (Chilt/04037)
	• Dorma Door Controls Ltd TS83V (Chilt/RF06048B)
	• Halspan Limited, 6000 series Eco closer ref: CLR-ECO-100, (Chilt/RF10078)
	• Halspan Limited, 9000 series power closer ref: CLR-PWR-100 (CFR1103311 Rev 2)

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

- Certifire approved overhead face-fixed closers for 90-minute fire resistance applications on 64mm thick timber door and timber or steel frames (as applicable).

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.

9.7.2 Concealed Overhead Self Closing Device

Concealed overhead self closing devices tested and permitted for use with the Halspan® 90 doorset design are detailed in the following sections. The following sub-sections detail the type of closer permitted as well as the frame type the closer type is permitted with.

9.7.2.1 Frame 1 – Hardwood

The tables below detail the tested and assessed concealed overhead closers permitted within the Halspan® 90 doorset design hung within Frame 1 – Hardwood. The body of the concealed closer morticed into the top of the door leaf and the track morticed into the frame head.

In all instances the maximum leaf dimensions for all doorsets which include concealed overhead closer must not be greater than:

- Height: 2218mm. (Based on FRR – 2112/1350)
- Width: 1033mm. (Based on FRR – 2112/1350)

Latched & Unlatched Single Acting Configurations					
Manufacturer & Product Reference (Test Reference)	**Intumescent Protection (mm)**	**Closer Body Dimensions (mm)**	**Closer Slide Arm Dimensions (mm)**	**Perimeter Intumescent Specification (see section 4.5)**	**Minimum Head Stop Height (mm)**
Geze Boxer EN 2-4 Hafele 931.14-689 (FRR – 2110/1497)	2 (t) MAP, fitted encasing the closer body within the leaf and the closer slide arm within the frame	270 x 45 x 31	440 x 12 x 20	LSASD: AH/6, AH/7 & AH/8 ULSASD: BH/7 LSADD: EH/6 & EH/7 ULSADD: FH/7	18
Dormakaba ITS 96 EN2-4 (WF369731)	Dormakaba supplied intumescent kit, 2 (t) fitted encasing the closer body within the leaf and the closer slide arm within the frame	280 x 32mm	440 x 32	LSASD: AH/2, AH/3, AH/7 & AH/8 ULSASD: BH/3, BH/4 & BH/7 LSADD: EH/7 ULSADD: FH/7	20

Based on the test evidence, the above tested and assessed concealed closers are permitted for use with the doorset design subject to the following parameters:

- The details identified in the table above for the following items must be followed for the selected concealed overhead closer, and is based on the tested arrangements:
  - Permitted configuration(s).
  - The frame must be fitted with a head stop of the minimum size, where required.
  - Intumescent protection to the concealed closer.
  - Leaf perimeter intumescent details.
- 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.
- The dimensions of the concealed overhead door closer must not exceed the dimensions given within the tables above.

9.7.2.2 Frame 2 – Steel

Concealed overhead self-closing devices are not permitted for use with the Halspan® 90 doorset design when hung within Frame 2 – Steel.

9.8 Bolts

9.8.1 Flush Bolts

The table below details the tested flush bolts that are approved.

Element	Manufacturer & Product Reference (Test Reference)	Size (mm)
Flush Bolts	• Zoo Architectural Hardware ZAS03RSS (UI082-A (Rev.01))	203 x 20
	• Euroart FBS202 (FRR – 2110/1496)	151 x 19 x 34
	• Simplex SDBSS.302.220.SSS (FRR – 2112/1350)	170 x 19

In addition to the tested and permitted flush bolts detailed above, flush bolts which meet the following requirements are permitted.

- Flush bolts must be steel.
- The following maximum dimensions are not exceeded:
    - 203mm long x 20mm deep x 38mm wide.

On the basis of the testing, the tested and alternative flush bolts are suitable in the following applications only:

Frame options: Frame 1 – Hardwood

In all cases the following scope must be complied with:

- Flush bolts must be fitted centrally within the thickness of the secondary leaf at the meeting edge.
- Flush bolts may be fitted to only the top of the leaf or alternatively to both the top and bottom of the leaf.
- The components are fitted relative to the meeting edge intumescent strips in the following way:
    - Where there are intumescent strips fitted to both the primary and secondary leaf meeting edges, a minimum of 2No. intumescent strips shall be in the leaf opposing the flush bolt.
- Intumescent Protection: All edges of the mortice of the keep and body must be protected with intumescent gaskets as specified in section 9.2.
- Flush bolts fitted at the bottom of the leaf cannot be used when a morticed in drop seal is present.
- The mortice to facilitate the flush bolt must be as tight to the mechanism as is compatible with its operation and the inclusion of intumescent protection.

9.8.2 Surface-Fixed Bolts

Surface fixed bolts have been successfully tested in Chilt/RF04037 and Chilt/RF04096 and are therefore acceptable for use with the Halspan® 90 doorset design.

Surface mounted face fixed bolts constructed from steel, stainless steel, aluminium or bronze may be fitted, providing the dimensions are no greater than:

- 350mm long x 38mm wide (footprint).

Surface mounted face fixed bolts may be applied to the horizontal or vertical edges of the doorset providing the components are fitted at least 40mm from the corners of the leaf.

Intumescent protection is not required where both the bolt and keep are face fixed.

Where a keep is required to be recessed into the frame, the keep shall be protected with 1mm (t) graphite or MAP based intumescent.

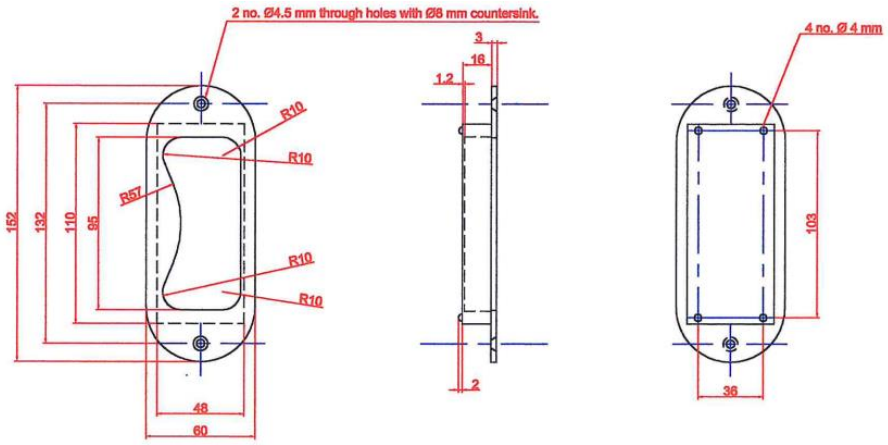
9.9 Pull Handles

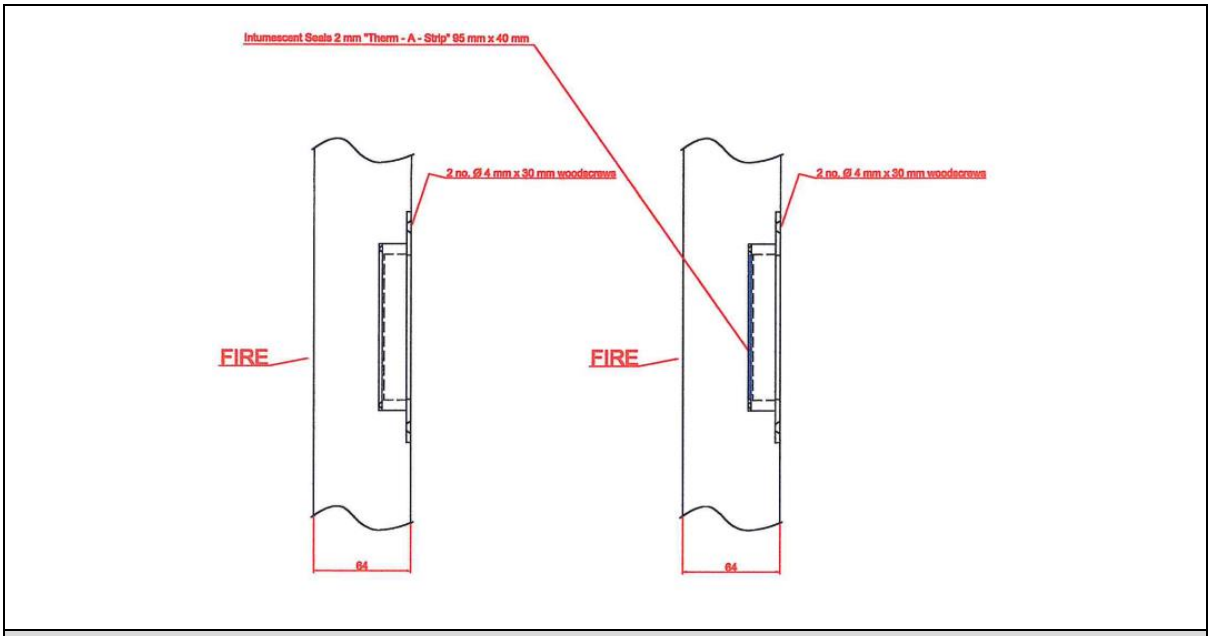
Steel, stainless steel or bronze pull handles may be surface-fixed or bolted through the door leaf, providing the length is limited to 1200mm between the fixing points. If through fixed, there must be no more than 1mm clearance between the hole and stud.

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.

9.10 Recessed Flush Pull Handles

The below table details the tested recessed flush pull handle that is approved within the Halspan® 90 doorset design.

Test evidence	Material Type	Overall Size of Product	Mortice within leaf (mm)	Intumescent Protection (mm)
DFR0503171	Stainless Steel	152mm high x 60mm wide x 21mm thick	Body – 110 (h) x 48 (w) x 21 (d) Face plate – 152 (h) x 60 (w) x 2 (d) (following the profile of the handle)	2 (t) Therm-A-Strip, 95 (h) x 40 (w) fitted lining the bottom mortice for the handle.
				
Permitted Flush Pull Handle (as tested)				



Required Intumescent Protection

Where fitted the following criteria must be adhered to:

- The handle must be screw fixed as tested with:
  - 2No. Ø4mm x 30mm steel wood screws
- The Intumescent protection must be as tested and identified within the table above.
- The recessed pull handle must be located no closer than 150mm to a door edge and no closer than 150mm to glazing, grooves or any hardware.
- The permitted recessed pull handles must not be fitted in a back-to-back arrangement. If fitted to both leaf faces the rebates must be a minimum of 50mm apart.

9.11 Push Plates & Kick Plates

The table below details a selection of the tested push plates that are approved.

Manufacturer & Product Reference (Test evidence)
• Steel, 100mm (w) x 2mm (t) x full height of leaf, fixed with PUR. (FRR – 2009/2359)

As tested in FRR – 2009/2359, the above referenced push plate may extend to the full height of the visible face of the door leaf and may be installed on both faces.

Alternatively, components with the following specification are also 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.

In all cases the applied push plates and / or kick plates must:

- Not return around the door edges.
- Not be recessed into the face of the leaf.
- Not be applied under glazing beads or door stops.

9.12 Security Viewers

The table below details the tested security viewers that are approved.

Manufacturer & Product Reference (Test Evidence)	Intumescent Protection
Hafele 959.00.096 (UB128-1A)	1 (t) Lorient Polyproducts Ltd, MAP applied lining the viewer aperture.

Alternatively, components with the following specification are also 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.
- Must be fitted no closer than 100mm to door edge, glazing or any other hardware component.
- Alternative security viewers must have demonstrated they provide 90-minute fire resistance integrity performance in a 64mm timber based door leaf.

9.13 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 are not considered within this field of application.

Door selectors may be required where an astragal is present.

9.14 Environmental Seals

The following sub-sections detail the permitted specification of environmental seals with each frame type as appropriate.

9.14.1 Frame 1 – Hardwood

A number of different environmental seals have been successfully tested as part of the Halspan® 90 doorset design. Based on this testing the table below details the approved environmental seals included within the summarised evidence within section 3:

Product Reference & Manufacturer (Test Reference)
Halspan Limited, Triple Fin Seal, SLS-TRI, 10mm x 10 mm (CFR1507271_A)
Lorient Polyproducts Ltd, LAS1010 (FRR – 2009/1221 Doorset B & FRR – 2009/2359)

Alternatively, on the basis of the testing undertaken, silicone or PVC based flame retardant acoustic, weather and dust seals may be fitted to this doorset design without compromising the performance, providing their fitting does not interfere with the activation of the intumescent seals or hinder the self-closing function of the leaves.

9.14.2 Frame 2 – Steel

Environmental seals are not permitted for use with the Halspan® 90 doorset design when hung within Frame 2 – Steel.

9.15 Threshold drop Seals

Drop seals have been successfully tested within the doorset design and are therefore, acceptable for use in the door designs considered herein. The table below details the permitted threshold drop seal as tested and summarised within section 3:

Product Information & Manufacturer (Test Reference)	Intumescent Protection (mm)
Halspan Limited, BOM-DRP Range (CFR1203271/01)	Halspan 90 drop seal intumescent kit, 2 (t), supplied with drop down seal within BOM-DRP range.

Alternative drop seals are not permitted.

9.16 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.
    - Polymeric signage equal to or smaller than the dimensions provided above are permitted, however, must not be applied on or above glazed apertures.

9.17 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.

9.18 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.

9.19 Panic Hardware

The table below details the tested panic hardware that have been successfully tested and are approved.

Element	Manufacturer & Product Reference (Test Reference)	Intumescent Protection (mm)
Panic Bar	Euroart Panic Bar with Outside Access Device EED301 & EAD230 (FRR – 2008/5507)	MAP, 2 (t) applied between the footprint of the panic bar and the leaf face.
	Eurolever SS9222 including Panic Bar Attachment with Europrofile Cylinder Eurolever SS9223 45.5mm (FRR – 2009/1221 Doorset B)	

The panic bars must be installed in accordance with the successfully tested design in the above referenced test reports.

Alternatively, Certifire approved panic hardware may be fitted, providing the installation does not require the removal of any material 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.

9.20 Halspan Smart Tags

Based on the testing summarised within section 3, the detailed Halspan Smart Tags below are permitted to be applied to the doorset within the following parameters:

Specification:		
Manufacturer & Reference	**Material**	**Overall Dimensions**
Halspan Limited, Halspan Edge Mounted Smart Tag: TAG-025-BLK	PVC	Ø25mm x 3mm thick
Halspan Limited, Halspan Surface Mounted Smart Tag: TAG-028-BLK	PVC	Ø28mm x 1mm thick

The following limitations must be adhered to when fitting the smart tag to the doorset:

Edge Mounted (Door leaf edge)

Frame Type: Frame 2 – Steel

- The TAG-025-BLK or TAG-028-BLK smart tag must be fitted into a tight rebate such that the smart tag results in being flush with the lipping material.
- The TAG-028-BLK smart tag must be surface mounted onto the lipping material.
- The smart tags shall be applied within the hanging edge of the door leaf only.
- The smart tag shall be positioned centrally within the thickness of the door leaf.
- The smart tag shall be fitted no closer than 100mm below the top hinge position, measured from the centre of the tracker tag.
- The smart tag must be no closer than 87mm to any other element of hardware.
- It is not permitted to interrupt or remove intumescent material within the doorset to apply the above detailed tags.

Surface Mounted (Door leaf face)

Frame Type: Frame 1 – Hardwood or Frame 2 – Steel

- The TAG-025-BLK or TAG-028-BLK smart tag must be fitted into a tight rebate such that the smart tag results in being flush with the face of the leaf.
- The TAG-028-BLK smart tag must be surface mounted onto the leaf face without the removal of leaf material.
- The smart tags may be applied to the leaf face without restriction providing the tags meet the following limitations:
    - The smart tag shall not be applied such that it interfaces with the door stop.
    - The smart tag shall not be positioned directly above or on a glazed aperture.
    - The smart tag must be no closer than 87mm to any other element of hardware, apertures within the leaf or the edge of the leaf.

10 Installation

10.1 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

10.2 Door Frame Installation

In all instances, the door frame (Frame 1 – Hardwood or Frame 2 – Steel) must be fully contained within the thickness of the supporting structure.

Furthermore, when fitted within a masonry construction as detailed in section 10.5 the entire thickness of the leaf and frame shall be within the thickness of the masonry element.

Where the thickness of the supporting structure is greater than the depth of the door frame and architrave is applied, it is permitted to fit the architrave such that it overlaps the door frame and abuts the structural opening to conceal the firestopping gap.

10.3 Firestopping

The following sub-sections define the permitted firestopping arrangements relevant to each of the two frame types considered herein.

10.3.1 Frame 1 – Hardwood

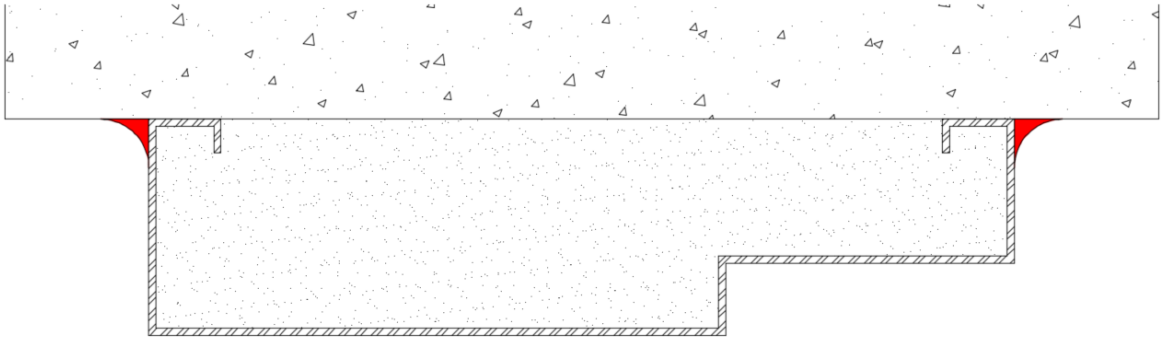
The door frame to structural opening gap must be protected using one of the following methods;

Gap (mm)	Method
Up to 20	Tightly packed with rock or stone based mineral fibre, capped on both sides with a 10mm depth of acrylic intumescent mastic. Products must have been demonstrated (at the required maximum gap dimension) to achieve 90 minutes fire resistance performance behind a timber frame to BS 476: Part 22: 1987 or BS EN 1634-1. Mineral fibre capped with intumescent mastic has been proven via test evidence for the Halspan® 90 doorsets in test report WF372528 and WF386186 A. Architraves of the same tested material type and dimensions must be applied if included within the evidence used to support the firestopping medium.
Up to 20	Filled to the full depth with fire resisting foam, once cured, a depth of 10mm from each face removed and refilled with intumescent mastic. Products must have been demonstrated (at the required maximum gap dimension) to achieve 90 minutes fire resistance performance behind a timber frame to BS 476: Part 22: 1987 or BS EN 1634-1 when used in conjunction with each other. (i.e. the foam and mastic must have been tested together). Architraves of the same tested material type and dimensions must be applied if included within the evidence used to support the firestopping medium. Dennard Polyurethane expanding foam, DI-PU0912 in conjunction with Tremco Illbruck Nullifire FS702 Intumescent Acrylic Sealant has been tested in the manner detailed above (UB128-1A). Based on the testing, this combination may be used up to a maximum width of 10mm. When this method and combination is applied architraves are optional as none were fitted in the testing undertaken.

10.3.2 Frame 2 – Steel

Frame 2 – Steel requires the rear of the frame to be fully back filled with cement mortar. Once completed no further fire stopping materials are required to be applied. Supported by Chilt/RF06048B.

Optionally the junction between the frame and supporting construction may be additionally sealed with an intumescent acrylic mastic which has been tested in accordance with BS 476-22: 1987. The location is included as a red coloured seal in the following image.



10.4 Packers

The following sub-sections detail the tested and assessed packing arrangements for each of the frame types considered within this assessment.

10.4.1 Frame 1 – Hardwood

Packers for Frame 1 can be timber of equal density to the frame, plywood or plastic packers if fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1 for 90 minutes fire resistance.

10.4.2 Frame 2 – Steel

Packers are not required for Frame 2 on the basis that the frame designs include ‘U’ brackets which are to be fixed tight to the supporting construction.

10.5 Wall Types, Structural Opening & Fixity

10.5.1 Wall Types

Each of the frame types considered herein have specific requirements relating to what wall types they may be applied within, the following sub-sections identify the permitted wall types for each frame type as applicable.

10.5.1.1 Frame 1 – Hardwood

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 90 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.

10.5.1.2 Frame 2 – Steel

The following wall types are approved for this doorset design:

a) Masonry constructions of 120mm minimum thickness

The wall type must be determined to be able to provide at least the same level of fire resistance of the doorset design.

The wall type shall provide a suitable medium to permit adequate fixity, it is anticipated that for:

- 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.

10.5.2 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.

10.5.3 Fixity

10.5.3.1 Frame 1 – Hardwood

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 doorsets, 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 double leaf doorsets, the upper horizontal framing section abutting the structural opening must also be secured to the supporting construction using steel fixings at either:

- 600mm maximum centres and maximum of 150mm from corner or
- 1No. fixing applied nominally central to the width of the frame head.

The fixings must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm.

10.5.3.2 Frame 2 – Steel

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 doorsets, the frame jambs only are to be fixed to the supporting construction using steel fixings (as tested in RF06048B) 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 the frame should be braced during installation to ensure the structural opening gap is protected.

10.6 Post Production (Onsite) Leaf Size Adjustment

The Halspan® 90 range of doorsets may be altered as follows:

Leaf Size Adjustment Specification	
Element	Reduction
Lipping (Hardwood Timber Lipping as defined within section 5.3.1 only)	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.

10.7 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. (WF384941 AR1)

11 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 more than 20% of non-insulating glazing
Partially insulating	Doorsets incorporating up to 20% of non-insulating glazing
Fully insulating	Unglazed doorsets

12 Conclusion

If the Halspan® 90 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 90 minutes integrity and insulation (subject to section 11).

13 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: Signed by: A. Davies 8295EF8349144CB...

Name: Andy Davies

Position: Technical Manager

Date: 06-Nov-2024

For and on behalf of: Halspan Limited

14 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.
7) This report may only be reproduced in full. Extracts or abridgements of reports shall not be published without permission of Warringtonfire. All work and services carried out by Warringtonfire Testing and Certification Limited are subject to, and conducted in accordance with, the Standard Terms and Conditions of Warringtonfire Testing and Certification Limited, which are available at https://www.element.com/terms/terms-and-conditions or upon request.
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.

15 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 13 duly signed by the applicant.

Position:	Assessor	Reviewer
Signature:	Signed by: 43935C1A192A419...	Signed by: E399772B03874B1...
Name:	**N Whitelock***	**E L Wilson***
Title:	Technical Manager, Doors & Smoke Leakage	Senior Product Assessor

* For and on behalf of Warringtonfire

Appendix A: Revisions

Rev.	WF Ref.	Date	Description
A	A05072	13/04/05	Inclusion of reduced leaf dimensions from Chilt/RF04096 and glazing system from Sealmaster test DFR0503171
B	A07036	10/04/07	Revision to include steel frame double door details from test WF 156775 and RF06048B
C	A10173	20/12/10	Revision to include double acting single door details from test RF10078 and PU gluelines for PVC lippings from test CFR1003181
D	A13011	31/01/12	Revision to include: large single leaf doorsets (2400mm (h) x 1047mm (w)) from test CFR1203271/02, concealed hinges and Europrofile locksets from test IF12069 and threshold dropseal from test CFR1203271/01. Assessment has been updated and revalidated for a further 5 year period
E	F14139	11/07/14	Update and revalidation, including a reduced perimeter intumescent seal specification permitted with latched & unlatched, single acting, single doors, and an increased maximum leaf size dimension, based on CFR1103311
F	F14218	09/09/14	The restriction on the use of beech timber as a door frame material has been removed from the assessment
G	F15270	04/01/16	To provide generic sections permitting alternative door closers, locks/latches & hinges within tested dimensions & materials. Restriction applied to use of Beech for door frames, lippings & glazing beads. Threshold door gap amended to reflect supporting test evidence. No change to the validity period.
I	WF369817	12/05/17	Addition of further glass and related glazing systems and ITS96 closer.
J	WF393076	01/03/18	Technical review and Revalidation for a further 5 years. Inclusion of jointing section 2.1, additional supporting test evidence and extended height envelope for LSASD
K	WF433080	11/09/20	Corrected minimum frame and lipping density from 650 to 640 kg/m^3, changed address of Halspan on cover page, and put into WF format.
L	WF530654	06/11/24	Revalidation of existing document, inclusion of further test evidence and a further 5 year validity.