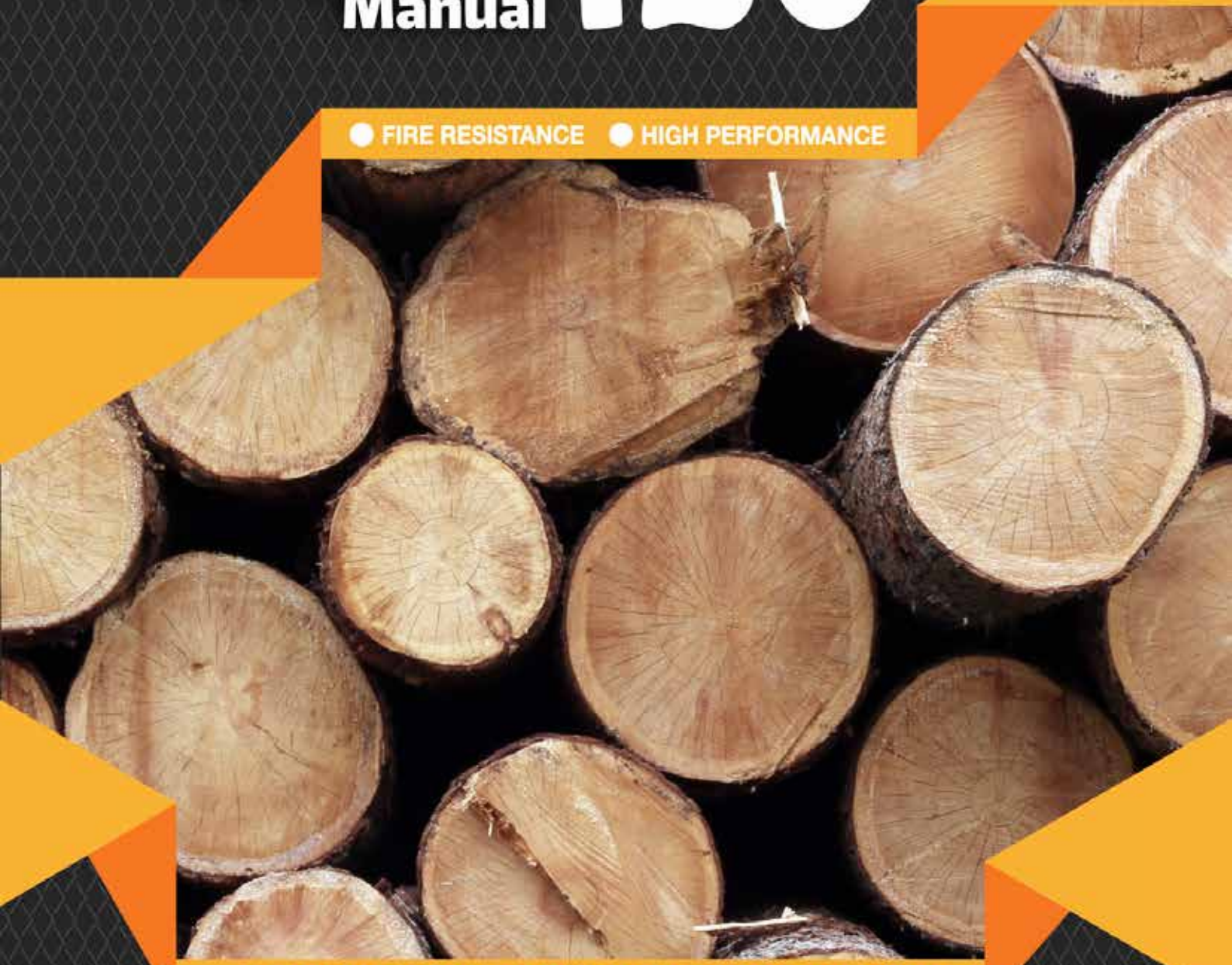
Technical Support Manual 120

- FIRE RESISTANCE
- HIGH PERFORMANCE



- 100% OF SELECTED RECYCLED SOFTWOOD, HARD WOOD

FireBAN

Fire Rated Particle Boards

100 % of selected recycled softwood , hard wood Vermiculite , resin , sawmill residues , carpenters residues .

5 FIREBAN FD 120 MATRIX

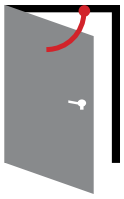
CHARACTERIZATION			
Fire Rated door core	**X**	**GLAZED AREA**	**0.18 M2**
40mm 'FireBAN' particleboard ,2 side 8mm MGO board density 900 kg/m³ inner facing and 2 side 4mm MDF density750 kg/m³ outer	**X**	**ACOUSTIC PERFORMANCE**	
64mm	**X**	**BOARD SIZE**	
FD 120	**X**	From: 2135 X 915mm X 64mm to 2440 x 1220 x 64mm	
Density	600 kg/m3	**MAXIMUM LEAF SIZE**	
Core Color	Yellow	refer to the envelope of approved leaf sizes	
DOOR FRAME			
Hardwood FD 120	**X**		
Steel FD 120	**X**		
LIPPING GLUE LINES			
PVA	**X**		
PVAC	**X**		
U/F	**X**		
PU	**X**		
LIPPING THICKNESS			
FD 120	3 mm		
DOOR SET CONFIGURATION			
LSASD	**X**		
LSDD	**X**		
STANDARD INTUMESCENT			
Graphite	**X**		
FINISHING			
Timber veneers	**X**		
decorative plastic based laminate	**X**		
PVC	**X**		
varnish	**X**		
Paint	**X**		
Decorative paper/ non-metallic foil	**X**		

5.1 FABRICATION & SPECIFICATION

5.1.1 MECHANICAL & PHYSICAL PROPERTIES:

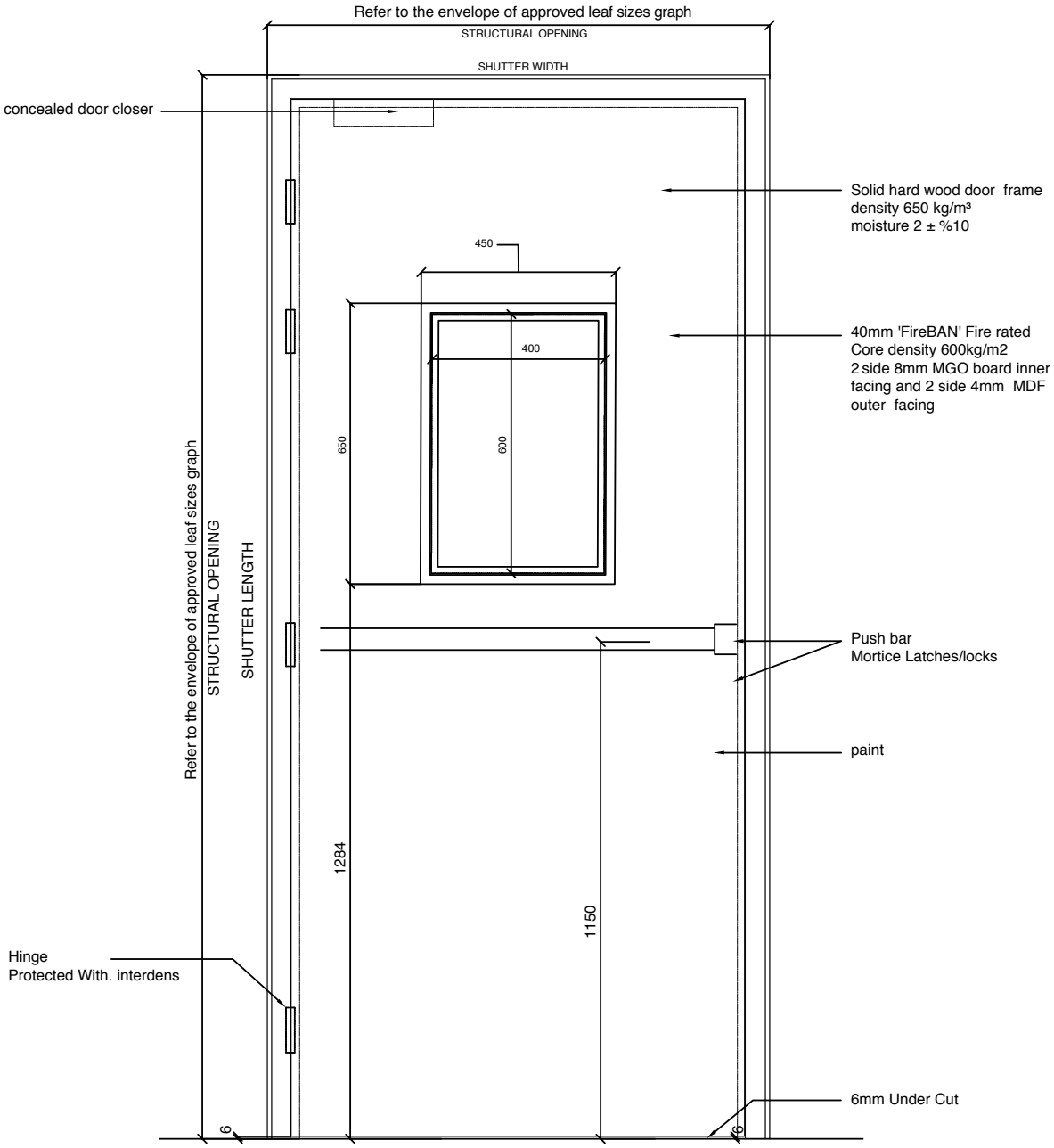
Type:	40mm 'FireBAN' particleboard ,2 side 8mm MGO board density 900 kg/m³ inner facing & 2 side 4mm MDF density750 kg/m³ outer facing with high performance confirm to BS EN 32
Composition:	100 % of selected recycled softwood, hard wood Vermiculite , resin, sawmill residues ,carpenters residues
Fire performance:	BS 467 Part 22 Standard
Assessment Report:	PAR/13335/01 Revision A / Chilt/A13194
Fire Behavior Category:	Resist Fire up to 120 Minutes
Certification:	IFC - FRTD483 & BM TRADA - 589
Green Product:	FSC – TT-COC-004433
Environment:	100 % Recycled product
Density:	600 Kg /m³ ±10
Moisture Content:	08-10 ±2
Board thickness:	64mm ±0.3
Board size:	2440 X 1220 X 64 mm
Emission Classification:	E 1 according to EN 120 Content < 8mg /100g

5.1.2 DOORSET CONFIGURATION



. Latched
. Single Acting
. Single Door
. Without Overpanel

5.1.3 SINGLE ACTING SINGLE DOOR:



120 minutes Fire Rated Door Leaf

Overall Dimension of Leaf	240 cm *105 cm
Overall Thickness of Leaf	65 mm
Leaf Constituents	40mm 'FireBAN' Fire rated Core density 600kg/m³ 2 side 8mm MGO board inner facing and 2 side 4mm MDF outer facing
	Automatic drop-down seal fixed on bottom of leaf and fixed centrally
	0.6mm hardwood on both front and back sides
	3-8 mm thick hard wood Lipping on all sides having stated stated minimum density of 650 kg/m³ & moisture content of 10±2 % fixed using Fevicol 1K PUR

5.1.4 SINGLE ACTING DOUBLE DOOR:

120 minutes Fire Rated Double Door Leaf	
Overall Dimension of Single Leaf	Refer to the envelope of approved leaf sizes graph
Overall Thickness of Leaf	65 mm
Leaf Constituents	40mm 'FireBAN' Fire rated Core density 600kg/m³ ,2 side 8mm MGO board inner facing and 2 side 4mm MDF outer facing
	0.6mm hardwood veneer on both front and back sides
	3 mm thick hardwood wood Lipping on all sides having stated minimum density of 650 kg/m³ and moisture content of 10±2 % fixed using Fevicol 1K PUR

5.2 DOOR LEAF SPECIFICATION

Dimensional tolerance of the door assemblies should comply with the recommendations given in BS4787: 1995. Timber densities must be measured at 12% moisture content and must be free of splits, shakes and checks, and have a slope of grain better than 1:15. Any knots must be sound. Moisture content; 10 + 2% for UK market (or to suit internal joinery moisture content specification of export countries).

5.2.1 DESIGN A-FireBAN COMPOSITE

COMPONENT		MATERIAL	DENSITY	DIMENSIONS
Core		FIREBAB particleboard	600kg/m^3	40mm thick
Inner facings		Non-combustible board	-	8mm thick
Outer facings		Medium Density Fireboard (MDF)	750 KG/m^3	4mm thick
Lippings		Hardwood	650kg/m^3	3mm thick
Adhesives	Core layers	Retained on confidentially file by IFC	-	-
	Inner facing/ Outer facing	Faun polyurethane adhesive	-	-
	Door/Leaf/ Lipping	Fevicol SH PVA adhesive	-	-
Minimum leaf thickness		-	-	64mm

5.2.2 DESIGN B - FIREBAN PLUS FD120

COMPONENT		MATERIAL	DENSITY	DIMENSIONS
Core		FireBAN Plus particleboard	650kg/m^3	64mm thick
Lippings	Square edges	Maple	650kg/m^3	3mm thick
Adhesive	Lipping	Fevicol 1 K PUR	-	-

5.2.3 LEAF SIZE ADJUSTMENT

ELEMENT	REDUCTION
Doors	The manufactured size of the leaf, excluding lippings, may be reduced in height or width without restriction.
Lipping	Lipping dimensions must not be reduced below 3

5.2.4 OVER PANELS

This door set design has not been tested with over panels & therefore their use is not permitted.

5.3 LEAF FACING MATERIALS

FireBAN is particularly suitable for laminating &veneering. Whether fire door or not, FireBAN is successful with veneer and clear lacquer, paint, plastic laminate. The fine, hard surface minimizes preparation time and together with its monolithic structure, these eliminate the problems like grin-through and ripple effect, found with other types of board.

5.3.1 VENEER

Decorative or structural veneers maximum 2 mm in thickness can be applied to FireBAN using the appropriate glue lines for the purpose. Balanced construction must always be maintained.

5.3.2 PAINTING

Problems usually associated with other types of board are eliminated by using FireBAN for example, it is not essential to add paper or veneer before painting. With no preparation or only minimal attention, FireBAN door blanks provide a suitable surface for a good paint finish, eliminating the usual problems associated with other types of board.

5.3.3 DECORATIVE AND PROTECTIVE FACING

The following additional facing 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	0.5
Timber veneer	2
PVC	2
Plastic laminate	2
Decorative paper/ non-metallic foil	0.4

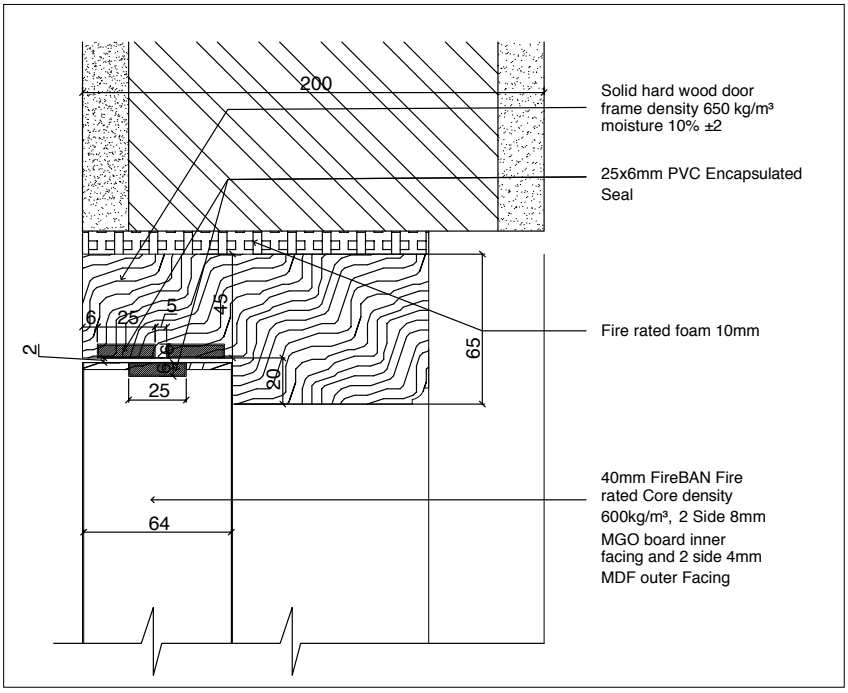
Notes:

1. Additional facing materials must not return around the edge of door leaves.

2. Metallic facings are not permitted except for push plates and kick plates.

5.4 DOOR FRAME

MATERIAL	Hardwood
DENSITY	650kg/m3
Minimum Face Width	44mm excluding stop
Minimum frame Depth	130mm
Minimum stop depth	19mm



THE FOLLOWING SPECIES OF HARDWOOD ARE ALSO ACCEPTABLE:

Oak	nominal density	660kg/m2	(+20 - 10%)
American Cherry	nominal density	580kg/m^3	(+20 - 10%)
Maple	nominal density	650kg/m3	(+20 - 10%)
American Ash	nominal density	550kg/m^3	(+20 - 10%)
Cherry	nominal density	580kg/m3	(+20 - 10%)
Sapele	nominal density	640kg/m^3	(+20 - 10%)
American Black Walnut	nominal density	660kg/m3	(+20 - 10%)
Merbau	nominal density	830kg/m^3	(+10 - 10%)
Pacific Walnut	nominal density	660kg/m3	(+20 - 10%)
Dark Red Meranti*	nominal density	6400kg/m^3	(+20 - 10%)

- *Timber must have a minimum measured density at 12% moisture content.*
- *The timber must be straight grained and of appropriate quality in accordance with BS EN 942: 1996.*
- *The moisture content shall be 10 + 2% for UK market, (or to suit internal joinery moisture content specification for export countries).*
- *These dimensions assume that the rear of the frame is protected by the adjacent wall, (and firestopping, see Section 3.6) and the frame does not project out form the wall.*
- *The door stop can be integral with the main door frame or planted, with a tongue, and pinned, providing the minimum frame thickness remains as stated.*

5.4.1 FIXINGS

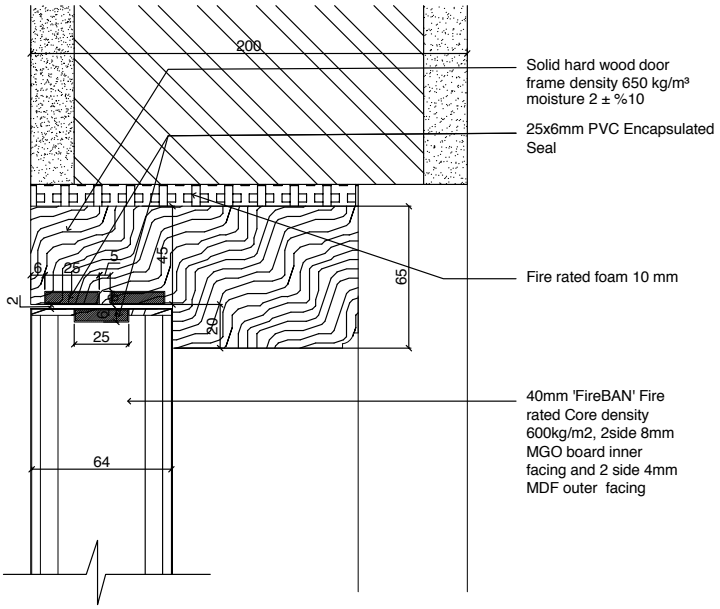
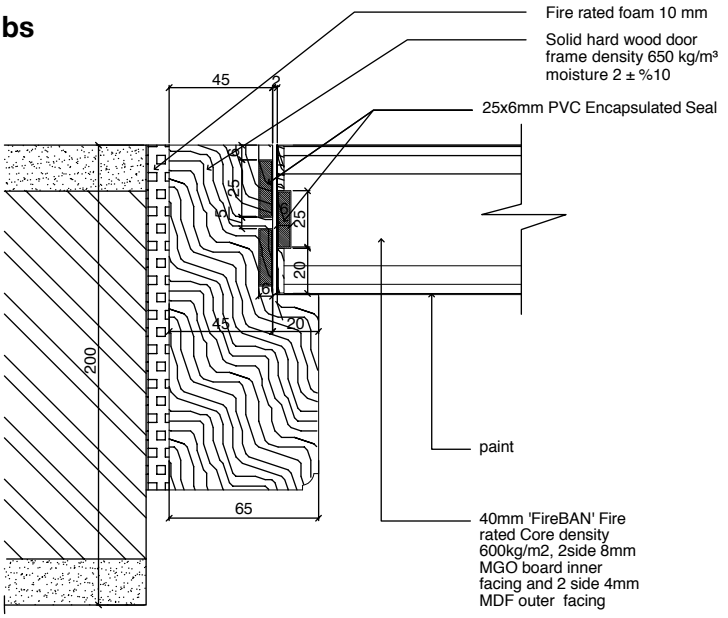
The frame jambs are to be fixed to the supporting construction using steel fixings at 600mm maximum centers. The fixing must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 50mm. It is not necessary to fix the frame head, although packers must be inserted.

5.4.2 STRUCTURAL OPENING

The supporting construction must provide the required level of fire resistance designated for the doorset design and be suitable medium to permit adequate fixing.

5.5 INTUMESCENT SEAL SPECIFICATIONS FOR FIREBAN & FIREBAN PLUS 64MM THICK FD120 GULF TRADE LINK FZCO DOOR LEAVES INSTALLED IN TIMBER FRAMES

The following intumescent seal specification shall be used for the door set configurations covered by this report.

<table>
<tr><th>POSITIONS</th><th>SEAL SPECIFICATION</th></tr>
<tr><td rowspan="2">Head
 
</td><td>Door Frame reveal
2 no 25 x 6mm seals, including PVC carrier, fixed 5mm apart into grooves centrally located in the frame reveal</td></tr>
<tr><td>Door leaf edge
1 no 25 x 6mm seal, including PVC carrier, fixed into a groove centrally located in the leaf edge</td></tr>
<tr><td rowspan="2">Jambs
 
</td><td>Door Frame reveal
2 no 25 x 6mm seals, including PVC carrier, fixed 5mm apart into grooves centrally located in the frame reveal</td></tr>
<tr><td>Door leaf edge
1 no 25 x 6mm seal, including PVC carrier, fixed into a groove centrally located in the leaf edge</td></tr>
<tr><td>Base of door leaf</td><td>1 no 40 x 2mm seal, non-pvc encased, fixed into a groove Centrally located in the leaf edge</td></tr>
</table>

Notes: *All intumescent seals are to be from Lorient polyproducts, who are a number of the intumescent fire Seals Association.*

5.6 HARDWARE PROTECTION

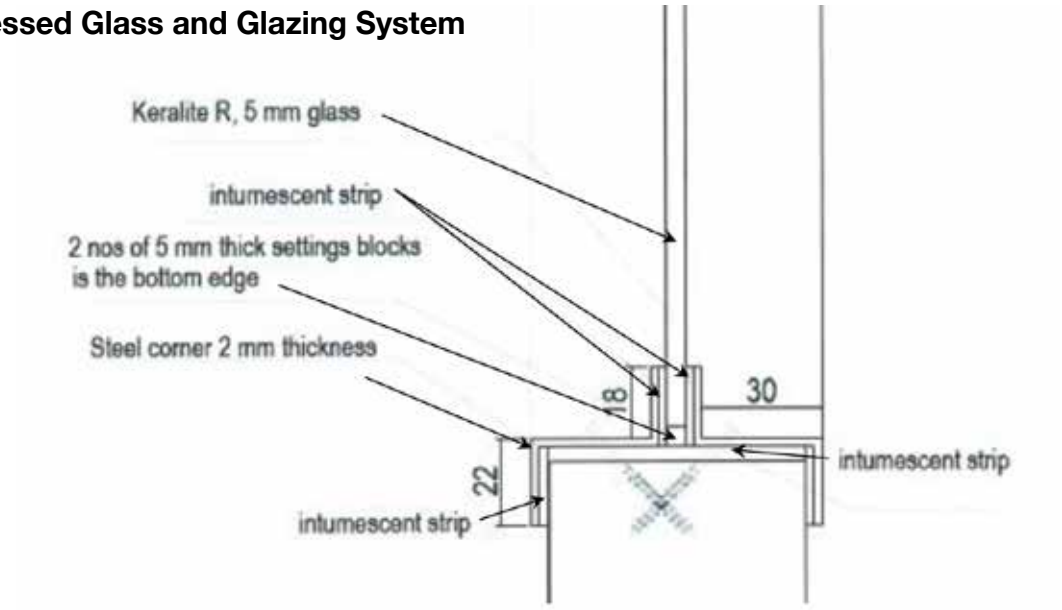
The following intumescent and non-combustible gaskets must be used to protect the hardware.

Element	Location	Specification
Hinges	Fitted under both blades	2mm thick Interdens - Lorient Polyproducts Ltd
Locks & latches	Fitted under the forend & keep	2mm thick intetdens - Lorient Polyproducts Ltd
	Lining all sides of the Closer mortice	1mm thick intetdens - Lorient Polyproducts Ltd
Rim exist device	Fitted between the device	6mm calcium silicate U channel

5.7 GLAZING

The testing conducted on gulf Trade Link FZCO-FireBAN FD120 door sets has demonstrated that the design is capable of tolerating glazed apertures, whilst providing a margin of over performance. Glazing is therefore acceptable within the following parameters
The maximum assessed glazed area for all doorset configuration is 0.18m^2 with a maximum pane size of 0.18 m^2.

5.7.1 Assessed Glass and Glazing System



The glass and glazing system must be the system for Keralite R glass shown below.

For door type A construction:		For door type B construction:	
Maximum area of single aperture	- 0.19m2	Maximum area of single aperture	-0.16 m2
Maximum vertical length of aperture	-615mm	Maximum vertical length of aperture	-525mm
Maximum width of aperture	-315mm	Maximum width of aperture	-320mm
Minimum distance from leaf edge (top)	-345mm	Minimum distance from leaf edge (top)	-525mm
Minimum distance from leaf edge (sides)	-350mm	Minimum distance from leaf edge (sides)	-345mm
Minimum distance from bottom of leaf	-1200mm	Minimum distance from bottom of leaf	-1400mm

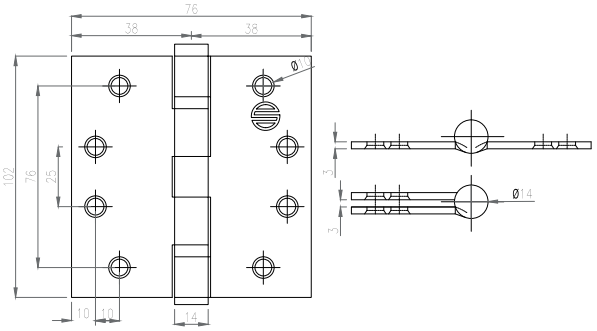
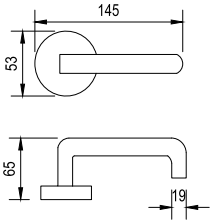
5.8 ADHESIVES

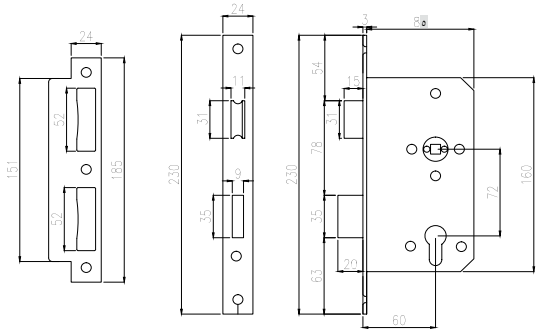
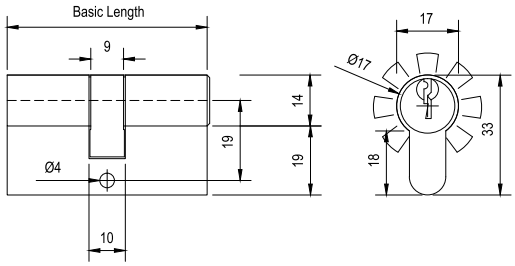
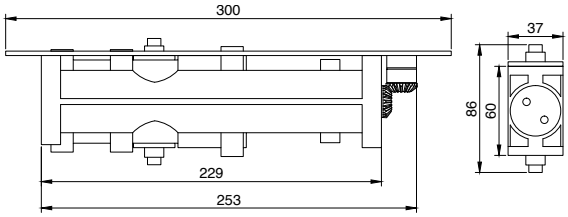
The following Adhesives must be used in the construction

ELEMENT		PRODUCT / MANUFACTURER
Leaf Construction Option 1	Core Layers	Information retained on file, in confidence, al Exova Warrington fire
	Facing	Fevicol 1k PUR or other polyurethane
	Lippings	
Leaf Construction Option 2	Core Layers	Information retained on file, in confidence, al Exova Warrington fire
	Core to inner facing	
	Inner to outer facing	PVC - Fevicol SH
	Lippings	

5.9 TESTED HARDWARE:

The following hardware has been successfully

Element	Make/Type	Size(mm)
Hinges	4 No Stainless steel	102 x 30 (blade size)
	Simplex' HSSBS-SIM- FR 304 grade stainless Steel double bearing butt hinges 	
Latches	Dorma 771	Lock Body: 155 thick x 165 High x 85 deep
		Forend: 235 high x 24 wide x 3 thick
Furniture	Steel - door handle	125 Handle x 19 circular
	Simplex' lever handle MS0101 	

Element	Make/Type	Size(mm)
Lock Bodies	Simplex' mortise sash lock Body 885572-SSS 	235 high x 24 wide forend 165 high x 85 deep body 
	Euro profile Double Cylinder Lock 1910 45/45-AB 	90 Long 
Automatic Overhead closer	Dorma ts72- overhead type	Body - 235 x 60 x 40 fitted Per manufacturers specification
Concealed Overhead Closer	Simplex' SCC24385 	6mm calcium silicate U Channel must be fitted to all Sides of the body mortice 

5.9.1 ADDITIONAL & ALTERNATIVE HARD WARE GENERAL

The following section details the permitted scope and constraints for fitting hardware to this door design. ***Additionally, For doorsets supplied to the Europen Union, the following items of hardware must also bear the CE Mark.***

Latches & locks:	harmonised standard EN 12209
Single axis hinges:	harmonized standard EN 1935
Controlled door closing devices:	harmonised standard EN 1154
Door coordinators:	harmonized standard EN 1158
Panic exit hardware:	harmonized standard EN 1125

5.9.2 HINGES

Leaves must be hung on a minimum of 4 hinges with thge following specification are acceptable.

Element	Specification	
Blade height	90 - 120 mm	
Blade width (excluding knuckle)	30 - 35 mm	
Blade thickness	2.5 - 4 mm	
Fixing	Minimum 4 No. 32mm No.8 or No.10 steel wood screws per blade	
Materials	Steel or stainless steel	
Hinge positions	***Top***	150-250mm from the head to top hinge
	2nd	100 from bottom of hinge to top of 2nd
	3rd	Equispaced between top and bottom hinges
	Bottom	150-250mm from foot of the leaf to bottom of the hinge

5.9.3 LATCHES & LOCKS

Latches and locks must either be as tested, or alternatively components with the following specification are acceptable.

Element	Specification
Maximum forend & strike plated Dimensions	235mm high by 24mm wide by 4mm thick
Maximum body dimensions	150mm high by 85mm wide by 18mm thick
Blade thickness	See section 11.2
Materials	All parts essential to locking/ latching action (including latch bolt, forend and strike) to be steel or stainless steel
Position	900-1200 above the threshold

5.9.4 AUTOMATIC CLOSING

Automatic closing devices, must either be as tested or components of equal specification that have demonstrated contribution to the required performance of this type of 120-minute doorset design, when tested to BS 476: PART22: 1987 0R BS EN 1634-1.

5.9.5 PULL HANDLES

Steel or stainless-steel pull handles may be surface-fixed or bolted through the leaf using steel mounting bolts at a maximum spacing of 1000mm.

No additional intumescent protection is required providing the hole for the bolt through the leaf is tight, unless test evidence dictates otherwise

5.9.6 PUSH PLATES & KICK PLATES

Steel or stainless-steel face -fixed hardware such as push plates and kick plates may be fitted to the doorest providing their fitting require 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 contact or thermally softening adhesive. Plates must not retum surround leaf edges.

5.9.7 PANIC HARDWARE

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

5.10 DOOR GAPS

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

LOCATION	DIMENSION
Door edge gaps	A minimum of 2 mm and a maximum of 4 mm
Alignment tolerances	Leaves must not be proud of the door frame by more than 1mm
	Threshold10mm Between Bottom of Leaf & Top Of Floor Covering

5.11 ENVELOPE OF APPROVED LEAF SIZES

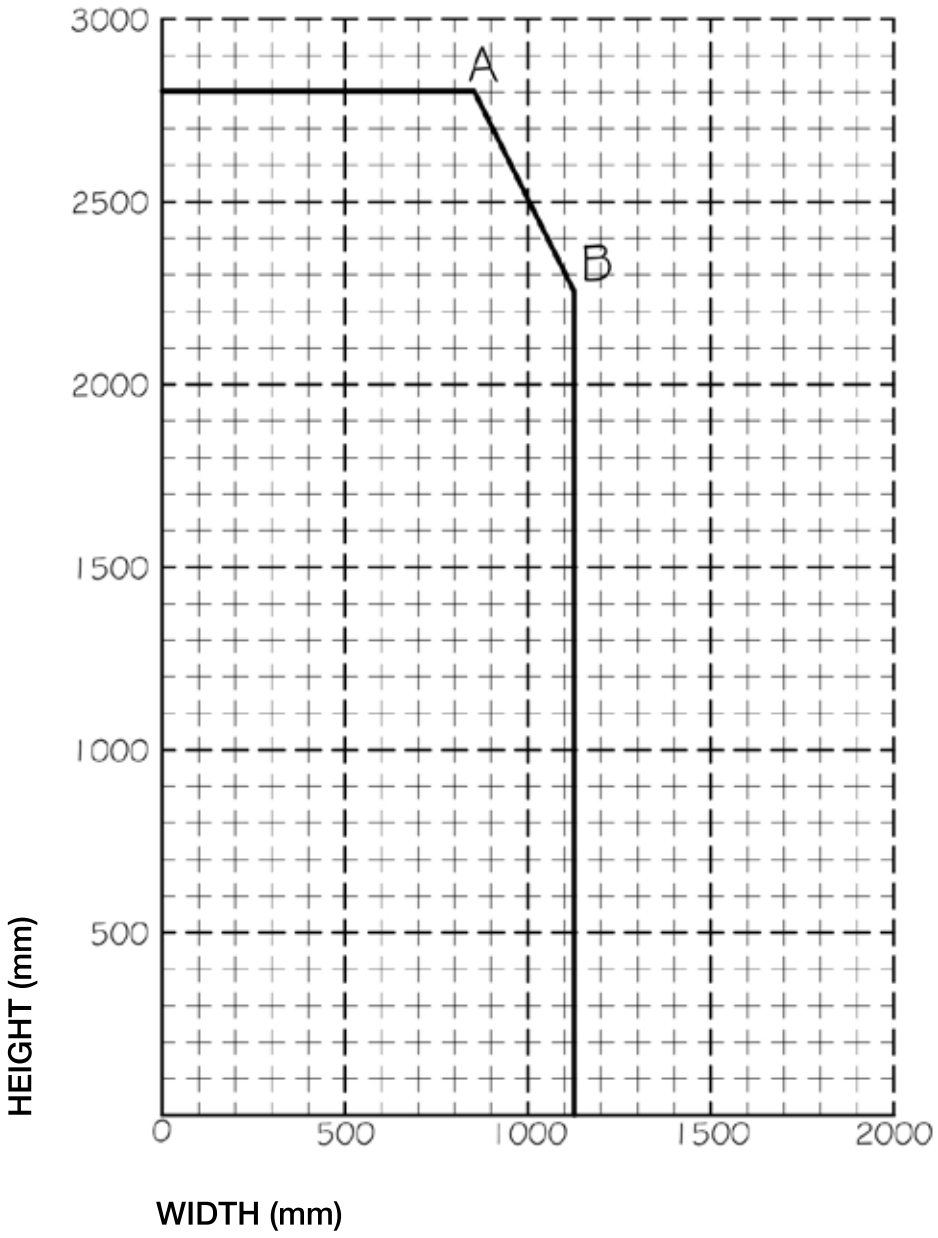
The above graph represents the envelope of approved leaf sizes for the proposed door leaf configuration. Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved. POINT A represents the maximum leaf height and its associated width. POINT B represents the maximum leaf width and its associated height.

TIMBER FRAMES
LATCHED
SINGLE ACTING
SINGLE LFAF
WITHOUT OVERPANEL

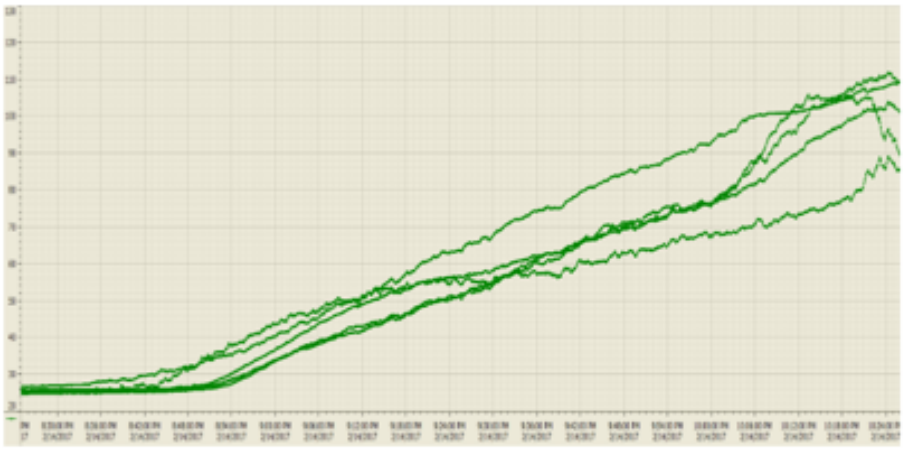
LEAF Size ENVELOFE POINTS

	A	B
Width	853	1127
Height	2803	2254

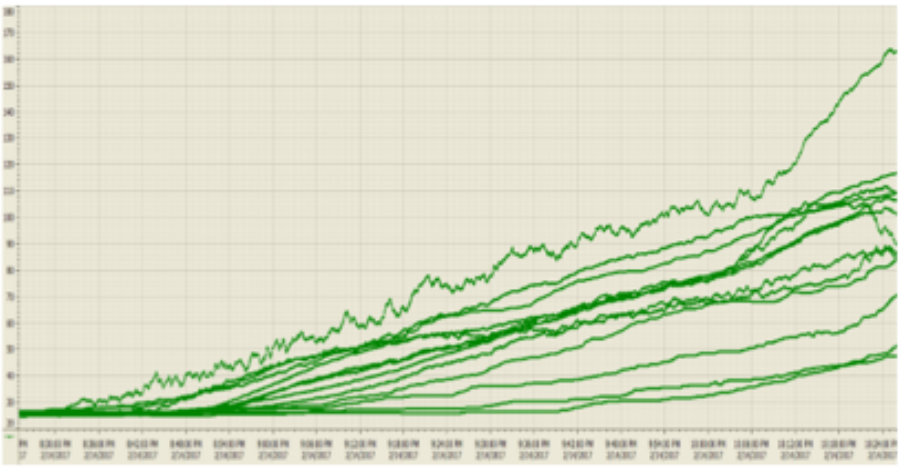
REQUIRED INTEGRITY: 120 Minutes



5.12 DATA RESULTS AND GRAPHICAL ILLUSTRATION FOR FIREBAN FD 120 MIN



Thermocouple graphs used for obtaining average unexposed surface temperature of FD 120 door assembly (TC1 to TC5) up till 123mins



Thermocouple graphs used for obtaining maximum unexposed surface temperature of FD 120 (Specimen – 2) door assembly (TC1 to TC13) up till 123mins

6 SAFETY HANDLING & STORAGE

When handling with mechanized 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 FireBAN is 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.

6.1 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 maybe increased.

6.2 HEALTH HAZARDS

Care should be taken to ensure adequate ventilation and control of the environment & to ensure prevention of exposure for persons likely to be particularly sensitive to the effects of certain chemicals like Polyurethane adhesives to 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 & waste extraction should be provided to ensure that the work place complies with safety standards as per the law.

6.3 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 firefighting 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.

6.4 PERSONAL PROTECTION

An ori-nasal mask and eye shield are strictly recommended.

5.5 HANDLING & STORAGE

On receipt of materials from supplier/distributor

- *Store **FireBAN** door blanks horizontally on 3 or more equally spaced bearers. For multiple pack storage ensure that bearers are aligned. Keep **FireBAN** Off the Floor/Ground*
- *Storage conditions prior to fabrication should be as close to the environmental conditions in the workshop as possible.*
- ***FireBAN** should be allowed to condition for 3-4 days prior to processing.*
- ***FireBAN** should not be exposed to external conditions such as rain, excessive moisture or intense sunlight. The storage area should be well ventilated.*
- *Avoid **FireBAN** coming into contact with corrosive or staining material.*

6.6 PROTECT DOORS

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

6.7 CLEANING VENEERED DOORS

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

Guidance for fixing door sets, and methods of providing an adequate fire-resistant seal to the structural opening, is documented in British standards and the manual On-site Instructions These On-Site Instructions refer only to fire doors manufactured with **FireBAN** high performance door blanks, Otherwise general application must comply with test requirements of individual suppliers.

FZCO

GULF TRADE LINK

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