

# fd120

## Innovative Solutions

to Access and Fire Safety 2007

### Halspan Fabrication

- › Doorsets
- › Frames
- › Doors
- › Acoustic Doors
- › Glass
- › Fire Doors

Technical Support Manual

**HALSPAN**<sup>™</sup>

[www.halspan.com](http://www.halspan.com)



<b>Introduction</b>	
An Introduction to Fire Doors	2
Introducing Halspan – Independent Verification	3
<b>Halspan<sup>®</sup> FD120 Specification Timber Frames</b>	
Timber Frame Profiles	4
Door gaps, Lipping Details – Single Action	5
<b>HALSPAN<sup>®</sup> FD120 PERMITTED SIZES, CONFIGURATIONS INTUMESCENT SEAL DETAILS, TIMBER FRAMES</b>	
Single Action Single	6
<b>GLAZING</b>	
Detail for Glazing	7
Glazing Instructions	8
<b>IRONMONGERY</b>	
Ironmongery	9
Non Essential Ironmongery	10
<b>SAFETY DATA</b>	
Handling and Storage, Health Hazards	11
Site Fixing Instructions	13
<b>APPENDIX</b>	
Intumescent Packs	15
Ironmongery Packs	16
Glazing Packs	17



## AN INTRODUCTION TO FIRE DOORS

### WHAT FIRE DOOR TESTING IS ABOUT

Test standards are designed to evaluate the 'fire resisting' capabilities of doorsets. Tests are conducted by 'Approved' bodies whose Test Reports and Assessments formally confirm the integrity of a fire door (e.g. FD30, FD60 & FD90).

These documents are the primary source of information summarised in Halspan manuals and literature to aid customers making doors from Halspan.

A brief summary of testing follows.

### THE REAL FIRE SITUATION

Following full flashover, gases already present in the room will be heated, and thus expand, creating a greater pressure than is present outside. At the same time, combustion processes create additional gases, adding to the imbalance or overpressure and the combination of hot gases rises to the upper zone of the room. Continuing, the combustion seeks more oxygen to maintain the process, which is drawn into the room through gaps at the lower zone, creating a slightly negative pressure in this area.

### HOW THE TEST IS CONDUCTED

This pressure regime fire test is considered appropriate because it replicates natural conditions similar to this experienced in a real fire.

The test is performed with a positive pressure within the upper part of a furnace. Such pressure forces the hot furnace gases through gaps or joints in the assembly which are essential for movement in normal service, especially those gaps between door leaf and frame. Invariably, it is as a result of these hot gases that integrity failure occurs.

To pass the rigorous standard of the tests, a similarly high standard of design and specification is essential. That includes the performance of intumescent materials which seal gaps and reduce thermal transfer.

### SIMILAR APPLICATION ELSEWHERE

The same testing principle is included in the International Standard ISO 834, which forms the basis of many tests in other countries.

### TEST RESULTS – WORKING IN PRACTICE

Fire resisting doors are rarely supplied in an identical form to that which was tested. The specification will invariably require the door to be supplied at a size, in a mode, with glazing openings, glass and ironmongery that are different to that tested. These variations in configuration and construction are covered by a judgement or expert opinion in the form of an Assessment issued by the approving body, within the guidelines of BS ISO/TR 12470: 1998, and / or The Fire Test Study Group Resolution No 82 2001.

### HALSPAN SERVICE – WORKING FOR YOU

Where a project specification is more demanding than published data would suggest, Halspan Technical Support service is available on request to help provide further solutions to customer' needs.



## INTRODUCING HALSPAN

Halspan 3-layer particle board has been designed for use in the fabrication of solid core doors. A complex combination of chemical and engineering development has resulted in the superior quality and strength of Halspan high performance timber door cores.

Produced on one of the world's most advanced CPS systems ensuring continuity of quality for the product. It is this expertise that sets Halspan above other routine types of board. Therefore, with doors in mind, Halspan door blanks have been ready tested for use in the manufacture of fire doors.

By using Halspan in the construction of flush or panelled doors, Halspan's pre-test programme readily enables the inclusion of fire doors of the same style and finish as the standard, non-fire door specification.

These high standards, applied in making Halspan board, also apply to Halspan's technical support. Literature and advice provide a continuity of quality right through, from manufacture to installation. Always ensuring the highest standards for you and your customer.

Due to our continuous testing programme, we reserve the right to amend this manual at any time. Please ensure you are in possession of the current issue.

### Independent Verification

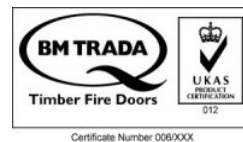
Reassures customers on the consistent quality of products they specify or use.

BM TRADA and IFC Certification provide such schemes for fire doors.

### The Halspan Proposition

Specialist joiners and fabricators can use Halspan door blanks in the manufacture of certified products.

With Halspan there are production and cost benefits, added factors to help smaller firms quote for new business.



Certificate Number 006XXXX



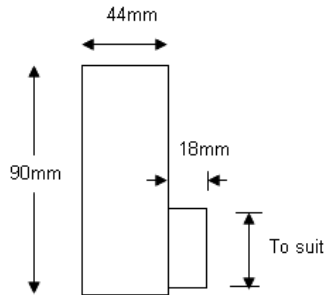
By specifying or selecting a certified product you can be assured that it has demonstrated the required performance levels through independent, accredited testing or appraisal and that every product manufactured offers the same level of performance through an approved quality management system.

Whether for today or for planning ahead, specifying Halspan products ensures we can all meet the highest standards and our obligations.



## HALSPAN<sup>®</sup> 120 FIRE DOOR FABRICATION & SPECIFICATION TIMBER FRAME SPECIFICATION

### MINIMUM SECTIONS

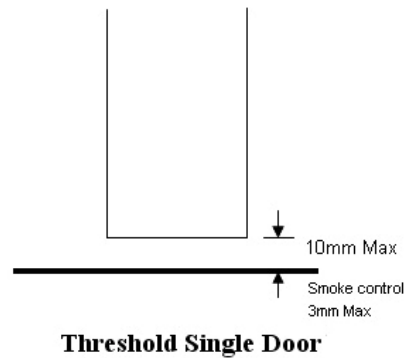
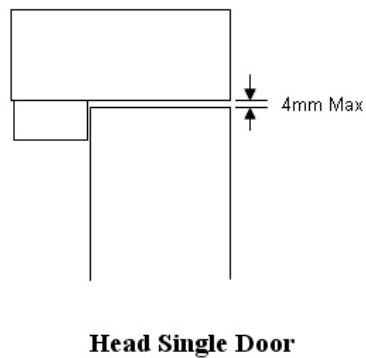
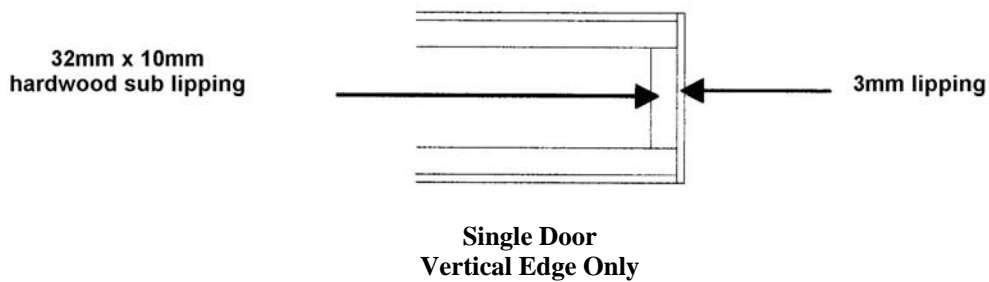


- Hardwood  $\geq 650\text{kg/m}^3$  density
- Single Action mode
- Door stop planted or wrought section



# HALSPAN® 120 FIRE DOOR FABRICATION & SPECIFICATION TIMBER FRAME SPECIFICATION

## DOOR GAPS, LIPPING DETAILS SINGLE ACTION

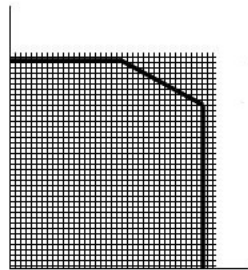


- Lipping Material – Hardwood  $\geq 650\text{kg/m}^3$  density @ 10% m/c  $\pm 2\%$
- Glue Line options – Phenol resorcinol formaldehyde
- See separate sections for intumescent detail



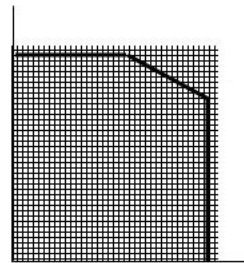
# HALSPAN® 120 PERMITTED SIZES, CONFIGURATIONS INTUMESCENT SEAL DETAILS

## SINGLE ACTION SINGLE



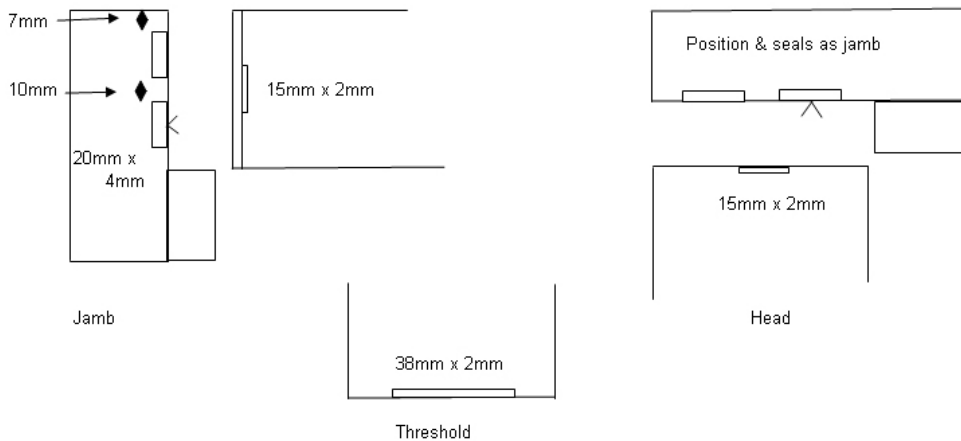
2322 x 915  
2075 x 1027

**LSASD**



2272 x 915  
2075 x 1002

**ULSASD**



### Approved Intumescents    PVC Encapsulated R120 seals

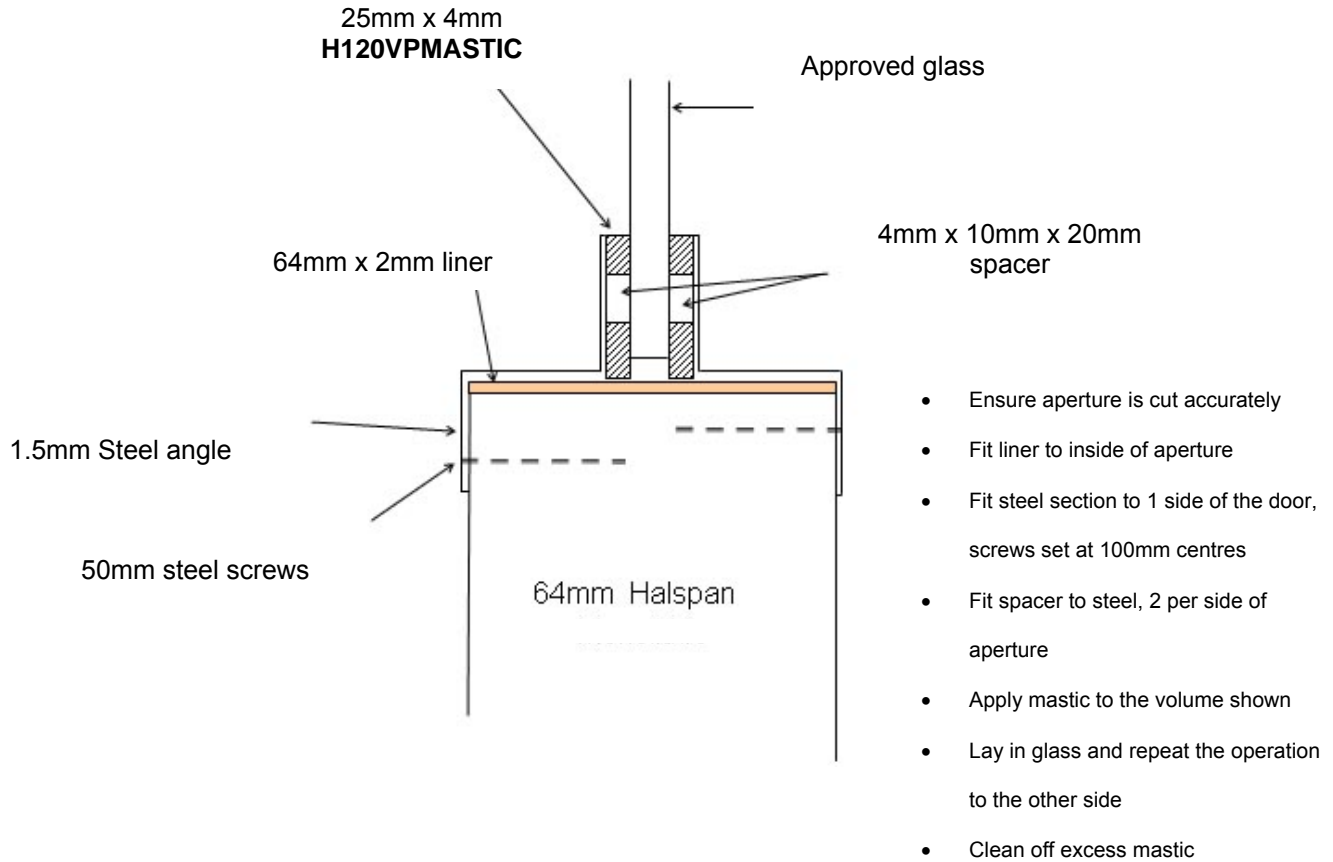
- **Smoke Control**

Smoke control is achieved by the inclusion of seals as shown.

Note that it is necessary to maintain continuous protection past the hinge blades and lock strikes.



## HALSPAN® 120 DETAIL FOR GLAZING



Approved glasses –

5mm Firelite  
(N.B. Firelite is not a safety glass)

Approved glazed area –

0.54m<sup>2</sup> (BMTrada) 0.27m<sup>2</sup> (IFC Certification)

Glazed margins –

175mm from door edge  
160mm between apertures





## **Halspan<sup>®</sup> 120**

# **GLAZING INSTRUCTIONS**

### **Metal Angle Option**

- Form the aperture in the door leaf to the required size and in the appropriate position.
- Cut the liner strip to the required length to line the inside edges of the aperture.  
Remove the backing from the liner strip and stick the strip to the inside edges of the aperture.
- Fit the steel angle bead to the aperture on the uppermost face of the door/aperture.
- Turn the door/aperture over and apply the spacer to the flat of both steel angle beads – i.e. the face upon which the glass will rest.
- Apply the mastic to the same surface as the spacer, ensuring an even flow.
- Let the glass onto the mastic surface and position accordingly.
- Apply mastic to the now uppermost perimeter surface of the glass.
- Fit the uppermost bead to the door/aperture. Clean off excess flow of mastic.
- Return the door to its original face and clean off the excess from that which was the underside of the aperture.



## HALSPAN® 120 IRONMONGERY

### Hinges –

Halspan® 120 including required intumescent protection

#### Fixings

Minimum 50mm long No10 steel screw 'Twinfast' Type (parallel shank)

#### Positioned To Hinge Centres

**Top** 255mm from head

**Bottom** 250mm – 200mm from foot

**Middle** Equidistant between Top and Bottom

### Locks –

Halspan® 120 mortice lock/latch including required intumescent protection.

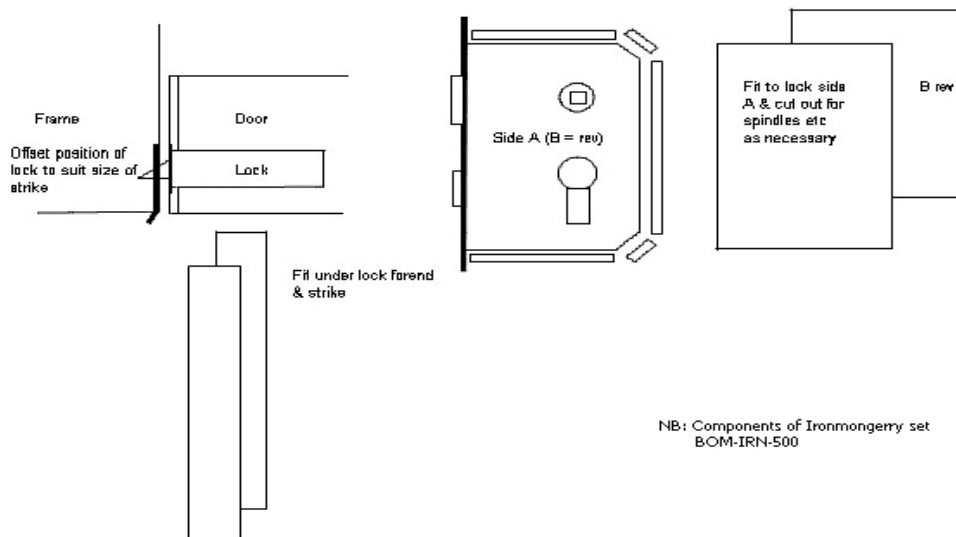
Centre line of spindle 1020mm up from bottom of door.

### Closers –

Halspan® 120 Power Closer R9000

### Bolts –

Steel face fixed bolt. Size 125mm x 35mm wide. Screw fixed to the face of inactive leaf with 6mm steel screws; 2no/leaf.





## **HALSPAN™ 120 NON ESSENTIAL IRONMONGERY**

### **Pull Handles –**

These may be surface-fixed to the door leaf provided that they are steel or aluminium, and that their length is limited to 750mm. No additional intumescent protection is required provided that the hole for the bolt through the leaf is tight, unless test evidence dictates otherwise.

### **Push Plates/Kick Plates –**

Face-fixed ironmongery such as push plates and kick plates may be fitted to the doorsets. These items of ironmongery must not amount to more than 20% of the door leaf area.

### **Other Ironmongery –**

Push bars as activation for latches can 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.



## SAFETY DATA

### HANDLING AND STORAGE

When handling with mechanised handling equipment, such as fork trucks and pallet trucks, care should be taken to observe the weight restrictions of the equipment and safe working practices.

When manually handling, care should be taken to avoid the product sliding through the hands, wearing gloves if frequently handling boards, especially re-cut material.

It is recommended that Halspan blanks are stored in a dry controlled area similar in ambient condition to that intended for further production. Areas for storing the product should be dry and adequately ventilated; making sure the material is not subjected to excesses of humidity and temperature.

In storage, care should be taken to stack material safely. Store flat and level on at least three equal spaced, equal height bearers.

**Halspan 120 Blanks weigh 65kg/m<sup>2</sup>  
(2220mm x 930 x 64mm)**

### TRANSPORT CONSIDERATIONS

Ensure that material is adequately packed and properly secured on the vehicle to prevent any movement. Goods should be conveyed in such a manner as to avoid movement and slipping.

Particular care should be taken with laminated products, as the possibility of movement may be increased.

### HEALTH HAZARDS

This product is bonded using urea formaldehyde resins and in its recently pressed state, or when being cut or worked, may possibly out-gas formaldehyde. The product is manufactured to the emission class E1 of the EU Standard.

Care should be taken to ensure adequate ventilation and control of the environment and to ensure prevention of exposure for persons likely to be particularly sensitive to the effects of formaldehyde, i.e. Asthma sufferers or those likely to contract skin rashes. When processed, this product produces wood dust which can act as a skin or respiratory irritant. Adequate ventilation and dust and waste extraction should be provided to ensure that the work place complies with COSHH Regulations 1988 and Guidance Note EH40/89.

Adequate control of exposure by employees to formaldehyde and wood dusts will automatically provide control against other aldehydes and amminiacal compounds, which can be produced when machining particle board, especially if blunt tools are used.



## SAFETY DATA

### FIRE AND EXPLOSION

There is no risk of explosion with this product, but users should be aware that airborne wood dust produced during processing could present a fire hazard. Do not smoke.

Ensuring efficient and continuous dust extraction during processing.

The product burns in a similar manner to natural timber. Normal fire fighting procedures should be observed.

### FIRST AID

#### Inhalation of wood dust

- Remove person to fresh air. Clean nasal passages.

#### Wood dust in eyes

- Flush eyes with tepid water for 15 minutes.

#### Affected by formaldehyde

- Remove person to fresh air. Drink copious volumes of fluid.
- If no recovery is made, immediate medical advice should be sought.

### PERSONAL PROTECTION

An ori-nasal mask to BS6016 and eye shield to BS2092 is recommended.

## IMPORTANT...HANDLING AND STORAGE

On receipt of materials from supplier/distributor

- Store Halspan door blanks horizontally on 3 or more equally spaced bearers. For multiple pack storage ensure that bearers are aligned.  
KEEP HALSPAN OFF THE FLOOR/GROUND
- Storage conditions prior to fabrication should be as close to the environmental conditions in the workshop as possible. These should be such that Halspan is not subjected to rapid changes in climatic conditions. Halspan should be allowed to condition for 3-4 days prior to processing.
- Halspan should not be exposed to external conditions such as rain, excessive moisture or intense sunlight. The storage area should be well ventilated.
- Avoid Halspan coming into contact with corrosive or staining materials.



## FIRE DOOR SITE FIXING INSTRUCTIONS

### 6. Supporting Wall Construction

The supporting wall construction must be of a suitable structure to meet the required fire rating and support the weight of the door assembly. The gap between the structure and the back of the door frame should not exceed 10mm and should be fitted with non constructible material and capped off with intumescent mastic.

### 2. Timber Frames

Frames and stops to be hardwood for FD120 see the relevant section in this Technical Support Manual for the specification.

The rear of the frame has to be protected. Where sub-frames/ extension linings are used, the joint between the main-frame and the sub-frame must not intrude into the plane of the doorset height/width.

#### Stops

Stops to be minimum 18mm wide, machines from solid or planted, pinned only, using 40mm steel pins.

#### Head/Jamb Joint

Mortice and tenon or half-lapped joint, head twice screwed to jambs.

### Architraves

Architraves are optional and have no performance requirements.

### 3. Hanging Leaves Gaps

Doors should be hung to give an equal gap across the head and down both jambs, the gap not to exceed 4mm.

The gap between the door and the frame should not exceed 4mm, the gap at the meeting stile should not exceed 4mm and the doors should not be proud of the frame reveal by more than 3mm.

Smoke seals which require a larger gap should remain within tested tolerances.

### 4. Glazing

On-site cutting of apertures is permissible with Halspan.

For full specification and installation instructions refer to the relevant section in this Technical Support Manual.

### 5. Ironmongery

See Halspan Ironmongery section for specification and installation instructions. Take care with ironmongery as certain items and their fixings may not be compatible with Halspan or other timber cored door constructions.



## FIRE DOOR SITE FIXING INSTRUCTIONS

### **6. Pre-Installation Handling & Storage**

If storing finished doors, doorsets and door kits, they should be protected from rain and sun, preferably in a ventilated building.

Fire doors are for internal installation and should also be protected from exposure to excessive moisture and splashing by corrosive or staining materials.

Store horizontally on 3 or more equally spaced bearers, away from floor or ground. Keep in wrappings as long as possible. Site environmental conditions should be such that Halspan is not subjected to rapid changes in climatic conditions.

#### **Protect glazed doors**

Use spacers between stored doors to prevent glazing beads from damage.

#### **Unlaquered doors**

Should have a coat of seal applied as soon as possible.

#### **Laminate faced doors**

Refer to manufacturer's guide on care and maintenance.

#### **Protect facings**

Door assembly timber components that are to receive a clear finish, or veneered surfaces, should not be exposed to strong lights, daylight or uneven light during storage as this can cause differential fading.

#### **Cleaning veneered doors**

Clean veneered doors and panels by wiping with a damp cloth. Do not use abrasive or chemical cleaners. If necessary, use a mild detergent solution.

#### **Smoke and heat activated seals**

Heat activated seals and smoke seals can easily be damaged. When supplied separately, for fixing after installation of the door assembly, they should be kept wrapped in a dry, ventilated environment and be clearly identified.

#### **Fixing & sealing to Structural openings**








Guidance for fixing doorsets, and methods of providing an adequate fire resistant seal to the structural opening, is documented in BS8214: 1990 Code of practice for "Fire door assemblies with non-metallic leaves". This should be referred to where necessary.

#### **On-site Instructions**

These On-Site Instructions refer only to fire doors manufactured with Halspan high performance door blanks. Otherwise, general application must comply with test requirements of individual suppliers.



**Halspan<sup>®</sup> 120 Perimeter Intumescent Pack  
SLS-KIT-100**

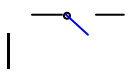
<b>HALSPAN<sup>®</sup>: Single Door Set 2220mm x 930mm</b>					
	<b>Element</b>	<b>Designation</b>	<b>Size</b>	<b>Length</b>	<b>Qty</b>
	Brown PVC c/w s/a strip	Door frame jambs	20mm x 4mm	2100mm	2
	Brown PVC c/w s/a strip	Door frame head	20mm x 4mm	1050mm	1
	Brown PVC c/w s/a strip (blade)	Door frame jambs	20mm x 4mm	2100mm	2
	Brown PVC c/w s/a strip (blade)	Door frame head	20mm x 4mm	1050mm	1
	Black intumescent only c/w s/a strip	Door leaf head	15mm x 2mm	1050mm	1
	Black intumescent only c/w s/a strip	Door leaf jambs (conc)	15mm x 2mm	2100mm	2
	Black intumescent only c/w s/a strip	Door leaf bottom	38mm x 2mm	1050mm	1





**Halspan® 120 Ironmongery Pack  
BOM-IRN-500**

**Set 1 = single door set Butt Hinge**




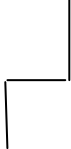
Element	Designation	Finish	Qty
 Halspan® 120 hinge	Door/frame jambs	Brushed S/S	3
Halspan® 120 Closer Power R9000	Door/frame Head	Brushed S/S	1
Halspan® 120 mortice Sash Lock + deadlock face plate	Door leaf edge	Brushed S/S	1



Appendix

**Halspan® 120 Glazing Pack  
Steel Angle Option  
SLS-GLZ-100**

**Set 1 = 1 vision panel up to area 0.54m<sup>2</sup> (BM TRADA) 0.27m<sup>2</sup> (IFC Certification)**

Element	Designation	Size	Length	Qty	
	White intumescent only c/w s/a strip	Inside edge aperture	64mm x 2mm	1050mm	3
	White intumescent mastic	Between glass & Z section	tube		3
	White intumescent spacer	Between glass & Z section	4mm x 10mm	20mm	16
	1.5mm Mild steel angle welded into 4 sided glazing frame. Red oxide primed finish	2 sides of aperture	Profile to detail, overall size to suit aperture		2 (pair set)

## Technical Support Manual



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