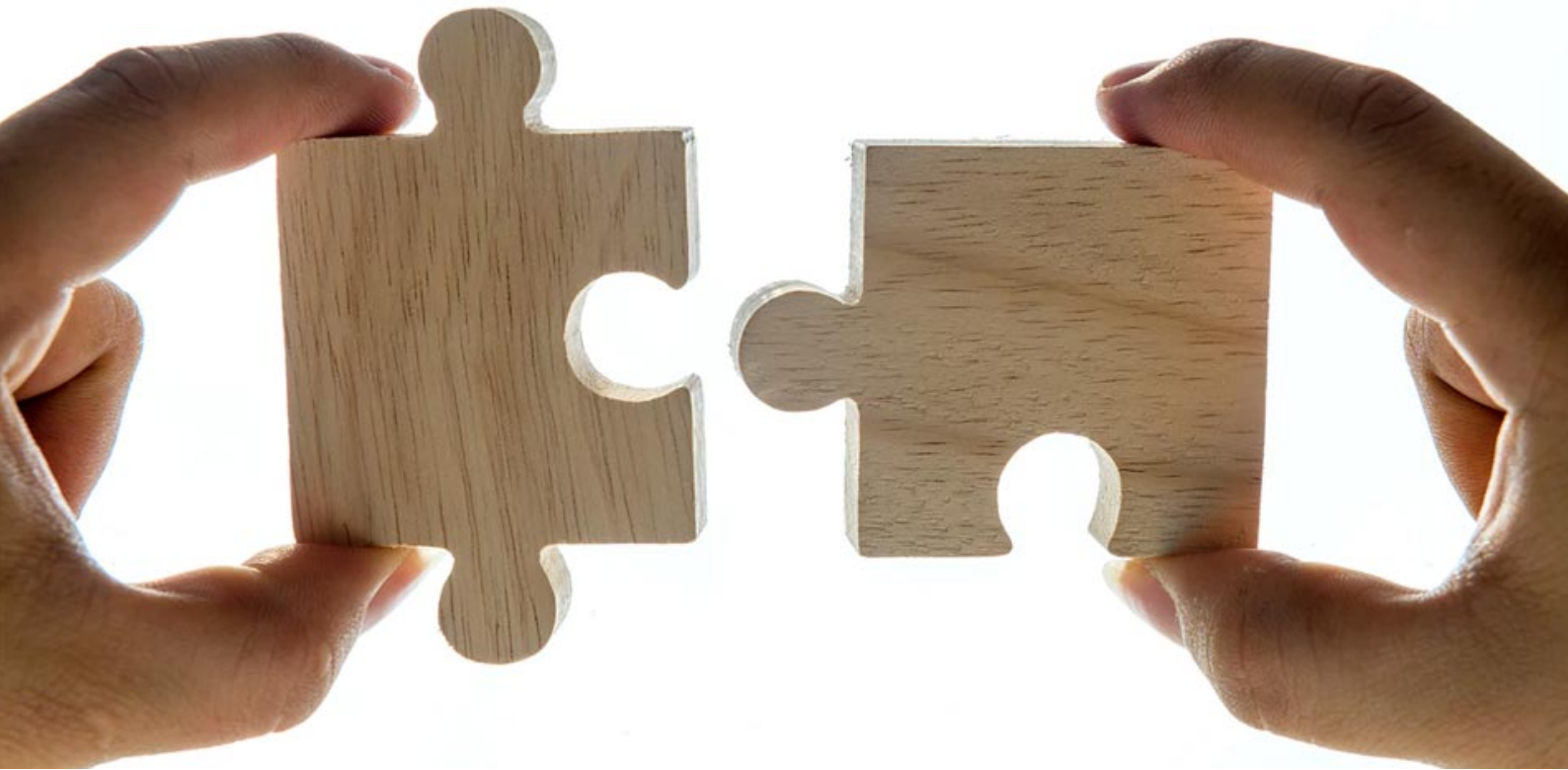


# NovABoarD

## TECHNICAL SUPPORT MANUEL FOR 30MIN.



## 2 NovABoard FD 30 MATRIX

CHARACTERIZATION		FEATURE GROOVES	
Fire Rated door core	<b>X</b>	<b>GLAZED AREA</b>	<b>5*5 MM</b> <b>0.16 M2</b>
Three layers chipboards	<b>X</b>	<b>ACOUSTIC PERFORMANCE</b>	-
44mm	<b>X</b>	<b>BOARD SIZE</b>	
FD 30	<b>X</b>	From: 2135 X 915mm X 44mm to 2440 x 1220 x 44mm	
Density	<b>600 kg/m3</b>	<b>MAXIMUM LEAF SIZE</b>	
Core Color	<b>Yellow</b>	Refer to the envelope of approved leaf sizes	
<b>DOOR FRAME</b>			
Hardwood FD 30	<b>X</b>		
<b>LIPPING GLUE LINES</b>			
PVA	<b>X</b>		
FireBAN FD 60 MATRIX	<b>X</b>		
U/F	<b>X</b>		
PU	<b>X</b>		
<b>LIPPING THICKNESS</b>			
FD 60	<b>8 -12 mm</b>		
<b>DOOR SET CONFIGURATION</b>			
LSASD	<b>X</b>		
ULSASD	<b>X</b>		
LSADD	<b>X</b>		
ULSADD	<b>X</b>		
<b>STANDARD INTUMESCENT</b>			
Palusol	<b>X</b>		
Graphite	<b>X</b>		
<b>FINISHING</b>			
Timber veneers	<b>X</b>		
Decorative plastic based laminate	<b>X</b>		
PVC	<b>X</b>		
Varnish	<b>X</b>		
Paint	<b>X</b>		
Decorative paper/non- metallic foil	<b>X</b>		



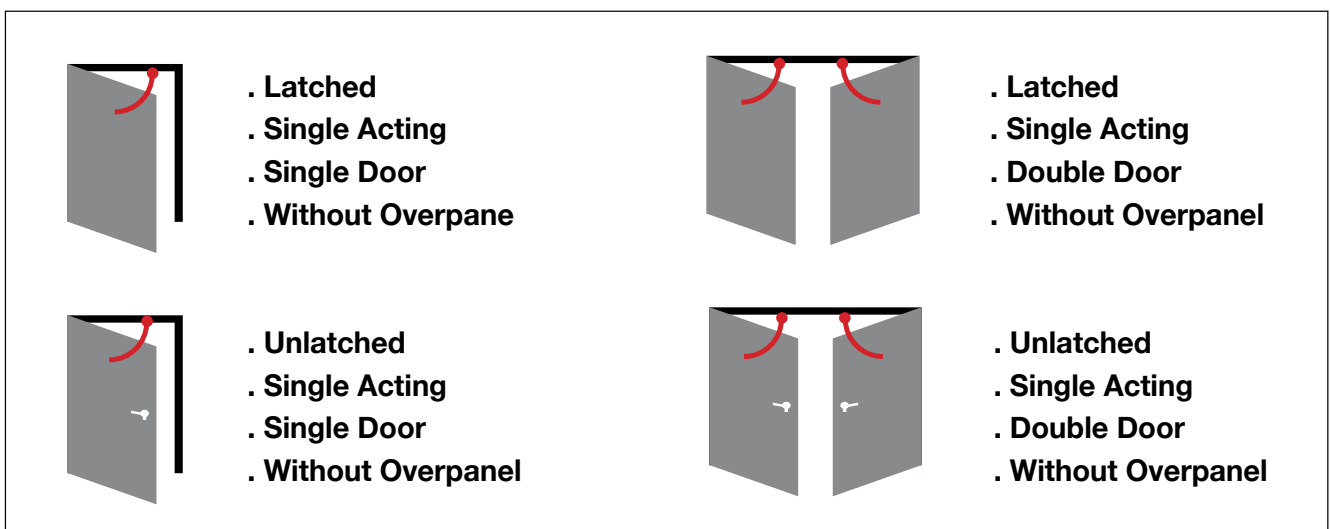
## 2.1 FABRICATION & SPECIFICATION

NovABoarD core is made in 3 layers particle board. The density and surface finish of NovABoarD permits the construction of doors without the need for perimeter framing or the addition of plywood or MDF faces. It is manufactured specifically, with doors in mind, ideal as a solid core timber door. In addition, **NovABoarD** high performance door core has been pre-tested for the fabrication of fire doors. Using **NovABoarD** brings flexibility resulting from a continual programmed of development and testing, which increasingly meets the needs of designers.

### 2.1.1 MECHANICAL & PHYSICAL PROPERTIES:

<b>Type:</b>	Three Layer particleboard with high performance Confirm to BS EN 312
<b>Composition:</b>	100 % of selected recycled softwood, hard wood Vermiculite, resin, sawmill residues, carpenter's residues.
<b>Fire performance:</b>	B.S 467 Part 22 Standard
<b>Assessment Report:</b>	PAR 10346 / 01Rev. C / Chilt/ A12067 Rev B
<b>Fire Behavior Category:</b>	Resist Fire up to 30 Minutes
<b>Certification:</b>	IFC - FRTD483 & BM TRADA - 589
<b>Green Product:</b>	FSC – TT-COC-004433
<b>Environment:</b>	100 % Recycled product
<b>Density:</b>	600 Kg /m <sup>3</sup> ±10
<b>Moisture Content:</b>	08-10 ±2
<b>Board thickness:</b>	44mm ±0.3
<b>Board size:</b>	2400 x 1220 X 44 mm
<b>Emission Classification:</b>	E 1 according to EN 120 Content < 8mg /100

### 2.1.2 DOORSET CONFIGURATION

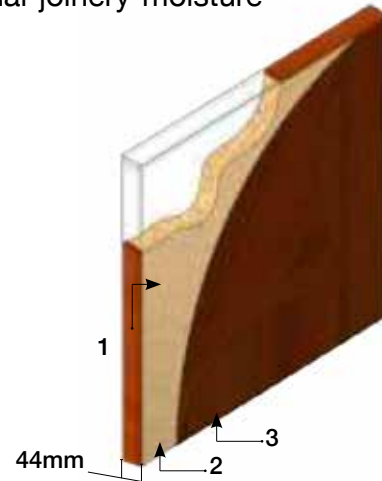


## 2.2 DOOR LEAF SPECIFICATION

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).

- 1- three layers of NovABoarD particleboard 600Kg/m<sup>3</sup>
- 2- 8-12 mm Thick Timber Lipping 650kg/m<sup>3</sup>
- 3- 8-12 mm Thick Timber Lipping 650kg/ m<sup>3</sup>

2mm Maximum Timber veneers, Decorative plastic based laminate, PVC, or varnish



### 2.2.1 NovABoarD FD 30 COMPONENT

COMPONENT		MATERIAL	DENSITY	DIMENSION
core		Three layers of NovABoarD particleboard	600kg/m <sup>3</sup>	44mm thick
Lipping	Square edges	Hardwood	650Kg/m <sup>3</sup>	8-12mm thick
	Rebated edges			20mm thick to include a 30mm wide x 13mm high rebate
Adhesive	Door Leaf/Lipping	Polyvinyl Acetate (PVA) Or Polyurethane		
Optional feature grooves		Maximum four horizontal grooves equally spaced over height of the leaf		3 mm wide x 3mm deep
Optional additional decorative finishes (to be applied to leaf faces only)		Timber veneers, decorative plastic based laminate, PVC Paint or varnish		Maximum 2mm thick



## 2.2.2 LEAF SIZE ADJUSTMENT

ELEMENT	REDUCTION
Doors	The manufactured size of the leaf, excluding lipping may be reduced in height or width without restriction.
Lipping	Lipping dimensions may not be reduced below 8 mm

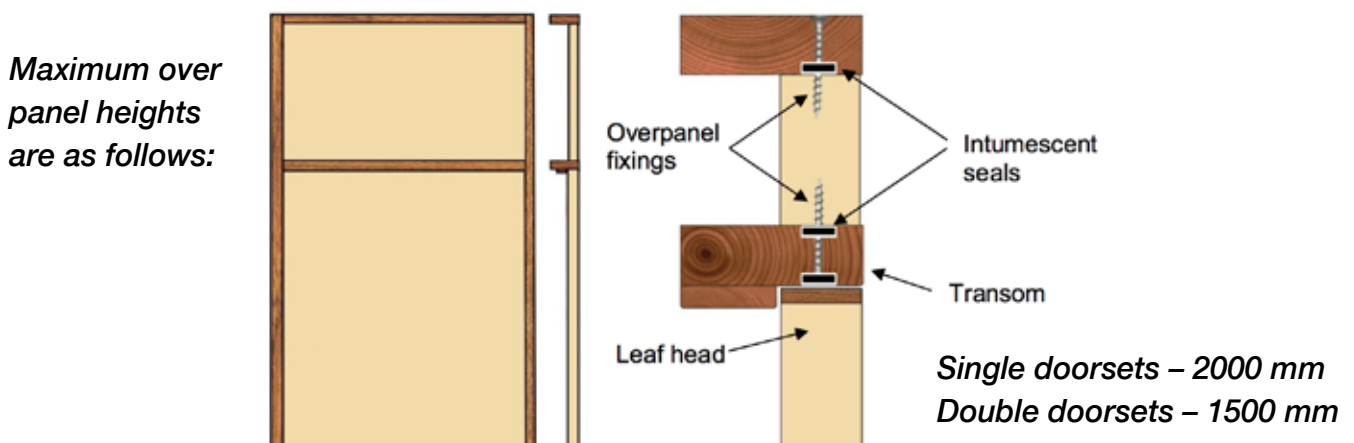
## 2.2.3 OVER PANELS

Over panels of the same construction as the door leaves may be used when separated by a transom. The over panel must be fully contained within the door frame the transom material must be to the same specification as the door frame.

Door frame transom joints must utilize mortise and tenon joints or butt joints must be tight, with no gaps and requires mechanical fixing with the appropriate size ring shank nails or screws. Butt joints must be additionally bonded with urea formaldehyde or equivalents.

Over panels 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 250 mm centers in between

**THE FOLLOWING DIAGRAM ILLUSTRATES THE PRINCIPLES DESCRIBED:**



## 2.3 LEAF FACING MATERIALS

NovABoarD is particularly suitable for laminating & veneering. Whether fire door or not, NovABoarD 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.

### 2.3.1 VENEER

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

### 2.3.2 PAINTING

Problems usually associated with other types of board are eliminated by using NovABoarD for example, it is not essential to add paper or veneer before painting. With no preparation

or only minimal attention, NovABoarD door blanks provide a suitable surface for a good paint finish, eliminating the usual problems associated with other types of board.

### 2.3.3 DECORATIVE AND PROTECTIVE FACING

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	0.5
Timber veneer	2
PVC	2
Plastic laminate	2
Decorative paper/ non-metallic foil	0.4

1. *May replace the tested 0.6mm hardwood veneer.*
2. *additional facing materials must not return around the edge of door leaves*
3. *metallic Facing are not permitted except for push plates and kick plates*



## 3.4 DOOR FRAME

MATERIAL	DENSITY	MINIMUM FACE WIDTH	MINIMUM FRAME DEPTH	MINIMUM STOP DEPTH
Hardwood	650kg/m <sup>3</sup>	32mm excluding stop	90mm	13mm

### THE FOLLOWING SPECIES OF HARDWOOD ARE ALSO ACCEPTABLE;

oak	nominal density	660kg/m <sup>3</sup>	(+20-10%)
American Cherry	nominal density	580kg/m <sup>3</sup>	(+20-10%)
Maple	nominal density	650kg/m <sup>3</sup>	(+20-10%)
Beech	nominal density	650kg/m <sup>3</sup>	(+20-10%)
cherry	nominal density	580kg/m <sup>3</sup>	(+20-10%)
sapele	nominal density	640kg/m <sup>3</sup>	(+20-10%)
American Black walnut	nominal density	660kg/m <sup>3</sup>	(+20-10%)
Merbau	nominal density	830kg/m <sup>3</sup>	(+10-10%)
pacific Walnut	nominal density	660kg/m <sup>3</sup>	(+20-10%)
Tropical cherry	nominal density	580kg/m <sup>3</sup>	(+20-10%)
Dark Red Meranti	nominal density	640kg/m <sup>3</sup>	(+20-10%)

The density of meranti varies considerably, hence the density of each specific batch used for production must be checked for compliance]

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 of export countries)

These dimensions assume that the rear of the frame is protected by the adjacent wall and that the frame does not project out from the wall. The door stop is to comprise the same material as the door frame and maybe either planted and pinned using 40mm steel pins, or integral with the main door frame, providing the minimum frame thickness remains as stated.

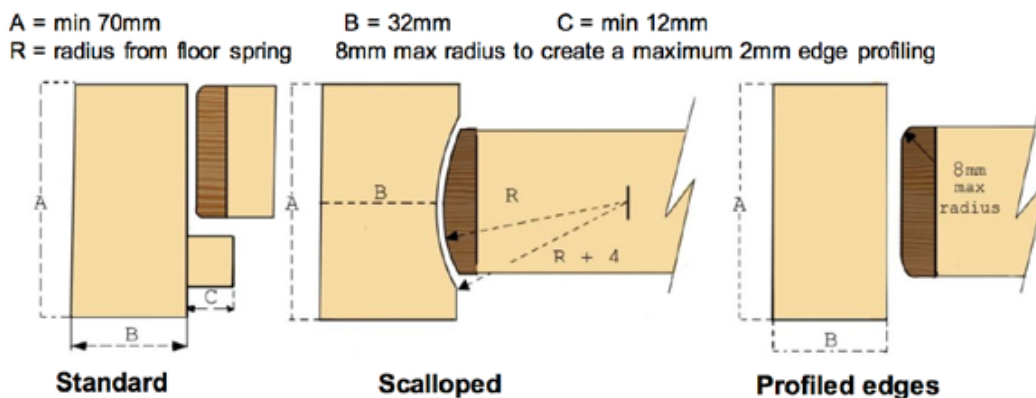
The overall Frame depth may be increased by the use of extension linings, But the joint between the main frame and the extension lining must not intrude in the plane of the door thickness.

### HEAD/JAMB

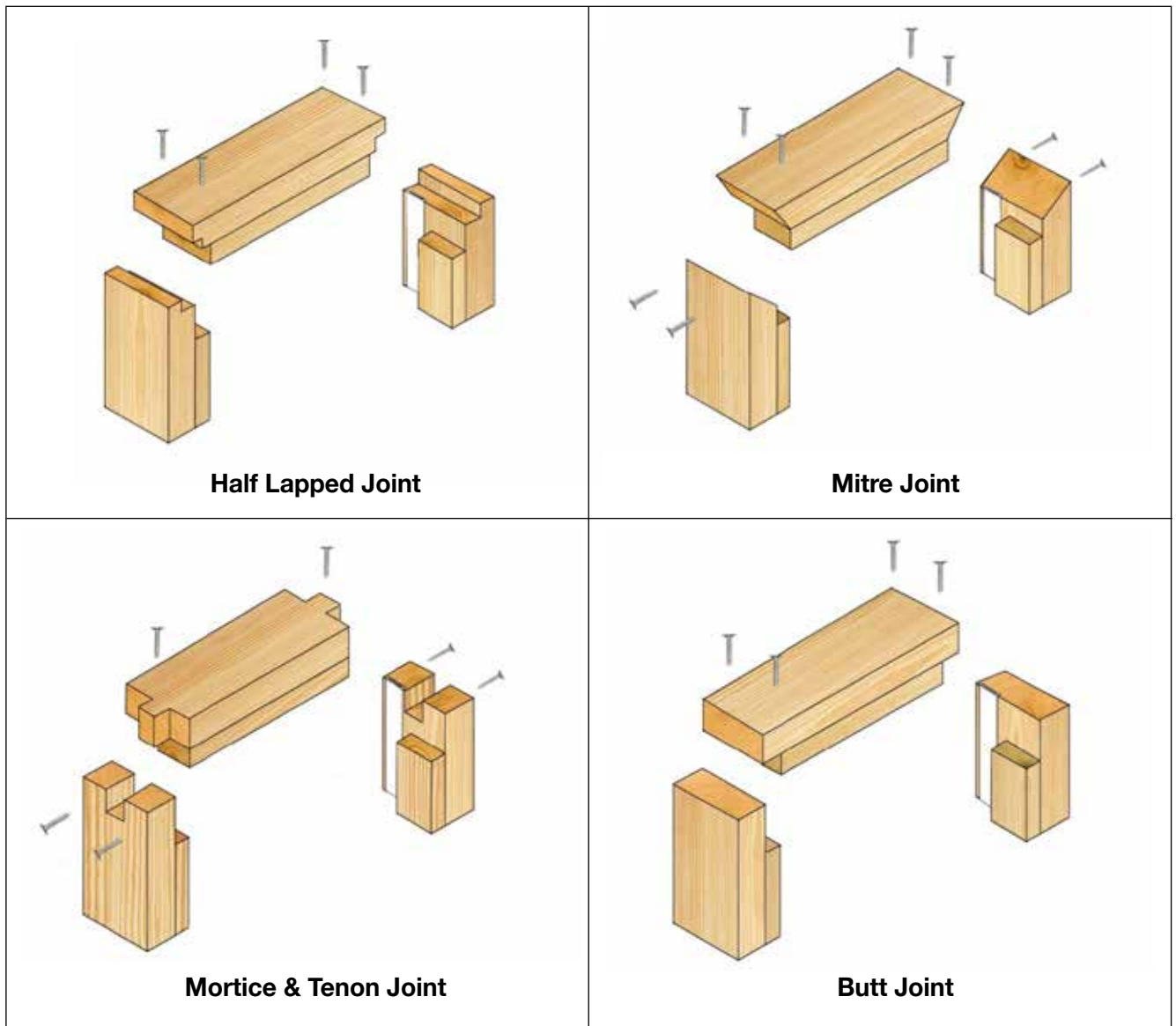
**Joint:** Mitered Corner with single finger joint using urea Formaldehyde adhesive and 5no. 50mm long steel screws per joint.

**Architraves:** Architraves are optional and have no fire performance requirements

The following diagram depicts the assessed frame profiles and dimensions:



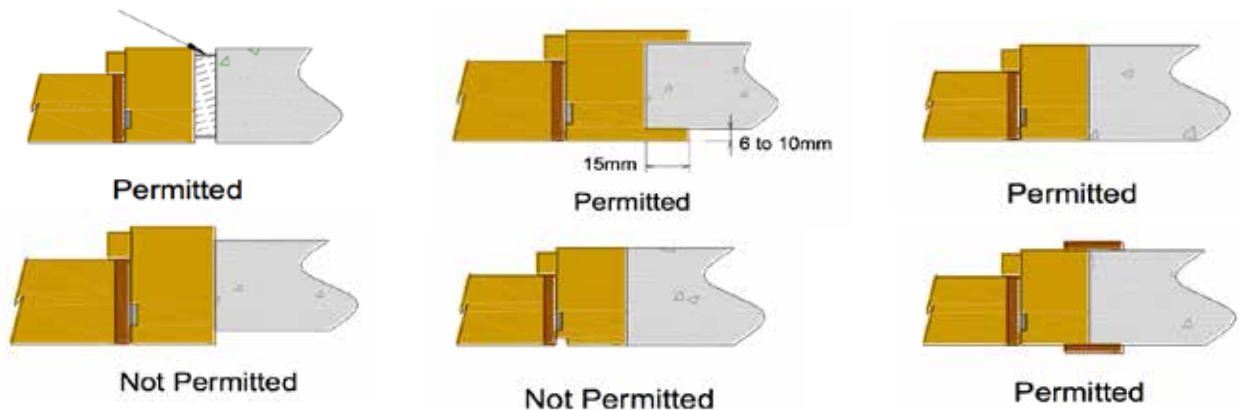
**2.4.1 DOOR FRAME JOINTS**



**2.4.2 DOOR FRAME INSTALLATION**

The following diagram indicates the acceptable and unacceptable door frame installation:

Max 10 x 10mm shadow gap with 2mm intumescent mastic capping or 10 x 4mm PVC encased intumescent seal





### 2.4.3 FIXINGS

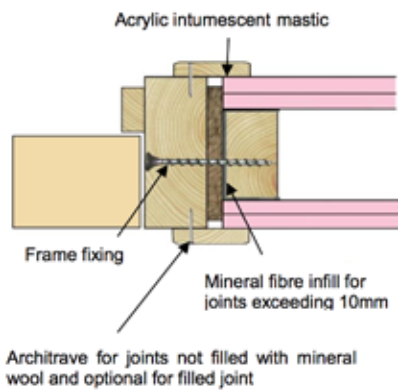
The frame jambs are to be fixed to the supporting construction using steel fixing at 500mm maximum centers. The fixing must be of the appropriate type for the supporting construction and must penetrate to a minimum depth of 60mm. It is not necessary to fix the frame head, although packers must be inserted.

### 2.4.4 STRUCTURAL OPENING

The supporting construction must provide the required fire resistance designated for the door set design. The supporting medium must be suitable to permit adequate fixing.

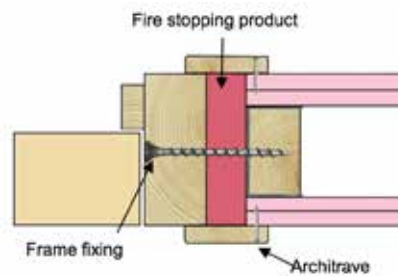
### 2.4.5 SEALING TO STRUCTURAL OPENING

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

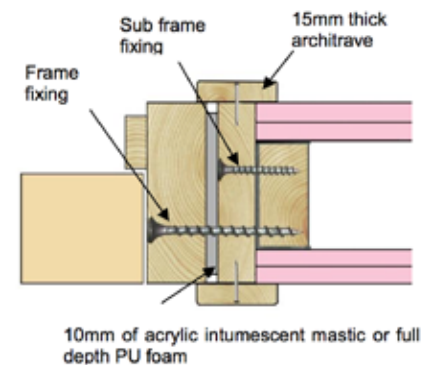


1. Gaps up to 10mm must be sealed on both sides with a 10mm depth of acrylic intumescent mastic, fire tested for this application to BS 476: part 22: 1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.

2. Gaps Between 10mm and 20mm must be tightly packed with mineral fiber 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.



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 EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.



4. Timber based or non-Combustible subframe up to 50mm thick, 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 BS476: part22:1987 or BS EN 1634-1. Joint must be fitted with 15mm thick architraves overlapping at least 15mm each side.

## 2.5 INTUMESCENT SEAL SPECIFICATIONS FOR NovABoard FD30 DOOR LEAVES INSTALLED IN TIMBER FRAMES

The following intumescent seal specification shall be used for the doorset configurations

POSITIONS	SEAL SPECIFICATION
<b>Door jambs</b>	1no 15 x 4mm thick, including PVC carrier, fixed into grooves centered in the leaf edge or frame reveal
<b>Door Head</b>	1no 15 x 4mm thick, including PVC carrier, fixed into grooves centered in the leaf edge or frame reveal
<b>Flush Meeting Stiles</b>	1no 15 x 4mm thick, including PVC carrier, fixed into grooves centered in the edge of both leaf
<b>Unequal rebated meeting stiles</b>	1no 10 x 4mm thick, including PVC carrier, fixed into a groove centered in the small up stand of the passive leaf and 1no. 20 x 4mm thick, including PVC carrier, fixed into a groove centered in the large rebate in the active leaf

Notes:

Seals to be Lorient Polyproducts LP1504 and LP2004 type 617.

## 2.6 HARDWARE PROTECTION

One of the following intumescent gaskets must be used to protect the hardware:

ELEMENT	LOCATION	SPECIFICATION
Hinges	Fitted under both blades	<ol style="list-style-type: none"> <li>1. 1mm interdens - Dufaylite Developments Ltd.</li> <li>2. 1mm MAP Lorient Polyproducts Ltd.</li> <li>3. 1mm Therm-A-strip- Intumescent Seals Ltd.</li> </ol>
Locks & latches	Fitted under the forend and keep, and lining all side of the lock body rebate	
Flush bolts	Lining all side of the lock body rebate	



## 2.7 GLAZING

The testing conducted on Novatrade Ltd Co. - NovABoarD FD60 doorsets 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:

### 2.7.1 ASSESSED GLAZING SYSTEMS

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

GLAZING SYSTEM	MANUFACTURER	MAXIMUM. Area (m2)
Fireglaze 30	Sealmaster Ltd..	0.16
Therm -A- strip	intumescent Seals Ltd.	0.16
Hodgsons firestrip 30	Hodgsons	0.16
Flexible figure	Lorient polyproducts Ltd.	0.16
System 36	Lorient polyproducts Ltd.	0.16
Pyroglaze 30	Mann McGowan Ltd.	0.16
R8193	pyroplex	0.16

### 2.7.2 ASSESSED GLASS PRODUCTS

Assessed glass types are as follows:

GLASS TYPE	MANUFACTURER	THIC. (MM)	MAX. AREA (M2)
firelite	Gulf glass industries (JAE)	5	0.16
keralite	Vetrotech Saint-Gobain	5	0.16
pyroshield	pilkington Group Ltd.	6-7	0.16
pyroshield II	pilkington Group Ltd.	6-7	0.16
pyran s	Schott glass Ltd	6	0.16
pyrostem	Pyroguard Ltd.	6	0.16
pyrodur	pilkington Group Ltd.	10	0.16
pyroguard EW30	Pyroguard Ltd.	11	0.16
Pyrobelite 12	AGC flat glass	12	0.16
pyrodur	pilkington Group Ltd.	13	0.16
pyroguard 12	Pyroguard Ltd.	15	0.16
contraflam	Vetrotech Saint-Gobain Ltd.	16	0.16
pyrostop	pilkington Group Ltd.	15	0.16
pyrobel 16	AGC flat glass	15	0.16

#### Notes:

1. all glass types must be fitted fully in accordance with the manufactures' tested details/ installation requirements, particularly with respect to edge cover & expansion tolerance.
2. for 5mm keralite the maximum single pane size is 0.12m2,



### 2.7.3 ASSESSED APERTURE SIZES

apertures are created by cutting directly into the door leaf, with beads fitted directly to the leaf. Based upon the size of the aperture tested, the following limitations apply to glazed apertures in the door leaves considered herein:

Maximum area of aperture (s)	- 0.16 m <sup>2</sup>
Maximum vertical length of aperture	- 800 mm
Maximum horizontal length of aperture	- 300mm
Maximum distance from leaf edge (top)	- 300mm
Maximum distance from leaf edge (sides)	- 300mm
Maximum distance from bottom of leaf	- 300mm

*More than one aperture may be included in each leaf subject to the limitation below, and the maximum total area of apertures allowed above.*

Minimum distance between apertures - 265mm

### 2.7.4 CIRCULAR GLAZING

the leaves are approved for the incorporation of circular glazing up to aperture dimensions of 300mm diameter, subject to the parameters for aperture margins,

### 2.7.5 GLAZING BEADS & INSTALLATIONS

Glazing beads must be from hardwood as specified in the following table:

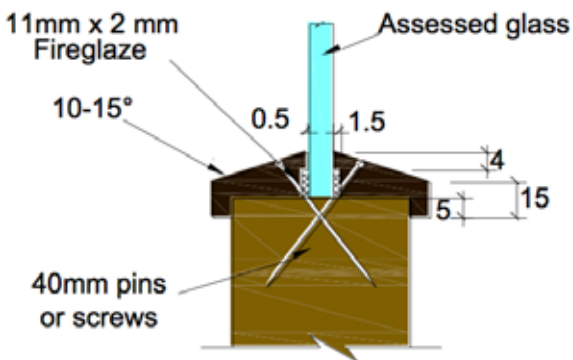
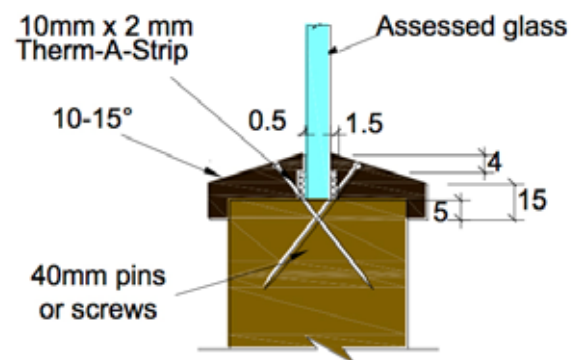
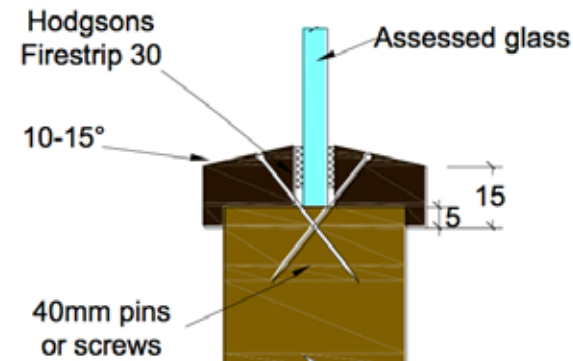
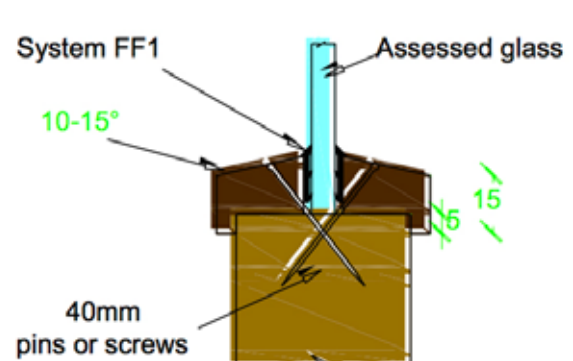
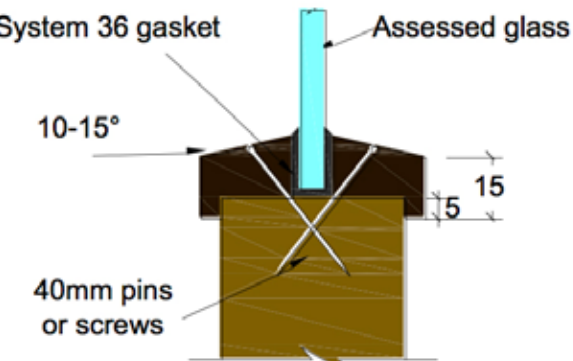
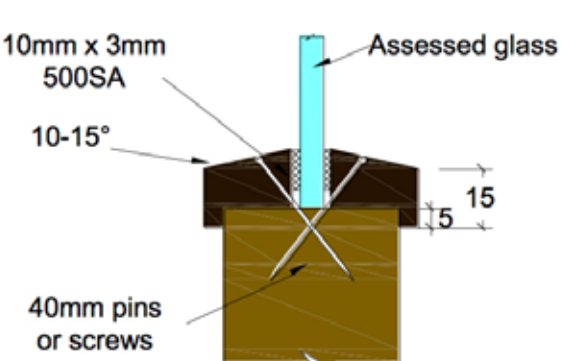
Profile	Mi. Density (kg/m <sup>3</sup> )	Size (mm)
chamfer	640	Maximum area of aperture(s) - 0.16 m <sup>2</sup>
square	640	Maximum area of aperture(s) - 0.16 m <sup>2</sup>

Bead profile as per proprietary system 90+

Bead Profile as tested and shown below, incorporating 8x8mm bolection return



## Proprietary Glazing Systems

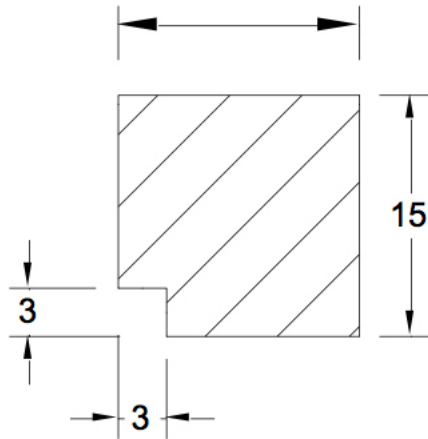
 <p>11mm x 2 mm Fireglaze</p> <p>Assessed glass</p> <p>10-15°</p> <p>0.5 1.5</p> <p>4</p> <p>5 15</p> <p>40mm pins or screws</p> <p><b>Fireglaze</b> Sealmaster Ltd</p>	 <p>10mm x 2 mm Therm-A-Strip</p> <p>Assessed glass</p> <p>10-15°</p> <p>0.5 1.5</p> <p>4</p> <p>5 15</p> <p>40mm pins or screws</p> <p><b>Therm -A-Strip</b> Intumescent Swals Ltd</p>
 <p>Hodgsons Firestrip 30</p> <p>Assessed glass</p> <p>10-15°</p> <p>15</p> <p>5</p> <p>40mm pins or screws</p> <p><b>Firestrip 30</b> Hodgsons Sealants Ltd</p>	 <p>System FF1</p> <p>Assessed glass</p> <p>10-15°</p> <p>15</p> <p>5</p> <p>40mm pins or screws</p> <p><b>System FF1</b> Lorient Polyproducts Ltd</p>
 <p>System 36 gasket</p> <p>Assessed glass</p> <p>10-15°</p> <p>15</p> <p>5</p> <p>40mm pins or screws</p> <p><b>System 36</b> Lorient Polyproducts Ltd</p>	 <p>10mm x 3mm 500SA</p> <p>Assessed glass</p> <p>10-15°</p> <p>15</p> <p>5</p> <p>40mm pins or screws</p> <p><b>Pyroglaze 30</b> Mann McGowan Ltd</p>



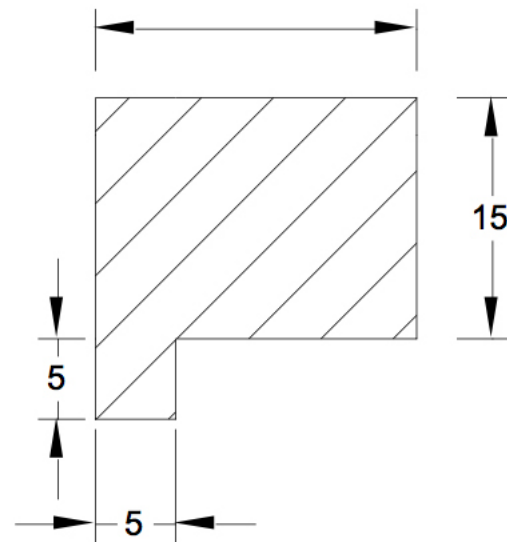
### 2.7.6 ASSESSED SQUARE GLAZING BEAD PROFILES

The following square bead profiles may be used as an alternative to splayed beads refer to section 7 for full details of glazing system and glass restrictions.

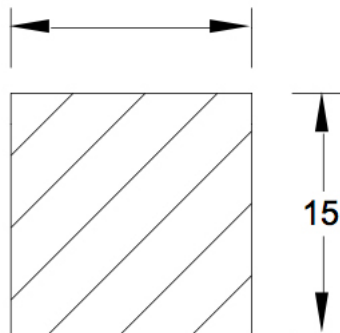
To finish flush with the leaf face



Suited to glass thickness

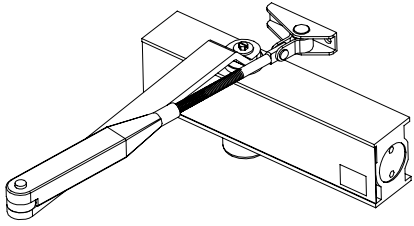


To finish flush with the leaf face



## 2.8 TESTED HARDWARE:

The following hardware has been successfully incorporated in the tests on the Novatrade Ltd. Co. -NovABoarD FD60 doorset design

Element	Make/Type	Size(mm)
Hinges	Eurospec Architectural Hardware 1433/13 SSS 2BB butt hinge	1433/13 SSS 2BB butt hinge Fitted 200, 1025 & 1850 from head of leaf to top of blade
Automatic Overhead closers	Eurospec Architectural Hardware overhead type-ref DCT2024 	Body-207x55x40 fitted per manufacturers specification
Lock/Latches	Eurospec Architectural Hardware sash lock ref DLE7255EPSSS	235x24(forend size)
	Eurospec Architectural Hardware sash lock ref CSL1191SSS	19 circular
	Dorma	25 thick x 230 high x 70 deep
Furniture	Eurospec Architectural Hardware- lever handle ref CSL 1191SSS	125 Handle x 19 circular
Eye Viewer	Simplex SDV200 200	
Flush Bolts - fitted top and bottom of leaf	Eurospec Architectural Hardware- ref FBT1008	Body-203 x 34 x 20

## 2.8.1 GENERAL

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

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

## 2.9 ADDITIONAL & ALTERNATIVE HARDWARE:

### 2.9.1 HINGES

Leaves must be hung on a minimum of 3 hinges. Hinges with the following specification are acceptable:

Element	Specification	
<b>Blade height</b>	90 - 120 mm	
<b>Blade width (excluding knuckle)</b>	30 - 35 mm	
<b>Blade thickness</b>	2,5 - 4 mm	
<b>Fixing</b>	Minimum 4 No. 32mm long No. 8 or No. 10 steel wood screw per blade	
<b>Materials</b>	Steel or stainless steel	
<b>Hinge positions if 3 hinges required</b>	<b>Top</b>	100 – 180 mm from the head to top hinge
	<b>Middle</b>	Minimum 200mm from bottom of top hinge to top of 2 <sup>nd</sup> hinge or centrally fitted between top and bottom hinges
	<b>Bottom</b>	150-180 mm from leaf threshold
<b>Hinge positions if 4 hinges required</b>	<b>Top</b>	100 – 180 mm from the head to top hinge
	<b>2<sup>nd</sup> &amp; 3<sup>rd</sup></b>	Equal spaced between top and bottom or 2 <sup>nd</sup> hinge 200 mm from top hinge & 2 <sup>nd</sup> hinge equally spaced between 2 <sup>nd</sup> & bottom
	<b>Bottom</b>	from 900 to 1200mm above the threshold

### 2.9.2 LATCHES & LOCK

Latches & locks must either be as tested or alternatively components with the following specifications are acceptable

Element	Specification
<b>Maximum forend &amp; strike plate dimensions</b>	235 mm high by 25 mm wide by 4 mm thick
<b>Maximum body dimensions</b>	165 mm high by 100 mm wide by 18 mm thick
<b>Materials</b>	All the parts essential to locking / latching action to be steel or stainless steel
<b>Position</b>	900-a200 from leaf threshold





### 2.9.3 AUTOMATIC CLOSING

Automatic closing devices, must either be as tested or components of equal specification that have demonstrated contribution to the required performance of these types of doorsets designs, when tested to BS 476; Part 22: 1987 or BS EV 1634 -1 Additionally, concealed overhead closers must fit the manufacturers tested intumescent or non - combustible protective gaskets.

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### 2.9.4 PULL HANDLES

<p>These may be surface - fixed or bottled through the door leaf provided that they are steel, or stainless steel, mounting bolts are steel and that their length is limited to 1200</p>	<p>mm. no additional intumescent protection is required provided that the hole for the bolt through the leaf is tight, unless test evidence dictates otherwise.</p>
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### 2.9.5 DOOR SECURITY VIEWERS

Door security viewers with 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 (Max. tolerance +1mm). Lenses must be glass and the item must be bedded in to a testes intumescent mastic

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### 2.9.6 PUSH PLATE AND KICK PLATES

<p>Steel &amp; stainless-steel push plates &amp; kick plates may be fitted to the doorset provided that their fitting requires the removal of no part of the door leaf. These items of hardware are</p>	<p>permitted up to a max of 20% of the door area if mechanically fixed &amp; a max of 30% if bonded with contact or thermally softening adhesive. Plates must not return around the door edges.</p>
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### 2.9.7 AIR TRANSFER GRILLES

Air transfer grilles may be fitted providing the product has suitable test evidence to BS 476: part 22: 1987 or BS EN 1634- 1 that demonstrates a minimum 60 minutes integrity performance when installed within door leaves of comparable thickness to these Novatrade Ltd. Co. -NovABoarD FD 60 designs.

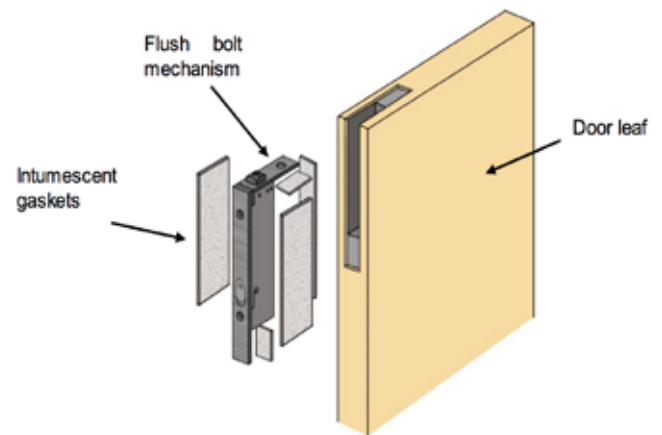
Margins to the leaf edges will remain as detailed for glazing and the position to the unit will be dictated by the pressure regime tested in the proving evidence (normally below mid height) The area occupied by the air transfer grille must not exceed that proven by the supporting fire test for the specific type of grille being used, and must be deducted from the area of glazing, if both elements are fitted.

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### 2.9.8 FLUSH BOLTS

Steel or stainless-steel flush bolts may be incorporated centrally into the top and bottom of one meeting edge, providing the following maximum dimensions are not exceeded. 220 mm long X 34mm deep X 20mm wide. Flush bolts must be steel and the mortise must be as tight to the mechanism as is compatible with its operation. All edges of the mortise for both top and bottom bolts, as fitted, must be protected with intumescent gaskets. Alternatively, the hardware manufacturers tested gaskets may be used.



### 2.9.9 PANIC HARDWARE

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

Door Selectors steel or stainless-steel selectors may be fitted providing the installation does not require the removal of any timber from the leaf, stop or frame reveal and they do not interfere with the self-closing action of the door leaf.

#### Threshold Seals

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

Manufacturer	Product
Lorient Polyproduct	IS8010si
Raven	RP8Si
Athmer	Schall-Ex Duo 1-15
Norsound	810

## 3.10 DOOR GAPS

For fire resistance performance door gaps and alignment tolerances must fall within the following range:

Location	Dimensions
Door edge gaps	A minimum of 2mm & a maximum of 4mm
Alignment tolerances	Leaves must not be proud of the door frame or each other By more than 1mm
Threshold	10mm between bottom of leaf and top of floor covering



## 2.11 ENVELOPE OF APPROVED LEAF SIZES

### 2.11.1 ENVELOPE OF APPROVED LEAF SIZES

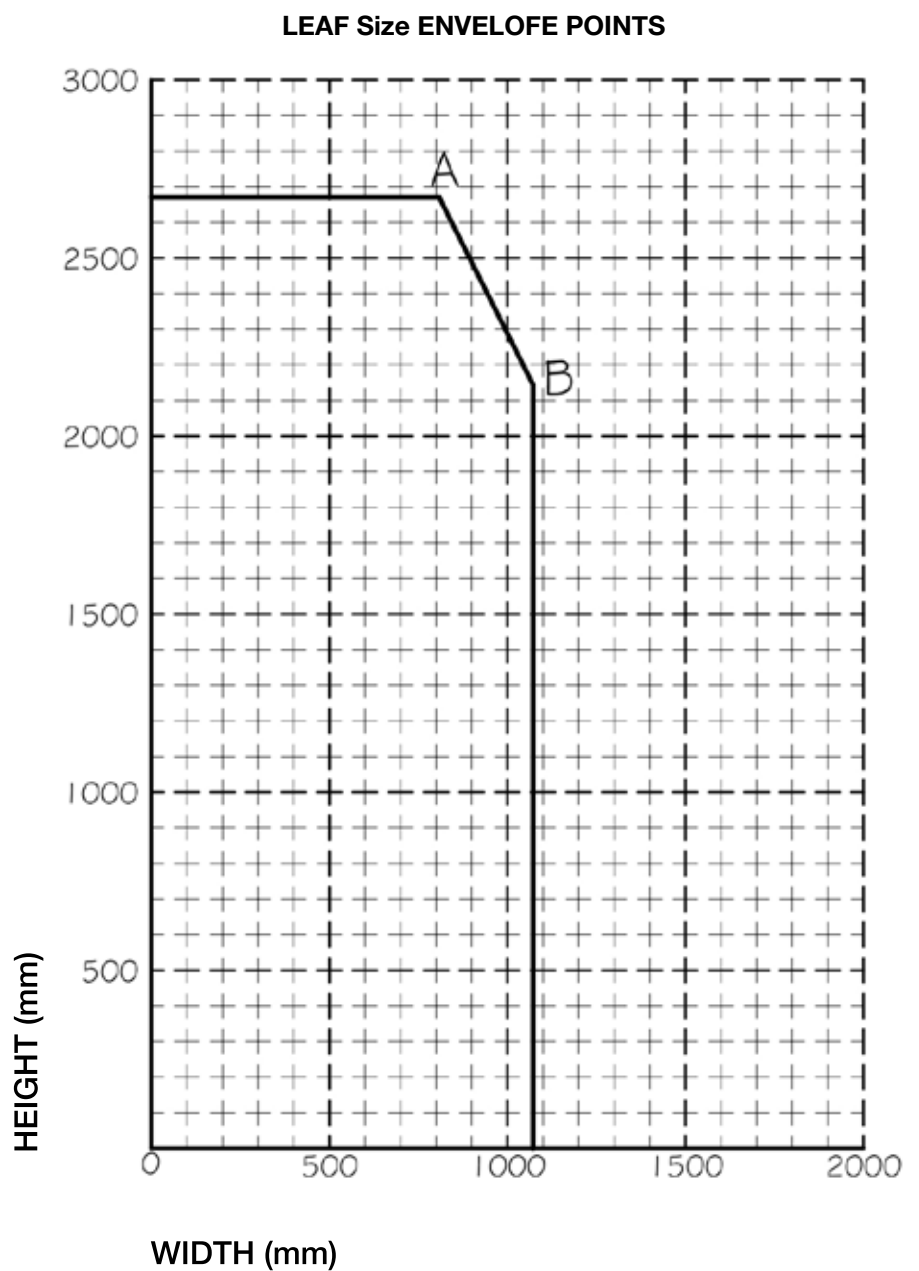
The above graph represents the envelope of approved leaf sizes for the proposed leaf configuration. Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved. POINT A represents the maximum leaf height and its associated width POINT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

### PROPOSED COBFIGURATION

LATCHED  
 SINGLE ACTING  
 SINGLE LFAF  
 WITHOUT OVERPANEL

**REQUIRED INTEGRITY: 30 Minutes**

	A	B
<b>Width</b>	808	1072
<b>Height</b>	2671	2144



**2.11.2 ENVELOPE OF APPROVED LEAF SIZES**

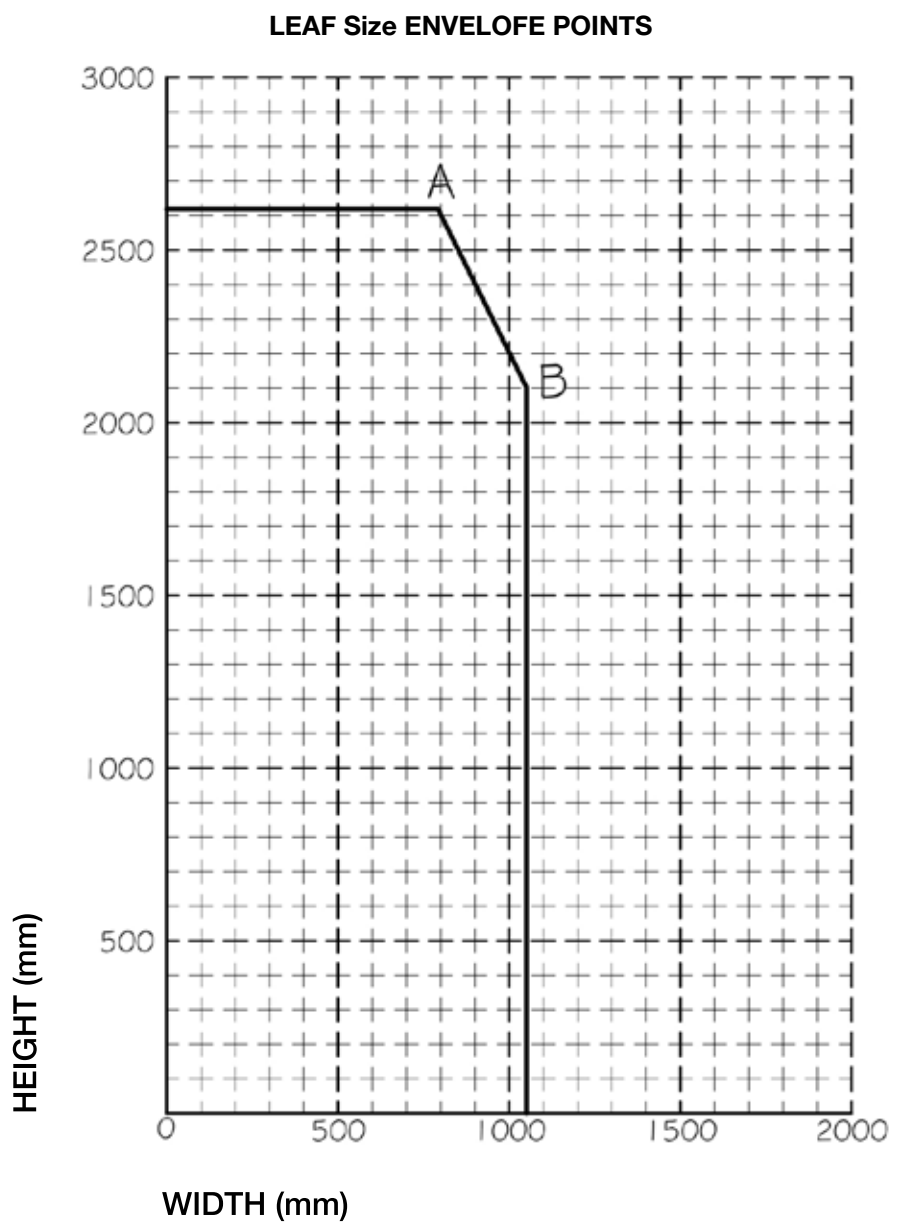
The above graph represents the envelope of approved leaf sizes for the proposed leaf configuration. Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved. POINT A represents the maximum leaf height and its associated width POINT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

**PROPOSED COBFIGURATION**

UNLATCHED  
 SINGLE ACTING  
 SINGLE LFAF  
 WITHOUT OVERPANEL

**REQUIRED INTEGRITY: 30 Minutes**

	<b>A</b>	<b>B</b>
<b>Width</b>	792	1051
<b>Height</b>	2619	2102



**2.11.3 ENVELOPE OF APPROVED LEAF SIZES**

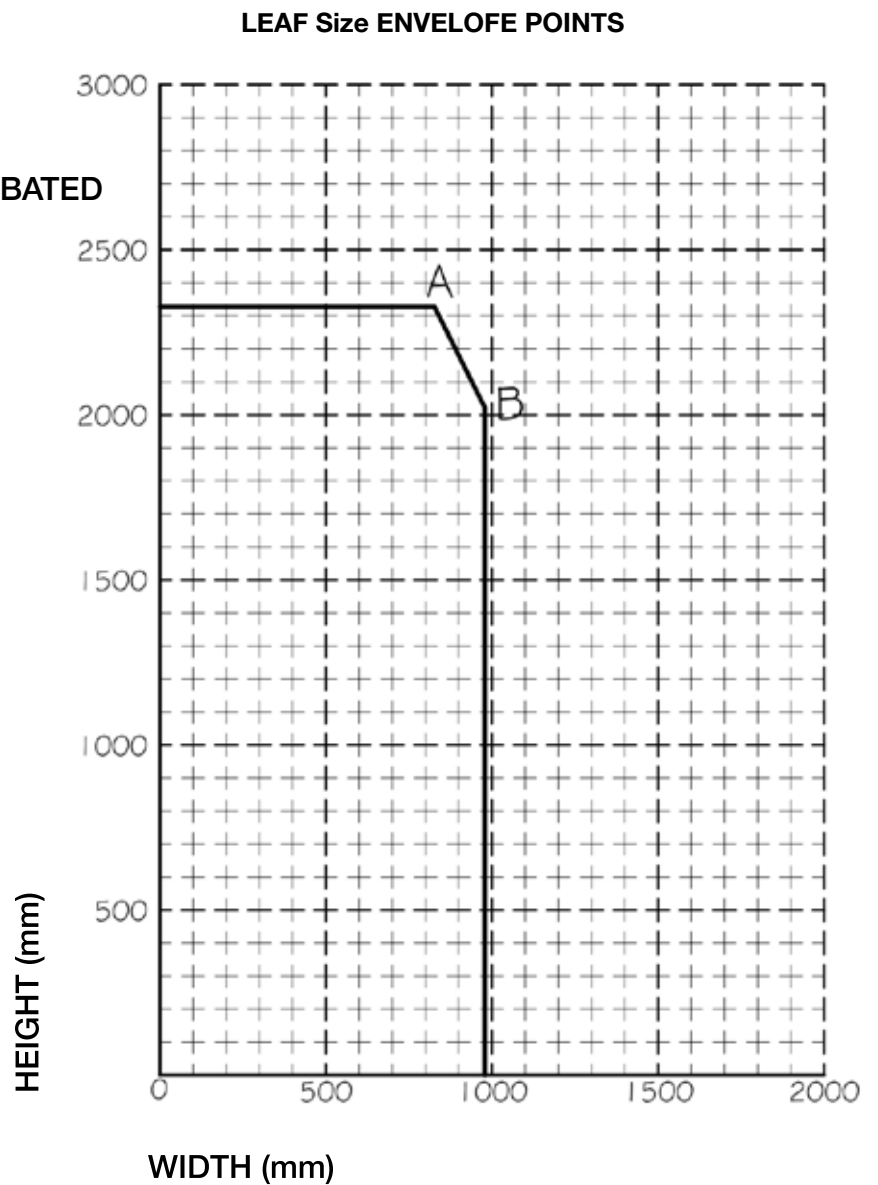
The above graph represents the envelope of approved leaf sizes for the proposed leaf configuration. Any combination of leaf width and height that falls within the graph axes and the connecting line on the graph above are approved. POINT A represents the maximum leaf height and its associated width POINT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

**PROPOSED COBFIGURATION**

LATCHED  
 SINGLE ACTING  
 DOUBLE LEAF  
 WITHOUT OVERPANEL  
 WITH FLUSH OR UNEQUALLY REBATED  
 MEETING STILES

**REQUIRED INTEGRITY: 30 Minutes**

	<b>A</b>	<b>B</b>
<b>Width</b>	827	979
<b>Height</b>	2327	2021



**2.11.4 ENVELOPE OF APPROVED LEAF SIZES**

The above graph represents the envelope of approved leaf sizes for the proposed 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 width height and its associated height.

**PROPOSED COBFIGURATION**

- LATCHED
- SINGLE ACTING
- DOUBLE LEAF
- WITHOUT OVERPANEL
- WITH FLUSH OR UNEQUALLY REBATED
- MEETING STILES

**REQUIRED INTEGRITY: 30 Minutes**

	<b>A</b>	<b>B</b>
<b>Width</b>	819	970
<b>Height</b>	2304	2001

**LEAF Size ENVELOPE POINTS**

