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**Title:**

# Field of Application for Strebord 44+ Doorsets for 60 Minute Fire Resisting Doorset

**Report Number**
WF 417523

**Valid From:**
27th August 2019

**Valid Until:**
27th August 2024

**Prepared for:**
**Falcon Panel Products Ltd.**

Clock House

Station Approach

Shepperton

Middlesex

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# Contents

Page No.

# 1 Foreword

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

This field of application report has been commissioned by Falcon Panel Products Ltd. and relates to the fire resistance of timber based doorsets. The assessment uses established extrapolation and interpretation techniques in order to extend the scope of application of the tested constructions and tested performances obtained, by determining the safe limits for the design. The assessment is an evaluation of the expected fire resistance performance, if the elements were to be tested as specified herein, in accordance with BS 476: Part 22: 1987. This assessment cannot therefore be considered for a CE marking application nor can the conclusion be used to establish a formal classification against EN13501-2.

This field of application has been written using appropriate test evidence generated at a UKAS accredited laboratory to the relevant test standard. The supporting test evidence has been deemed appropriate to support the manufacturers stated scope of application for the products and is summarised in section3.

The defined scope presented in this field of application report relates to the behaviour of the proposed timber based solid core doorsets, under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the elements 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 PFPF guidelines to undertaking assessments in lieu of fire tests. 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 in lieu of fire tests for building control and other purposes.

The PFPF guidelines are produced by the UK Fire Test Study Group (FTSG) an association of the major fire testing laboratories in the UK and are published by the PFPF, the representative body for the passive fire protection industry in the UK.

## 2 Proposal

It is proposed to consider the fire resistance performance of the Falcon Panel Products Ltd. doorset design described in the technical specification in section 4 of this assessment report, for 60 minutes fire resistance, if the doorset were to be tested to the requirements of BS 476: Part 22: 1987, *Fire tests on building materials and structures – Part 22: Method for determination of the fire resistance of non-load bearing elements of construction.*

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

## 3 Test Evidence

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

### 3.1 Test report FEP/F14147 – With Stiles and Rails

The referenced test report, the essential details of which are summarised below, is the primary data for the single/double door design being considered for assessment in this report.

| | |
|---|---|
| **Date of test** | 24th June 2014 |
| **Identification of test body:** | Warringtonfire ( Originally Chiltern International Fire ) |
| **Sponsor:** | Falcon Panel Products Ltd |
| **Tested Product:** | Insulated, unlatched, double leaf, single acting, timber doorset |
| **Summary of test specimen:** | Dimensions of leaf : 2040mm (h) x 926mm (w) x 54mm (t)<br>Leaf – Stiles and rails – 40mm by 42mm sapele with a Core – 44mm thick Strebord 44 sanded to 42mm either side, faced with 6mm MDF and lipped all edges 10mm thick Sapele<br>Intumescent – 2 No 15mm by 4mm in the frame and 2 No 15mm by 4mm at the meeting stile in the leaf containing the lock body. Pyroplex FO8700 and PO8012.<br>Frame – 32mm by 90mm, sapele with 12mm by 34mm pinned stop<br>Hardware – 3No Royde and Tucker lift off hinge H101 blade size 100mm by 35mm. Carlisle brass Closer DCT2024SV with a fig 66 bracket. Union Assa abloy latch body: 235 by 24mm and keep: 145 by 25mm.<br>Hardware protection – Tenmat 1mm thick graphite under all hinge blades. Tenmat 1mm thick graphite under latch forend and Pyroplex 2mm thick graphite under latch keep<br>Glazing – None fitted<br>Frame fixing 4 masonry fixings 100 mm long by 10mm dia each side.<br>Doorset orientated to open towards heating conditions. |
| **Test Standard:** | BS 476: Part 22: 1987 |
| **Performance** | Integrity: 69 minutes<br>Insulation: 69 minutes |

## 3.2 Test report FEP/F16187 – Without Stiles and Rails

The referenced test report, the essential details of which are summarised below, is the primary data for the single/double door design being considered for assessment in this report.

| | |
|---|---|
| **Date of test** | 8th June 2016 |
| **Identification of test body:** | Warringtonfire ( Originally Chiltern International Fire ) |
| **Sponsor:** | Sealed Tight Solutions |
| **Tested Product:** | Insulated, unlatched, double leaf, single acting, timber doorset |
| **Summary of test specimen:** | Dimensions of leaf : 2135mm (h) x 932mm (w) x 54mm (t)<br>Leaf – Stiles and rails – None fitted, a Core – 44mm thick Strebord 44 sanded to 42mm either side, faced with 6mm Moisture resistant MDF and lipped all edges 8mm thick Sapele<br>Intumescent – 2 No 15mm by 4mm in the frame and 2 No 15mm by 4mm at the meeting stile in the leaf containing the lock body. Sealed Tight Solutions ST1504.<br>Frame – 32mm by 90mm, sapele with 12mm by24mm pinned stop<br>Hardware – 3No Union Bearing butt hinge blade size 100mm by 37mm. Rutland TS3204. Union Assa abloy latch body: 235mm by 25mm and keep: 185mm by 25mm.<br>Hardware protection – 1mm thick graphite under all hinge blades. 1mm thick graphite under latch forend and 1mm thick graphite under latch and 1mm graphite around latch body. Sealed Tight solutions graphite intumescent<br>Glazing – None fitted<br>Frame fixing 4 masonry fixings 80 mm long by 10mm dia each side.<br>Doorset orientated to open towards heating conditions. |
| **Test Standard:** | BS 476: Part 22: 1987 |
| **Performance** | Integrity: 61 minutes<br>Insulation: 61 minutes |

# 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 design, summarised in section 3.

## 4.2 Intended use

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

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

## 4.3 Description of Construction

There are 2 design variations for the door leaf

- With Stiles and Rails - Core surrounded by hardwood stiles and rails, lipped and faced
- Without Stiles and Rails – Core, lipped and faced

The finished thickness of the door leaf is 54mm.

This can be increased, in the opinion of Warringtonfire, up to a maximum of 66mm by increasing the facing from 6mm to 12mm, increasing the facing thickness will increase door stability and resistance to thermal distortion

## 4.4 With Stiles and Rails

The construction for door leaves covered by this design comprise the following elements:

| **Element** | | **Species/Type** | **Dimensions** (mm) | **Min. Density** ($kg/m^3$) |
|---|---|---|---|---|
| **Single piece Core** | | Strebord 44 bonded to stile and rails | 44 thick sanded evenly either side to finish 42 | 550* |
| **Stiles and Rails** | | Sapele stapled at corners | 40 wide by 42 thick | 640 |
| **Facings** | | MDF or Moisture resistant MDF | 6 thick | 700 |
| **Adhesive** | Lippings | PU | - | - |
| | Facings | Cross linked PVA | | |
| | Core | Cross linked PVA | | |
| **Lippings** | | Sapele | 10 thick | 640 |

## 4.5 Without Stiles and Rails

The construction for door leaves covered by this design comprise the following elements:

| Element | | Species/Type | Dimensions (mm) | Min. Density ($kg/m^3$) |
|---|---|---|---|---|
| **Single piece Core** | | Strebord 44 | 44 thick sanded evenly either side to finish 42 | 550* |
| **Facings** | | MDF or Moisture Resistant MDF | 6 to 12 thick | 700 |
| **Adhesive** | Lippings | PU | - | - |
| | Facings | Cross linked PVA | | |
| | Core | Cross linked PVA | | |
| **Lippings** | | Sapele | 8 thick | 640 |

# 5 Leaf Sizes

The approval for increased leaf dimensions is based on results of the tests listed in section 3 and takes into account the designs margin of over performance above 60 minutes integrity and the characteristics exhibited during test. Data sheets specifying the maximum approved leaf sizes and graphs showing the permitted gradient between maximum height and width are contained in appendix B.

Unequal leaf double doorsets are covered by this assessment with no restriction on the smaller leaf dimension, providing they are no larger than the leaf dimensions contained in appendix B.

Doorsets containing leaves with smaller dimensions than those stated are deemed to be less onerous, due to the increased stability of smaller leaves and the reduced potential for leaf distortion, and are therefore automatically covered.

## 5.1 Orientation

The primary fire resistance test for this design was 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, for timber based door leaves hung in timber door frames (see Annex C of BS EN 1634-1: 2014 + A1: 2018 for justification).

Based on this testing, assessment is made that doorsets to this design may be hung to open either away from or towards the fire risk side of the doorset.

# 6 Configurations

Based on the test evidence listed in section 3, this assessment covers the following doorset configurations for both designs wiith Stiles and Rails and without Stiles and Rails.

| Abbreviation | Description |
|---|---|
| LSASD | Latched, single acting, single doorset |
| ULSASD | Unlatched, single acting, single doorset |
| LSADD | Latched, single acting, double doorset |
| ULSADD | Latched, single acting, single doorset |

## 7 Leaf Size Adjustment

Door leaves of this design may be altered as follows:

With Stiles and Rails

| Element | Reduction |
|---|---|
| Leaf | The manufactured dimensions of the leaf may not be reduced in height or width |
| Timber lippings | The lipping dimensions stated in section 11.1 may be reduced by 20% for fitting purposes |

Without Stiles and Rails

| Element | Reduction |
|---|---|
| Leaf | The manufactured dimensions of the leaf may be reduced in height or width without restriction |
| Timber lippings | The lipping dimensions stated in section 11.1 may be reduced by 20% for fitting purposes |

## 8 Glazing

Not permitted

# 9 Overpanels

## 9.1 Solid

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

The transom required to separate the leaf heads from the overpanel must be to the same specification as the door frame (see section 12.1).

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

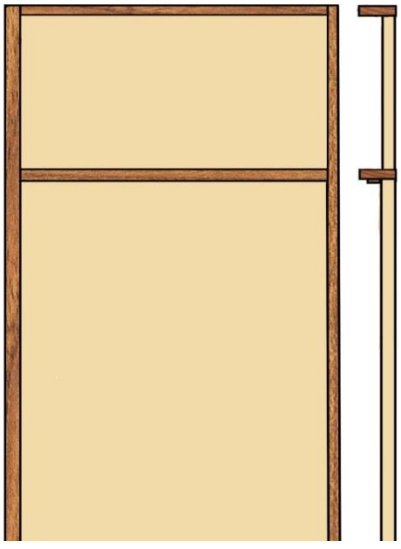
All methods require joints to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws. Butt joints must be additionally bonded with a urea formaldehyde or better, thermosetting adhesive.

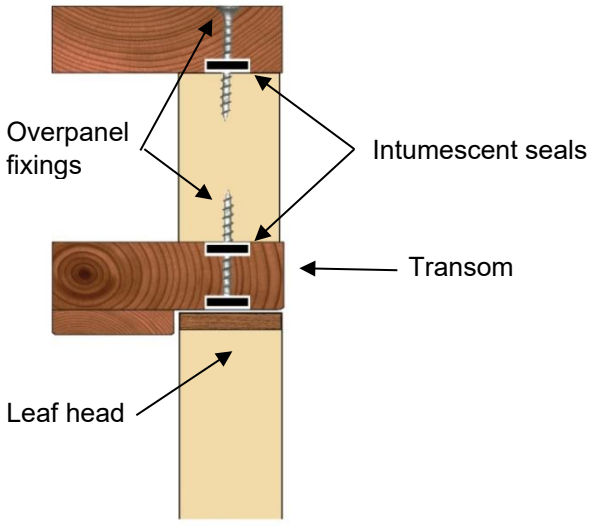
The overpanels must be fixed by screwing through the rear of the frame with steel screws passing at least 30mm into the centre line of the overpanel. Fixings must be no more than 100mm from each corner and a maximum of 250mm centres in between.

The intumescent seals specified for the jambs in section 14 must be fitted to all four edges of the overpanel. A 2mm gap tolerance is permitted between the overpanel and frame/transom.

Maximum overpanel heights are as follows:

| **Configuration** | **Height** (mm) | **Width** (mm) |
|---|---|---|
| Single doorsets | 2000 | Overall door width |
| Double doorsets | 1500 | Overall door width |






**Note:** Drawing is representative of overpanel construction only; actual construction must comply with the details specified in this document.

## 10 Leaf Facing Materials

### 10.1 General

Alternative leaf facings are not permitted as the tested facings form an integral part of the design. The tested facings which have been tested and can be used with this design are as follow, minimum density must be 700 kg/m$^{3:}$

- MDF
- Moisture resistant MDF

### 10.2 Decorative & Protective Materials

The following additional materials are permitted for this door design since they would degrade rapidly under test conditions without significant effect:

| **Facing Material** | **Maximum Permitted Thickness** (mm) |
|---|---|
| Paint | 0.2 |
| Timber veneers | 2 |
| Plastic laminates | 2 |
| Cellulosic foils | 0.5 |

**Notes:**

1. Metallic facings are not permitted (except for push plates and kick plates).
2. The door leaf thickness must not be reduced to accommodate the finish.
3. Materials must not conceal intumescent strips.
4. Plastic laminates must not be applied to the edges of leaves.

### 10.3 Decorative Mouldings

If required, face-fixed surface applied mouldings may be fixed to the doors. Mouldings must meet the specifications contained in the following table:

| **Type** | **Dimensions** (mm) | **Min. Density** (kg/m$^3$) |
|---|---|---|
| Surface applied mouldings | Maximum of 20 thick x 50 wide | ≥300 |

**Notes:**

1. Timber for mouldings must meet or exceed class J30 as specified in BSEN 942:2007 ( subject to adequate repair of any defect.)
2. Surface applied mouldings may be softwood, hardwood or MDF meeting the minimum specified density stated above.
3. Surface applied mouldings may be fixed to the leaf up to a maximum of 30% of the door leaf area when bonded with a contact or other thermally softening adhesive.

# 11 Lippings

## 11.1 Timber Lippings

The door leaves must be lipped in accordance with the following specification.

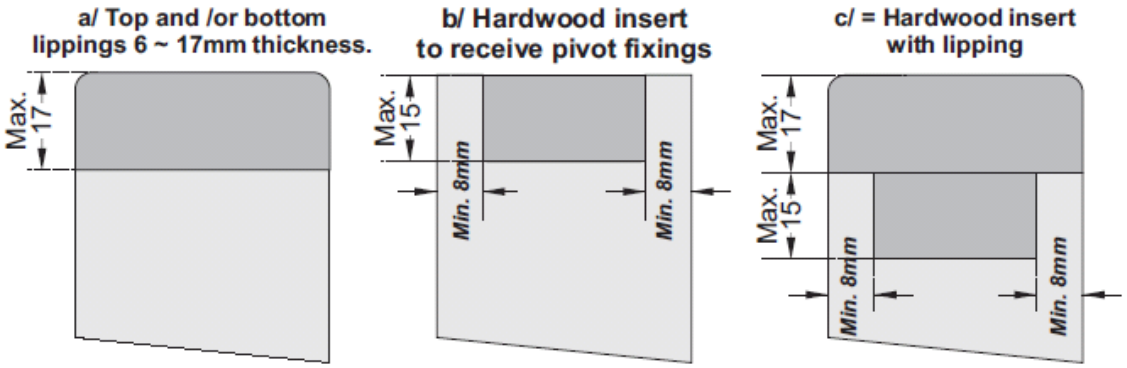
| Material | Size (mm) | Min. Density ($kg/m^3$) |
|---|---|---|
| Timber must be meet or exceed J30 as specified in BSEN 942: 2007 ( subject to adequate repair of any defects.) | 1. Flat = 8 – 15 thick with a maximum of 2mm profiling permitted at corners of lipping (see section 12.1).<br>2. Rounded = 11 –17 thick with a radius matching the distance between leaf edge and floor pivot (see section 12.1).<br>3. Rebated = Not permitted. | 640 |

1. Single and double doorsets require lipping on all 4 edges.
2. A $2.5^0$ chamfer is permitted to the lipping at the leading edge of leaves providing the door gaps meet the requirements of section 17
3. On-site adjustment of the lippings by a maximum of 3mm for fitting purposes is permitted, providing the minimum dimensions stated above are maintained
4. Beech, *Fagus Sylvatica,* is not permitted for 60 minute applications

## 11.2 Hardwood Blocking for Pivots

The following leaf edge option is permitted for lipping the top and bottom of doors that are to receive pivot fixings and are to be used in severe duty locations.

The hardwood insert must be a size (length) suited to the particular item of hardware plus a maximum of 50mm (but not be full door width) and must be securely adhered to the door core. The hardwood insert should not be greater than 15mm in depth and when fitted should provide for a minimum margin of 8mm to either face of the leaf. The inserted blocks must be bonded on all contact faces using adhesives approved for the application of lippings (see section 13). The hardwood insert must meet the minimum density requirements as given in the table in section 11.1.



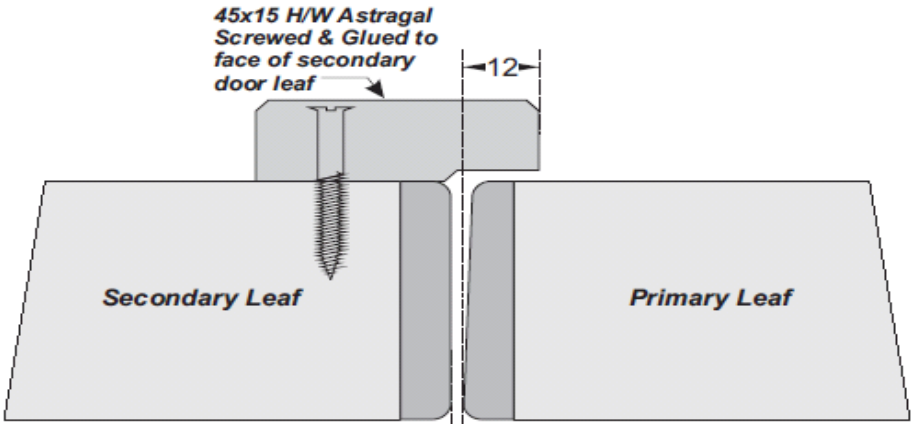
### 11.3 Meeting Stile Astragals

Generally fire doors should be able to open simultaneously. However, where additional performances are required (e.g. acoustic performances) it may be necessary to provide for sequential opening.

An astragal detail may be used where these conditions apply, without adverse influence on existing fire test.

Astragals can be applied to both door leaves provided a suitable door selector is fitted and may be profiled for aesthetic effect providing they meet the minimum specification given below.

The hardwood for the astragal must meet or exceed class J30 as specified in BSEN 942:2007 ( subject to adequate repair of any defect) and have the same minimum density being used for the lipping material. See following diagram:




## 12 Door Frames

### 12.1 Timber Based Door Frame Construction

Timber based door frames for the door leaf designs referred to in sections 4.4 and 4.5 of this assessment must be constructed to meet the following specification:

| **Material** | **Section Size*** (mm) | **Min. Density** ($kg/m^3$) |
|---|---|---|
| hardwood | 90 x 32 (excluding the stop) | 640 |

*If the doorset features a transomed overpanel, the door frame must be hardwood with a minimum section of 90mm x 32mm.

Beech, *Fagus Sylvatica,* is not permitted for 60 minute applications

All door frame timber must meet or exceed class J30 as specified in BSEN 942:2007 ( subject to adequate repair of any defect.)

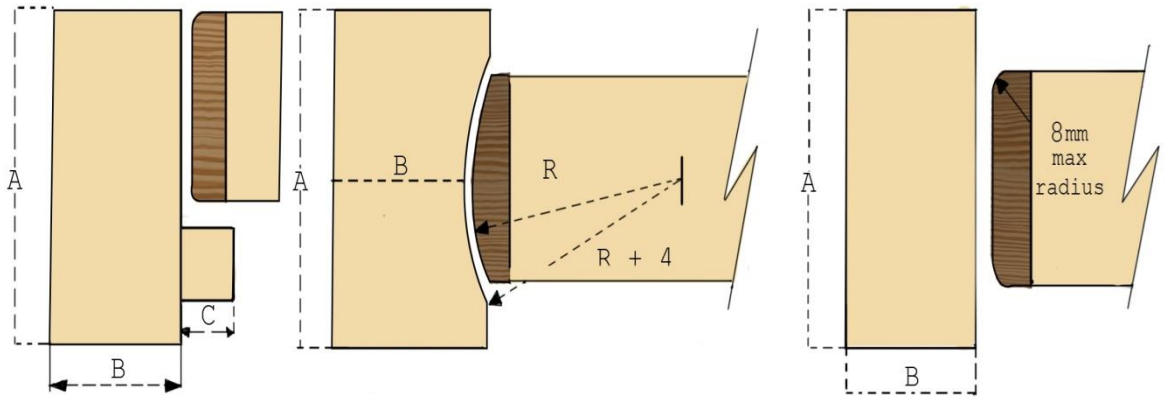
A 12mm deep planted stop is adequate for single acting frames whilst double acting frames may be scalloped or square (see diagram below).

Frame joints may be mortice and tenoned, mitred, half lapped or butted and with no gaps (see section 12.2). All jointing methods require mechanical fixing with the appropriate size ring shank nails or screws.

The following diagram depicts the assessed frame profiles and dimensions:

A = Min. 90mm B = Min. 32mm (see table above) C = Min. 12mm

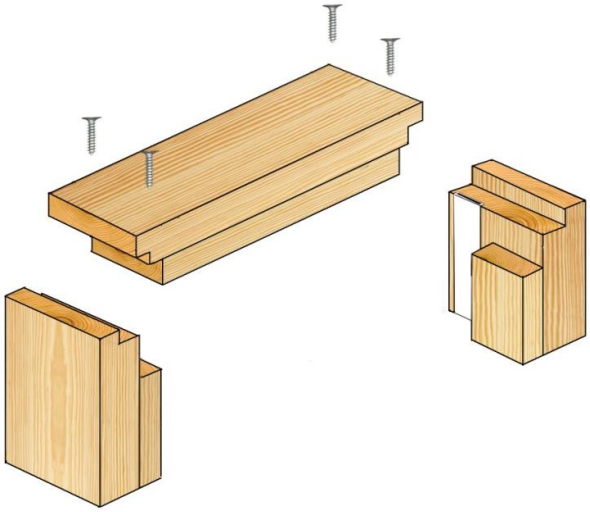
R = Radius from floor spring 8mm radius to create maximum 2mm edge profiling



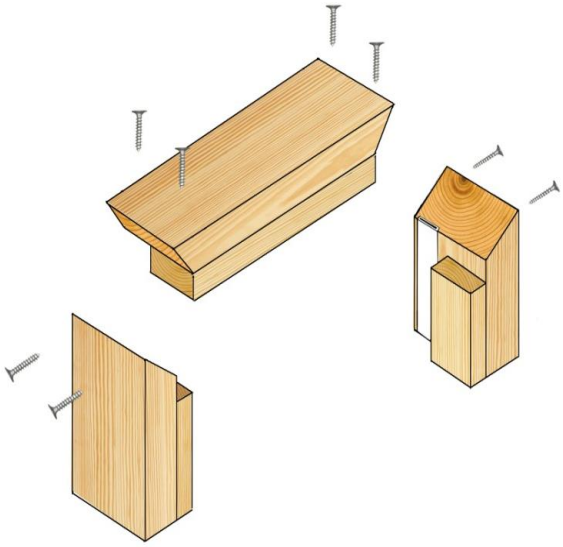

**Standard** **Scalloped** **Profiled Edges**

**With Stiles and Rails only**

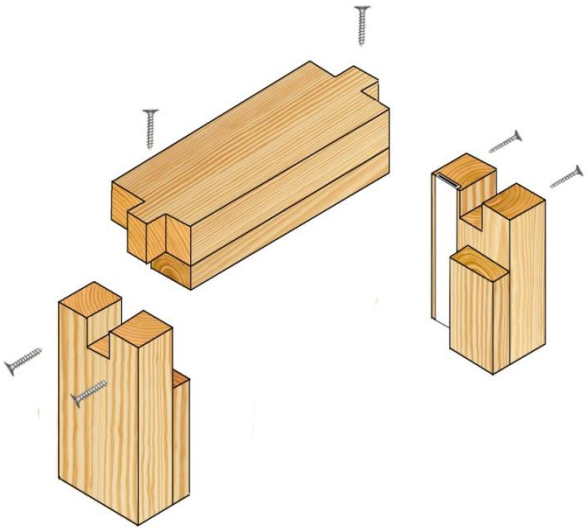
## 12.2 **Door Frame Joints**



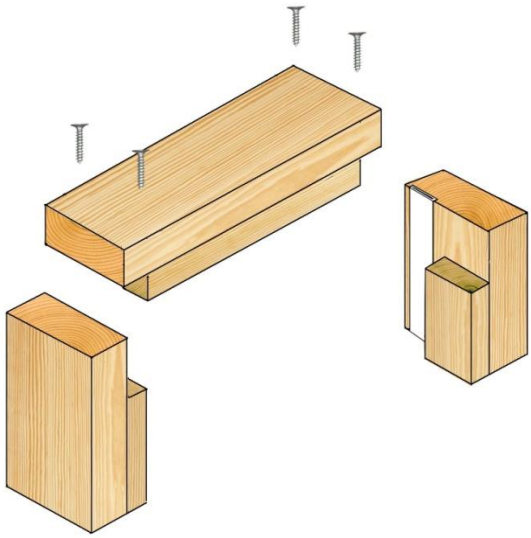
Half Lapped Joint



Mitre Joint



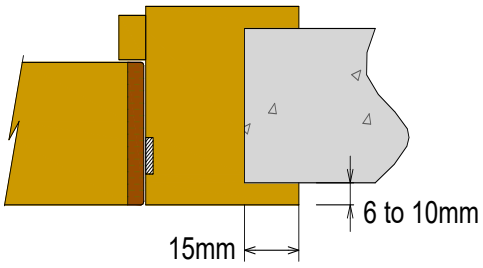
Mortice & Tenon Joint

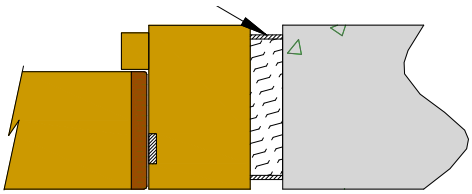
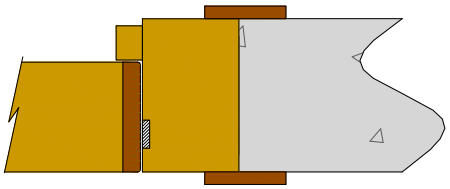
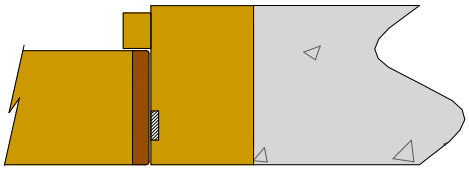
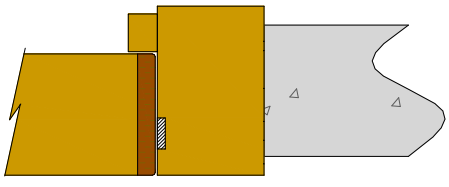
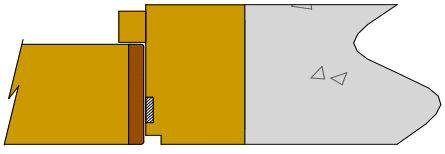


Butt Joint

## 12.3 Door Frame Installation

The following diagrams indicate acceptable door frame installations:

<table>
<tr><th colspan="2">Permitted Installations</th></tr>
<tr>
<td> 

6-10mm is the maximum a frame is permitted to be proud of the structural surround when combined with a 15mm bolection return. Projecting frames outside these dimensions will require specific test evidence or assessment.</td>
<td>Max 10 x 10mm shadow gap with 2mm intumescent mastic capping or<br>10 x 4mm PVC encased intumescent seal<br> 
Shadow gaps are permitted as shown in the above diagram providing the frame to structural surround is infilled with timber of the same density as the frame or a non combustible material such as plasterboard. Other shadow gap dimensions will require specific test evidence or assessment.</td>
</tr>
<tr>
<td> 
Architraves overlapping the frame to structural surround junction are always permitted where required but may be mandatory depending on the size of frame to surround junction gap and the fire stopping used. See section on Sealing to the Structural Surround.</td>
<td> 
Depending on the size of the frame to surround junction gap and the fire stopping methods used, it may be permitted to install doorsets without architraves. See section on Sealing to the Structural Surround.</td>
</tr>
<tr><th colspan="2">Installations Not Permitted</th></tr>
<tr>
<td> 
Projecting frames without bolection returns are not permitted without specific test evidence or assessment due to the potential for increased charring to the back of the frame.</td>
<td> 
Quirks between the leaf and frame are not permitted without specific test evidence or assessment due to the potential for increased charring of the leaf to frame gap.</td>
</tr>
</table>

Drawing are representative of door frame installation, actual installation must be as the text within this document specifies. See section 20 for specification on sealing to structural opening.

## 13 Adhesive

The following adhesives must be used in construction of this doorset design:

| Element | Adhesive Type |
|---|---|
| Lipping | PU |
| Facings | Cross Linked PVA |
| Core | Cross Linked PVA |

## 14 Intumescent Materials

### 14.1 Door Type With Stiles and Rails

The intumescent materials tested and approved for use with this door design are as follows:

| Application | | Location | Size (mm) | Product/Manufacturer |
|---|---|---|---|---|
| Door Edge seals | Meeting edge | Fitted centrally in leaf with lock 10mm apart. | 15 x 4 | 1No Pyroplex Rigid box seal FO8700 and 1No Pyroplex Rigid box PO8712 |
| Frame head & Jambs | | Fitted centrally in frame reveal 10mm apart | 15 x 4 | 1No Pyroplex Rigid box seal FO8700 and 1No Pyroplex Rigid box PO8712 |
| Hinges | | Fitted under all hinge blades | 2 | Graphite sheet -Tenmat Ltd or graphite sheet from Pyroplex ltd<br>MAP- Interdens sheet |
| Latches/locks | | Fitted under forend and keep | 2 | Graphite sheet -Tenmat Ltd or graphite sheet from Pyroplex ltd<br>MAP- Interdens sheet |
| Flush bolts | | Fitted in cut-out for the flush bolts and under flush bolt keeps | 2 | Graphite sheet -Tenmat Ltd or graphite sheet from Pyroplex ltd<br>MAP- Interdens sheet |
| Top pivots and pivot arms | | Fitted in cut-out for the top pivot and pivot arm | 2 | Graphite sheet -Tenmat Ltd or graphite sheet from Pyroplex ltd<br>MAP- Interdens sheet |

### 14.2 **Door Type Without Stiles and Rails**

The intumescent materials tested and approved for use with this door design are as follows:

| Application | | Location | Size (mm) | Product/Manufacturer |
|---|---|---|---|---|
| Door Edge seals | Meeting edge | Fitted centrally in leaf containing lock body 10mm apart. | 15 x 4 | 2No Sealed Tight Solutions ST1504 |
| Frame head & Jambs | | Fitted centrally in frame reveal 10mm apart | 15 x 4 | 2No Sealed Tight Solutions ST1504 |
| Hinges | | Fitted under all hinge blades | 1 | Graphite sheet - Sealed Tight Solutions Ltd. |
| Latches/locks | | Fitted under forend and keep and lock body | 1 | Graphite sheet - Sealed Tight Solutions Ltd. |
| Flush bolts | | Fitted in cut-out for the flush bolts and under flush bolt keeps | 1 | Graphite sheet - Sealed Tight Solutions Ltd. |

## 15 Tested Hardware

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

| Element | Make/Type | Dimensions (mm) |
|---|---|---|
| Hinges | Royde & Tucker H101 lift-off type hinges<br>Union Bearing butt hinge | 100 x 35<br>(blade size)<br>100 x 37<br>( blade size) |
| Closers | Carlisle brass DCT2024SV with fig 66 Bracket<br>Rutland TS3204 overhead type closer | 208 x 56<br>(footprint size)<br>220 x 60<br>(footprint size) |
| Latches and Locks | Union Assay Abloy mortice latch<br><br>Union Assay Abloy mortice lock/latch | 235 x 24 (forend size)<br>145 x 25 ( keep size)<br>235 x 25 (forend size)<br>185 x 25 ( keep size) |
| Furniture | Aluminium and stainless steel lever type handles | 100 x 38<br>(footprint size) |

# 16 Additional & Alternative Hardware

## 16.1 General

The following sections detail a generic specification for hardware assessed for use with this doorset design.

## 16.2 Certifire

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

Certifire approved hardware may be used as alternative to the tested hardware. Some items of hardware may be specifically excluded as a result of the doors performance in fire, if this is the case then this takes precedent over the Certifire certification.

Specifically the Certifire approved hardware must comply with the following

- It must comply with the requirements of the relevant following section e.g. hinges
- It must comply with the limitations specified for hardware in terms of design, material and dimensions
- Any other relevant requirement of this report take precedence.

## 16.3 CE Marking

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

- 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.

## 16.4 Hinges

Leaves must be hung on a minimum of 3 hinges. Hinges with the following specification are acceptable, providing they have been tested and have demonstrated contribution to 60 minutes integrity performance, with this type of doorset design, when tested to BS 476: Part 22: 1987, BS EN 1634-1 or BS EN 1634-2. Hinges with the following specification are acceptable:

| Element | Specification | |
|---|---|---|
| Blade height | 90 - 120mm | |
| Blade width (excluding knuckle) | 30 - 35mm | |
| Blade thickness | 2.5 - 4mm | |
| Fixings | Minimum of 4No. 38mm long fully threaded 'twinfast' or chipboard screws per blade | |
| Materials | Steel, stainless steel | |
| Hinge positions | Top | 120 - 180mm from the head of the leaf to the top of the hinge |
| | Middle | Equispaced between top and bottom hinge |
| | Bottom | 150 - 250mm from the foot of the leaf to the bottom of the hinge |
| Intumescent protection | See section 14 | |

## 16.5 Latches & Locks

Latches and locks must either be as tested, or alternatively components with the following specification are acceptable, providing they have been tested and have demonstrated contribution to 60 minutes integrity performance with this type of doorset, when tested to BS 476: Part 22: 1987, BS EN 1634-1 or BS EN 1634-2;

| | |
|---|---|
| **Maximum forend and strike plate dimensions** | 235mm high by 25mm wide by 4mm thick |
| **Maximum body dimensions** | 165mm high by 100mm wide by 18mm thick |
| **Intumescent protection** | See section 14 |
| **Materials** | All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel or stainless steel. |
| **Location** | 750 – 1200mm above threshold |

## 16.6 Automatic Closing

Automatic closing devices must either be as tested or components of equal specification that have demonstrated contribution to the required integrity performance of this type of 60 minute doorset design, when tested to BS 476: Part 22: 1987 or BS EN 1634-1.

Concealed closers are not permitted.

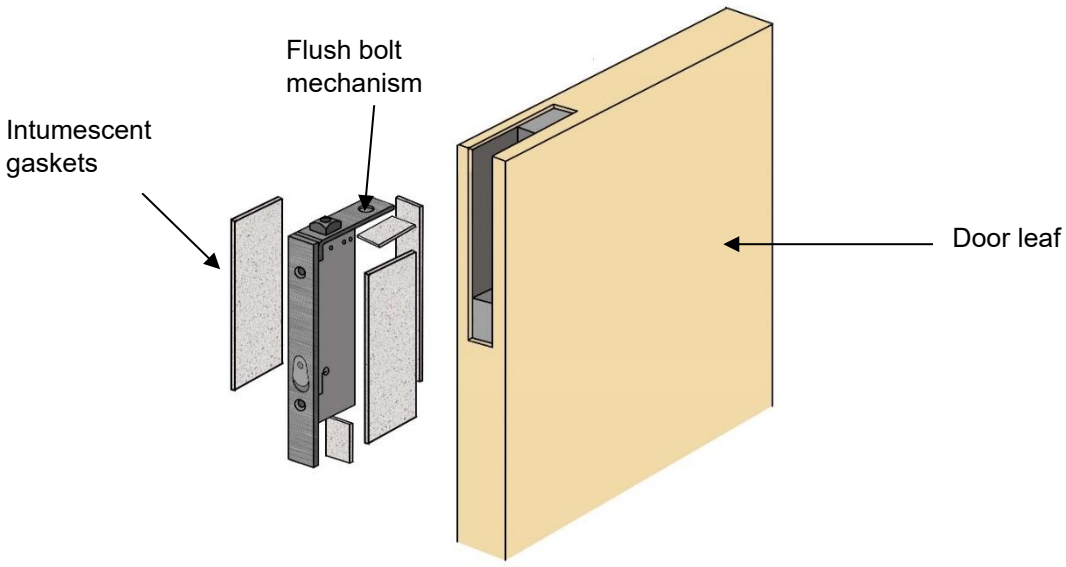
**Note:** The top pivots to floorspring assemblies must be protected with 2mm thick intumescent gasket (see section 14) or alternatively the manufacturers tested intumescent pack.

## 16.7 Flush Bolts

Flush bolts may be incorporated centrally into the top and bottom of one meeting edge, providing the following maximum dimensions are not exceeded.

- 210mm long x 22mm deep x 20mm wide

Flush bolts must be steel and the mortice must be as tight to the mechanism as is compatible with its operation. All edges of the keep and bolt mortice must be protected with intumescent gaskets as specified in section 14. Alternatively the hardware manufacturers tested gaskets may be used.




## 16.8 Pull Handles

Handles may be surface-fixed or bolted through the door leaf, providing they are steel and the length is limited to 1200 mm between the fixing points. If through fixed, there must be no more than 1mm clearance between the hole and stud and fitted with 1mm intumescent gasket or bedded in mastic.

## 16.9 Door selectors – when astragal fitted

These may be fitted, provided that they are not invasive in the leaf edges or door frame, do not require any removal of the leaf or frame and they do not interfere with the self closing action of the door leaf. Products that do not comply with these requirements will require fire resistance test/assessment evidence to support their use.

16.10 **Push Plates/Kick Plates**

Steel or Stainless Steel face-fixed hardware such as push plates and kick plates may be fitted to the doorsets provided that their fitting requires the removal of no part of the door leaf. 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 thermo-softening contact adhesive. Plates must not return around the door edges and must be fixed onto the solid framing of the door leaf

16.11 **Door Security Viewers**

Door security viewers with steel or stainless 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 +1mm). Lenses must be glass and the item must be bedded into a tested intumescent mastic.

16.12 **Panic Hardware**

Panic ironmongery manufactured from non-combustible materials may be fitted, provided that its installation does not require the removal of any timber from the leaf, stop or frame reveal and it in no way interferes with the self-closing action of the door leaf.

16.13 **Environmental Seals**

Silicon 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.

16.14 **Threshold Seals**

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

| Manufacturer | Product Reference |
|---|---|
| Norsound | NOR810, NOR810S & NOR810dB+ |
| Lorient Polyproducts | IS8010s |
| Raven Products | RP8Si |
| Athmer | Schall-Ex Duo L-15 |

## 17 Door Gaps

For fire resisting applications, door edge gaps and alignment tolerances must be set within the range defined in the following table:

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

## 18 Supporting Construction

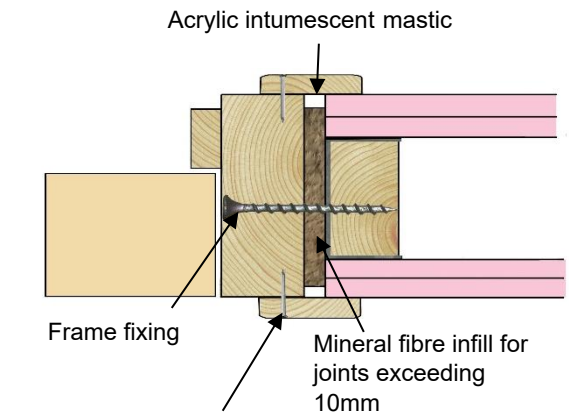
The supporting construction must be capable of staying in place and intact for the full period of fire resistance required from the doorset.

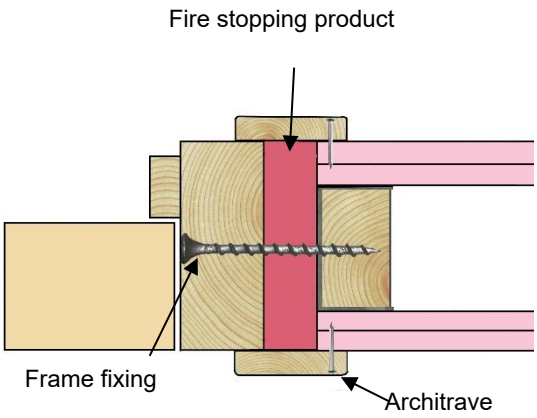
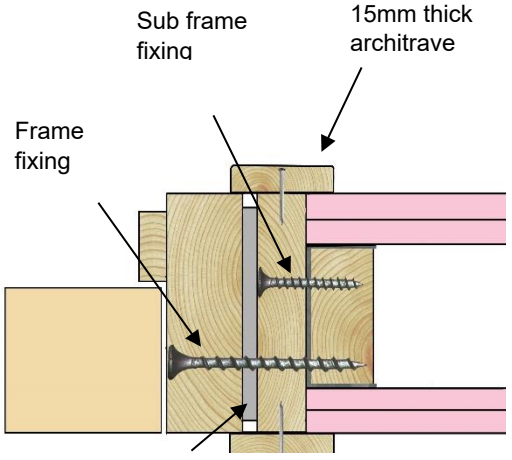
## 19 Fixings

The frame jambs are to be fixed to the supporting construction using steel fixings at 500mm maximum centres and 150mm maximum from corners. 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.

## 20 Sealing to Structural Opening

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

<table>
<tr>
<td>1. Gaps up to 10mm must be sealed on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.</td>
<td rowspan="2"> 

Architrave for joints not filled with mineral wool and optional for filled joints</td>
</tr>
<tr>
<td>2. Gaps between 10mm and 20mm must be tightly packed with mineral fibre capped on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Architraves are optional.</td>
</tr>
<tr>
<td>3. Gaps up to 20mm filled with proprietary fire stopping product (e.g. expanding PU foam or preformed compressible intumescent foam). Products must be tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side. Sealed Tight Solutions STS90 and Fire Acoustic Seals L td expanding foam has been successfully tested for this application</td>
<td> 
</td>
</tr>
<tr>
<td>4. For gaps between 20–50mm, a timber based or non-combustible subframe up to 50mm thick, must be fitted with gaps up to 10mm between the components filled on both sides with 10mm depth of acrylic intumescent mastic or full depth expanding PU foam, fire tested for this application to BS 476: Part 22: 1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.</td>
<td> 
</td>
</tr>
</table>

Guidance for various methods of sealing the frame to structural opening gap is also given in BS 8214: 2016, “Code of practice for fire door assemblies”, which may be referred to where appropriate.

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

## 21 Insulation

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

| Type | Details |
|---|---|
| Fully insulating | Unglazed doorsets |

## 22 Smoke Control

### 22.1 General

If the doorset design is required to provide a smoke control function to comply with Building Regulations, in the absence of a suitable pressurisation system, the doorset must meet one of the following criteria:

(a) have a leakage rate not exceeding $3m^3/m$/hour (head and jambs only) when tested at 25Pa under BS 476 *Fire tests on building materials and structures*, Section 31.1 - *Methods for measuring smoke penetration through doorsets and shutter assemblies, Method of measurement under ambient temperature conditions*; or

(b) meet the additional classification requirement of Sa when tested to BS EN 1634-3: 2004 - *Fire resistance tests for door and shutter assemblies*, Part 3 – *Smoke control doors*.

Smoke seals or combined intumescent/smoke seals that are fitted to the door to achieve the performance requirements specified above must have been tested in accordance with the associated test method. Providing the smoke seals, any interruptions, door gaps, and the type/configuration of the doorset are consistent with the detail tested, the doorset will comply with current smoke control legislation under Approved Document B; and a suffix 'S' or 'Sa', as appropriate, may be added to the designation. Any other components installed where smoke leakage may occur must also be taken into account.

**Note:** The incorrect specification and fitting of smoke seals may impair the operation of a doorset and therefore compromise the fire resistance performance. Advice should be sought from the seal manufacturers regarding the correct specification and installation of smoke seals or combined smoke and intumescent seals.

### 22.2 Further Considerations

Note that there is other guidance available, including BS EN 9999-2017 - *Code of practice for fire safety in the design, management and use of buildings,* which may impose different or additional requirements, such as consideration of the gap between door leaf and threshold.

Responsibility for the appropriate smoke sealing specification and performance of the doors should be agreed between the relevant parties (i.e. specifier, manufacturer, contractor) prior to commencing manufacture and/or installation.

## 23 Conclusion

If the Falcon Panel Products Strebord 44+ designs with and without Stiles and Rails, constructed in accordance with the specification documented in this assessment report, were to be tested in accordance with BS 476: Part 22: 1987, it is our opinion that they would provide a minimum of 60 minutes integrity and insulation (subject to section 21).

## 24 Declaration by the Applicant

1) We the undersigned confirm that we have read and comply with obligations placed on us by FTSG Resolution No. 82: 2001.
2) We confirm that the component or element of structure, which is the subject of this assessment, has not to our knowledge been subjected to a fire test to the Standard against which this assessment is being made.
3) We agree to withdraw this assessment from circulation should the component or element of structure be the subject of a fire test to the Standard against which this assessment is being made.
4) We are not aware of any information that could adversely affect the conclusions of this assessment.
5) If we subsequently become aware of any such information we agree to ask the assessing authority to withdraw the assessment.

Signed:

Name:

For and on behalf of: **Falcon Panel Products Ltd.**

FALCON
PANEL PRODUCTS LTD

## 25 Limitations

The following limitations apply to this assessment:

1) This assessment addresses itself solely to the elements and subjects discussed and does not cover any other criteria. All other details not specifically referred to should remain as tested or assessed.

2) This assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available, Warringtonfire reserves the right to withdraw the assessment unconditionally but not retrospectively.

3) This assessment has been carried out in accordance with Fire Test Study Group Resolution No. 82: 2001.

4) Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

5) This assessment relates only to those aspects of design, materials and construction that influence the performance of the element(s) under fire resistance test conditions. It does not purport to be a complete specification ensuring fitness for purpose and long-term serviceability. It is the responsibility of the client to ensure that the element conforms to recognised good practice in all other respects and that, with the incorporation of the guidance given in this assessment, the element is suitable for its intended purpose.

6) This assessment represents our opinion as to the performance likely to be demonstrated on a test in accordance with BS 476: Part 22: 1987, on the basis of the evidence referred to in Section 3. We express no opinion as to whether that evidence, and/or this assessment, would be regarded by any Building Control authority as sufficient for that or any other purpose. This assessment is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.

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

## 26 Validity

1) The assessment is initially valid for 5 years after which time it must be submitted to Warringtonfire for technical review and revalidation.
2) This assessment report is not valid unless it incorporates the declaration given in Section 24 duly signed by the applicant.

| | | |
|---|---|---|
| **Signature:** |  |  |
| **Name:** | **Dr K D S Towler** | **A M Winning** |
| **Title:** | Senior Product Assessor | Senior Product Assessor |

# Appendix A

## Revisions

| Rev | Warringtonfire Reference | Date | Description |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

# Appendix B

**Data Sheets for:**

**Falcon Panel Products. Ltd.**

**60 Minute Strebord 44+ ( Designs With and without Stiles and Rails ) Fire Resisting Doorsets**

## DESIGN With Stiles and Rails – 60 Minutes Fire Resistance

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

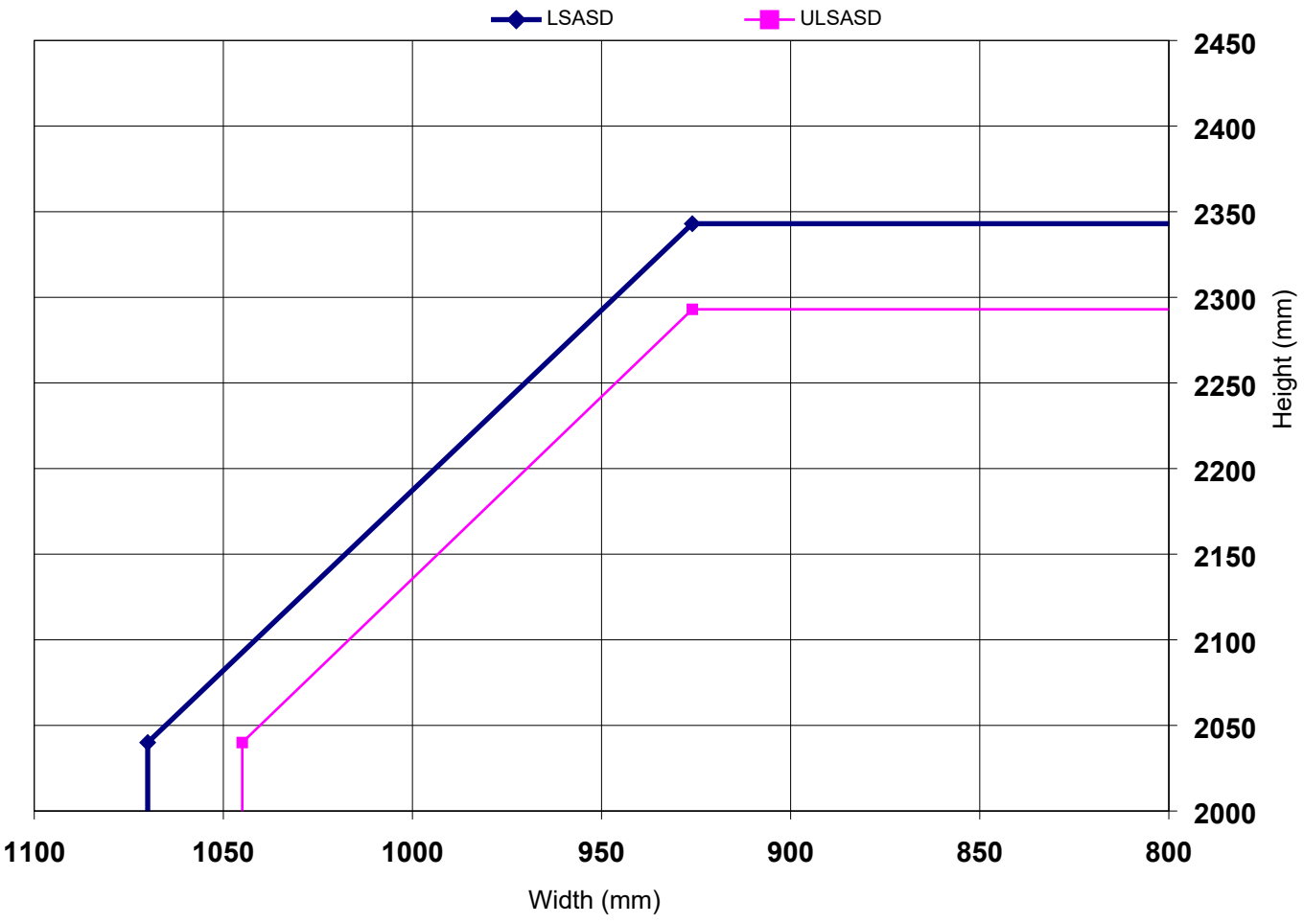
| | Configuration | | Height (mm) | | Width (mm) |
|---|---|---|---|---|---|
| Leaf Sizes | LSASD | From: | 2040 | x | 1070 |
| | | To: | 2343 | x | 926 |
| | ULSASD & DASD | From: | 2040 | x | 1045 |
| | | To: | 2293 | x | 926 |

**Intumescent Materials: Pyroplex Rigid box graphite seals FO8700**

**Head** 2 No 15 x 4mm spaced 10mm apart and centrally fitted in the frame reveal or leaf edge

**Jambs:** 2 No 15 x 4mm spaced 10mm apart and centrally fitted in the frame reveal or leaf edge

**Maximum Door Leaf Size**



## DESIGN With Stiles and Rails – 60 Minutes Fire Resistance

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

| | Configuration | | Height (mm) | | Width (mm) |
|---|---|---|---|---|---|
| Leaf Sizes | LSADD | From: | 2040 | x | 1020 |
| | | To: | 2243 | x | 926 |
| | ULSADD & DADD | From: | 2040 | x | 995 |
| | | To: | 2193 | x | 926 |

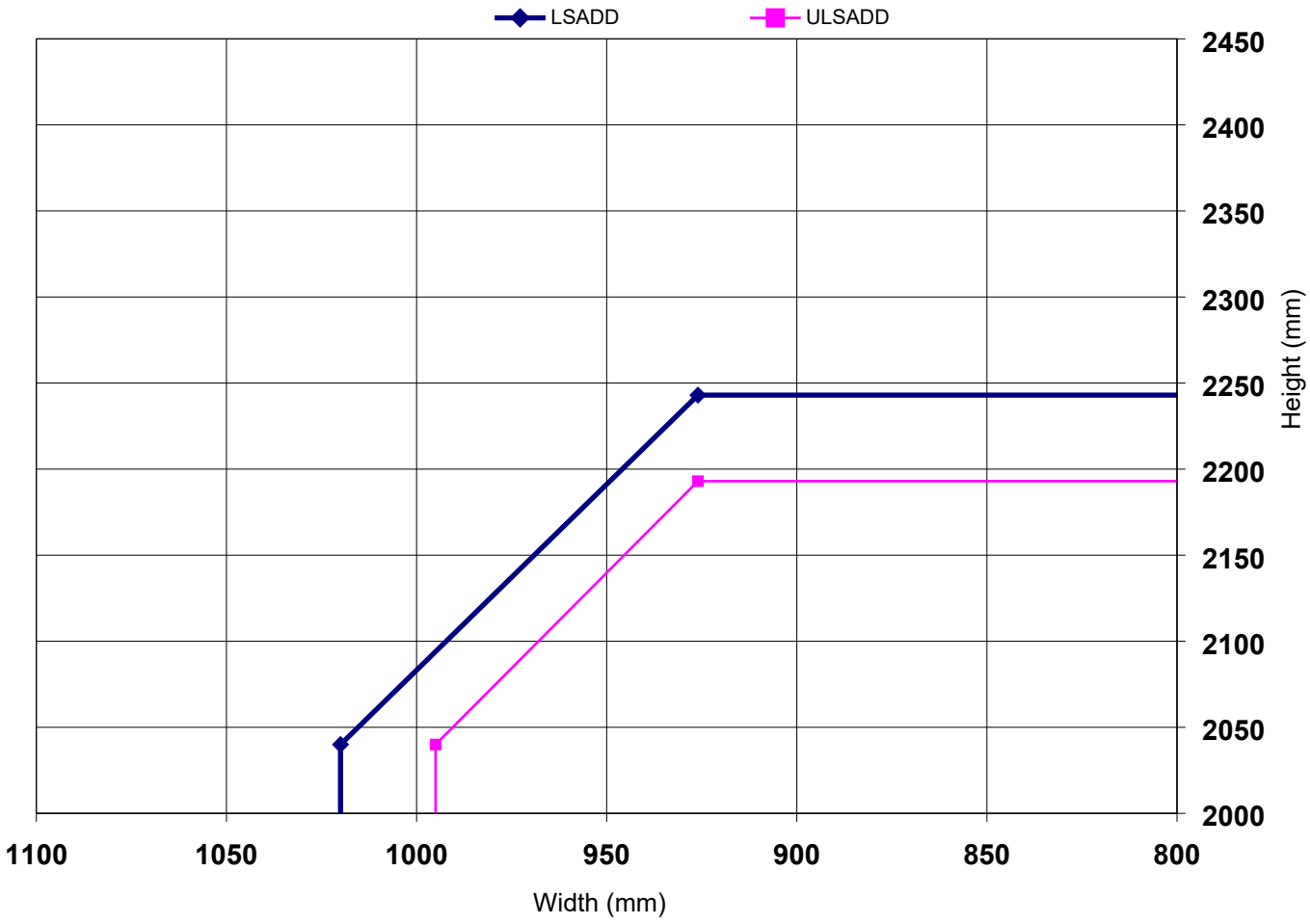
**Intumescent Materials:** **Pyroplex Rigid box graphite seals FO8700**

**Head** 2 No 15 x 4mm spaced 10mm apart and centrally fitted in the frame reveal or leaf edge

**Jambs:** 2 No 15 x 4mm spaced 10mm apart and centrally fitted in the frame reveal or leaf edge

**Meeting edge:** 2 No 15 x 4mm spaced 10mm apart and centrally fitted in the leaf containing latch

**Maximum Door Leaf Size**



## DESIGN Without Stiles and Rails – 60 Minutes Fire Resistance

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

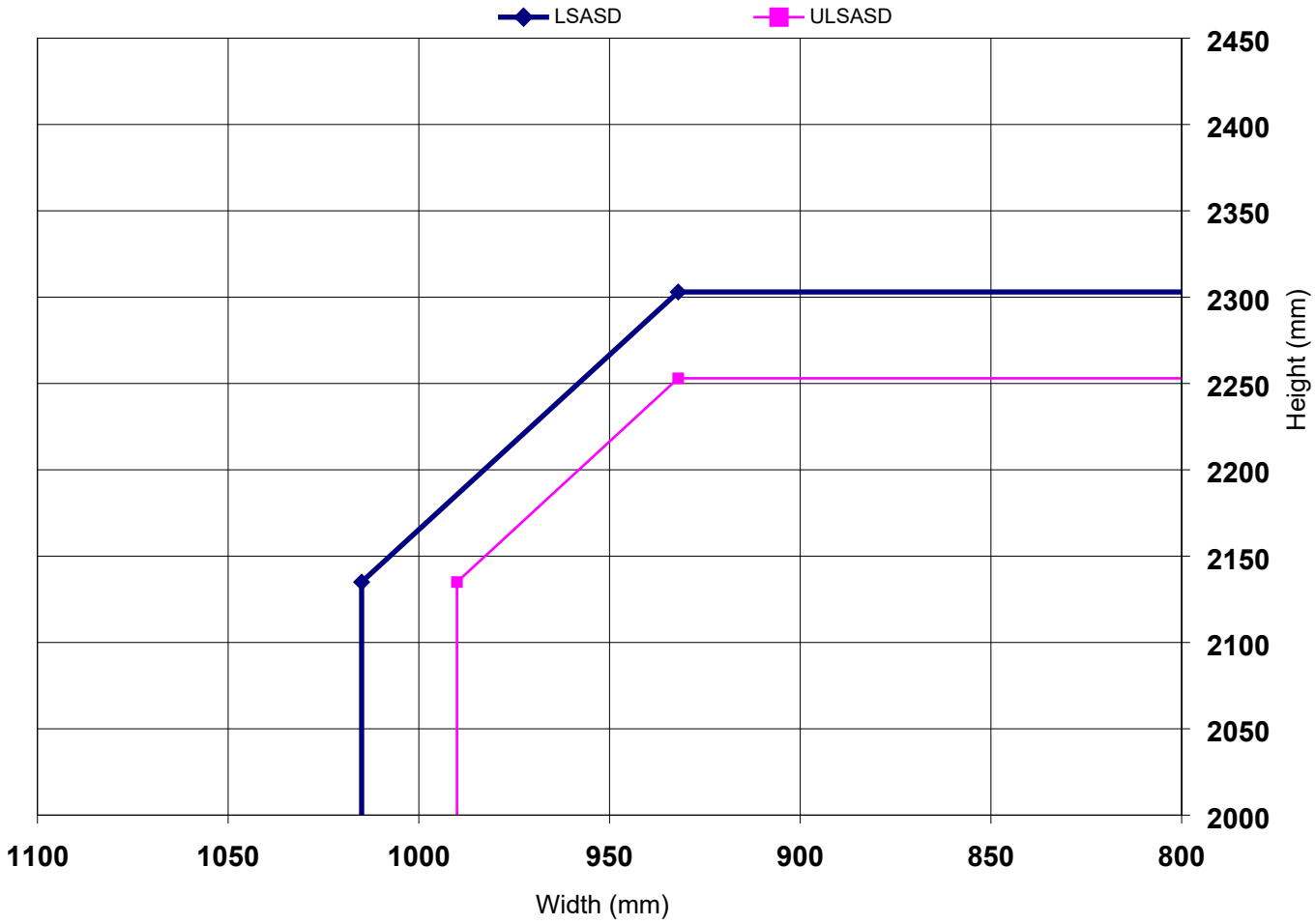
| | Configuration | | Height (mm) | | Width (mm) |
|---|---|---|---|---|---|
| Leaf Sizes | LSASD | From: | 2135 | x | 1015 |
| | | To: | 2303 | x | 932 |
| | ULSASD & DASD | From: | 2135 | x | 990 |
| | | To: | 2253 | x | 932 |

**Intumescent Materials: Sealed Tight Solutions ST1504**

**Head** 2 No 15 x 4mm spaced 10mm apart and centrally fitted in the frame reveal or leaf edge

**Jambs:** 2 No 15 x 4mm spaced 10mm apart and centrally fitted in the frame reveal or leaf edge

**Maximum Door Leaf Size**



## DESIGN Without Stiles and Rails – 60 Minutes Fire Resistance

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

| | Configuration | | Height (mm) | | Width (mm) |
|---|---|---|---|---|---|
| Leaf Sizes | LSADD | From: | 2135 | x | 965 |
| | | To: | 2203 | x | 932 |
| | ULSADD & DADD | From: | 2135 | x | 940 |
| | | To: | 2153 | x | 932 |

**Intumescent Materials:** **Sealed Tight Solutions ST1504**

**Head** 2 No 15 x 4mm spaced 10mm apart and centrally fitted in the frame reveal or leaf edge

**Jambs:** 2 No 15 x 4mm spaced 10mm apart and centrally fitted in the frame reveal or leaf edge

**Meeting edge:** 2 No 15 x 4mm spaced 10mm apart and centrally fitted in the leaf containing latch body

**Maximum Door Leaf Size**