

Field of Application Report

Kiwa Fire Safety Compliance Report IFCA/05163 Rev H

Fire Resistance Standard: BS476: Part 22: 1987



Prepared for:

Theuma NV

Assessed Product/System:

40mm Thick Chipboard (wood or flax) Core FD30 Door Leaves Hung Flush or Over-Rebated in Steel Frames With or Without Sidelights and/or Fanlights

Assessed Performance:

30 minutes fire resistance

Issue Date

December 2023

Expiry Date

December 2028

Partner
for
Progress

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Issue and Amendment Record

REV	DATE	AUTHOR	REVIEW	SECTION	AMENDMENTS
-	June 2005	DC	MB	-	On behalf of Fibelco NV
A	December 2005	DC	DJI	Various	On behalf of Fibelco NV
B	June 2007	DC	DJI	Various	On behalf of Fibelco NV
C	October 2007	DC	DJI	Various	On behalf of Fibelco NV
D	October 2012	MB	DC	Various	Change of client name. Review and revalidation with minor editorial revisions
E	August 2018	DC	CH	Various	Review and revalidation with updated report format and some technical changes
F	January 2019	WL/DC	CH	Various	Additional intumescent specification added
G	December 2019	JT/DC	CH	Various	Added in approved door frame product and additional test evidence
H	December 2023	RS/WL	CH	-	Review and revalidation

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1. Introduction

This report has been prepared by Kiwa Fire Safety Compliance (KFS), on the instruction of Theuma NV, to define the Field of Application for 40mm thick flaxboard cored door leaves hung flush, or over-rebated, in steel frames; with or without, sidelights and/or fanlights, that are required to provide 30 minutes fire resistance performance, when adjudged against BS476: Part 22: 1987.

This assessment has been produced using the principles outlined in the [Passive Fire Protection Forum \(PFPF\): 'Guide to Undertaking Technical Assessments of Fire Performance of Construction Products Based on Fire Test Evidence, 2021, Industry Standard Procedure'](#).

When establishing the variations in the construction that can achieve the required fire resistance performance, KFS complies with the principles found in the following documents:

- BS ISO/TR 12470-2: 2017 '*Fire resistance tests - Guidance on the application and extension of results from tests conducted on fire containment assemblies and products. Part 2: Non-load bearing elements*'.
- EN 15725: 2023 '*Extended application reports on the fire performance of construction products and building elements*'.

It is proposed that variations to the tested specifications, as described in the following sections, may be accommodated into door assemblies, without reducing their potential to achieve a 30 minute integrity rating, if tested in accordance with the method and criteria of BS476: Part 22: 1987. The omission of information on any components or manufacturing methods does not imply a lack of approval of those details, but these would need to be the subject of a separate analysis. Only variations specifically mentioned are supported by this assessment document, all other aspects must otherwise be as proven in tests summarised herein.

It is more onerous to test timber door assemblies, hinged or pivoted, with the specimen installed with the leaf opening in towards the furnace. Testing in this orientation is therefore incorporated into Field of Application Reports to cover doors opening in the opposite direction. The principle is only applicable when the door construction, and any features within the door leaf, such as glazing, are symmetrical.

Unless stated otherwise, herein (for door assemblies with concealed intumescent seals, see [Figure 05163H/A09](#) in Appendix A where a fire risk side needs to be identified), this Field of Application considers the scope of approval for door assemblies that may be installed in either orientation, that being with either face exposed to fire conditions.

2. Test Evidence



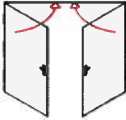
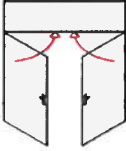
The test evidence used to support this Field of Application Report is summarised in Appendix C of this report.

All of the test evidence referenced in this Field of Application Report is more than 5 years old. In accordance with industry practice, KFS have reviewed this test evidence, and have concluded that the evidence is still valid, and suitable to form the basis of this approval.

3. Scope of Approval

3.1 Door Assembly Configuration

The approved leaf sizes and configurations of door assemblies comprising door leaves are outlined below:

	CONFIGURATION	ENVELOPE OF APPROVED LEAF SIZE
	<ul style="list-style-type: none"> • Latched • Single Acting • Single Door <i>Note 1</i> • Without Overpanel 	Figure 05163H/B01 in Appendix C
	<ul style="list-style-type: none"> • Latched • Single Acting • Single Door <i>Note 1</i> • With Overpanel <i>Note 2</i> 	Figure 05163H/B02 in Appendix B
	<ul style="list-style-type: none"> • Latched • Single Acting • Double Doors <i>Note 3</i> • Without Overpanel 	Figure 05163H/B03 in Appendix B
	<ul style="list-style-type: none"> • Latched • Single Acting • Double Doors <i>Note 3</i> • With Transomed Overpanel <i>Note 4</i> 	Figure 05163H/B04 in Appendix B

Note 1 In single leaf door assemblies, the face of the leaf may be hung “flush” with the face of the frame, or, “over-rebated”, where the face of the leaf projects 13-15mm beyond the face of the frame.

Note 2 Overpanels may either be installed directly against the top edge of the door, see below, or be fitted above a transom member.

Overpanels above single leaf doors may be installed directly against the top edge of the door, with either a square junction, or a rebated junction, where the overpanel rebates shall be 13-15mm wide x 8-15mm deep.

The concealed enhanced intumescent specification may not be used in conjunction with overpanels.

Note 3 In double leaf doorsets, the face of the leaves should be hung ‘flush’ with the face of the frame.

When incorporating the standard or enhanced exposed intumescent seal specification, meeting stiles may be flush, (i.e. square-edged), or with unequal rebates, 25mm wide x 12mm deep in one leaf and 14mm wide x 12mm deep in the other.

When incorporating the enhanced concealed intumescent specification, meeting stiles shall be flush (i.e. square-edged).

Note 4 Overpanels above double leaf doors must be separated with a transom.

The doors may be fitted with, or without, sidelights and/or fanlights. See Section 3.8

3.2 Maximum Assessable Door Leaf Sizes

The calculated envelopes of assessed leaf dimensions for each mode and configuration covered by this Field of Application report are given in Appendix B, based upon use of the intumescent specification shown alongside each envelope.

Leaves in double door assemblies may each be of the same width, up to the maximum width indicated in Appendix B. Alternatively, leaves may be of unequal width, and there is no limit on the ratio of leaf widths, (although the largest leaf must still be within the limitations outlined in Appendix B for double leaf door assemblies). In any case, the width of the small leaf shall not be less than 300mm, since this will affect its vertical stability relative to that of the larger leaf.

Note 5 Although this report approves a range of door sizes, door leaves must be made to the required size, by the manufacturer. Doors must not be reduced in size after manufacture, since this will reduce the width of framing members, and interfere with intumescent strips; potentially adversely affecting the fire resistance of the assembly.

3.3 Overpanels

The size of overpanels is limited to the full width of the leaves contained within the door assembly with a maximum height of 600mm, and in all cases, the overpanel must be a single piece panel across the frame width.

Intumescent seals at the panel/frame interface shall be as defined in Appendix B, and installation shall be as defined in Section 3.9.2.

3.4 Door Leaf and Overpanel Specification

The door leaf and overpanel constructional specifications are given below.

The leaf construction is based upon the details contained within the test evidence referenced in Appendix C, and defines variations and tolerances, where it is considered that these will not adversely affect the intended fire resistance performance. The construction details are limited to the information available from the test reports.

COMPONENT		MATERIAL	MINIMUM DENSITY	DIMENSIONS
CORE		Wood or Flax Chipboard	370kg/m ³	33mm thick
RAILS/ STILES	TOP RAIL	Hardwood <i>Note 6</i>	450kg/m ³	32 x 33mm. To include at least one section, but may also include additional similar sections, up to a maximum of 3no. total. To include 25-27mm x 8-15mm rebates in over-rebated leaf heads and when used with rebated overpanels
	BOTTOM RAIL (DOOR)	Softwood or hardwood <i>Note 6</i>	450kg/m ³	32 x 33mm
	BOTTOM RAIL (OVERPANEL)	Hardwood <i>Note 6</i>	640kg/m ³	32 x 33mm, to include 25-27mm x 8-15mm rebates in over-rebated overpanel base
	STILES	Hardwood <i>Note 6</i>	450kg/m ³	32 x 33mm. To include 25-27mm x 8-15mm rebates in over-rebated leaf edges
FACINGS		Hardboard	800kg/m ³	3mm thick
OPTIONAL LIPPINGS	SQUARE EDGES	Hardwood	640kg/m ³ <i>Note 6</i>	8-12mm thick
	REBATED EDGES			8-18mm thick
ADHESIVES		Urea formaldehyde, Resorcinol or cross-linked PVA	–	–
MINIMUM LEAF THICKNESS		–	–	39mm
OPTIONAL ADDITIONAL DECORATIVE FINISHES		Timber veneer or decorative plastic - based laminate (to leaf faces only)	–	Maximum 2mm thick
		Paint or varnish (to leaf faces and edges)	–	Maximum 0.5mm thick

Note 6 Timber to be straight grained, with minimum measured density at 15% moisture content and of appropriate quality in accordance with BS EN 942: 2007. Moisture content to be $11 \pm 2\%$ for UK market in heated buildings between 12-21°C (or to suit internal joinery moisture content specification of export countries).

The machining of the core/lipping, and bonding process, must be such to ensure that no gaps occur between core and lipping.

The construction of a door leaf is illustrated in **Figure 05163H/A01** in Appendix A. The construction of an overpanel, installed flush within the frame reveal, is illustrated in **Figure 05163H/A02** in Appendix A. These Figures are primarily included to show the door and overpanel constructions and the choice of "over-rebated" or "flush" edges may be equally applied to doors and overpanels. (The choice of edge detail in each door will be the same for both door and overpanel). The machining and assembly of all components, and the bonding processes, shall be such to ensure that no gaps occur within the construction.

Note 7 *Although variations and options may be approved herein, both doors (and overpanel, where applicable) of each door assembly shall use the same specification.*

3.5 Frames

3.5.1 General Overview

Perimeter frame members should be constructed from 1-1.5mm thick steel, shaped to give minimum overall dimension 90 x 50mm. The frame includes a 45 x 15mm rebate for door leaves hung flush within the frame reveal, or the frame includes a 25-27mm x 15mm rebate for door leaves with over-rebated details.

An example of the frame for over-rebated doors is shown in [Figure 05163H/A03](#) in Appendix A.

Where smoke sealing is to be incorporated, the face of the frame stop section can be modified to accommodate a recess to house the seal.

Door frames for double doors must be infilled with gypsum or plasterboard.

Mullion and transom framing members are composite items, and should be constructed from 1-1.5mm thick steel and profiled to give minimum overall dimensions 67 x 65mm. They should include 45 x 15mm rebates for door leaves hung flush with the frames (and to accept the glazing in sidelights/fanlights), or 25-27mm x 15mm rebates for over-rebated door leaves (and to accept the glazing in sidelights/fanlights). An example of the mullion or transom with 25-27mm rebates is shown in [Figure 05163H/A04](#) in Appendix A.

Where sidelights are included in the door assembly, a steel cill should also be included in the glazed zone. This should be constructed from 1-1.5mm thick steel and profiled as for the mullion and transom framing, fitted in a steel channel which will blank off the rebate detail.

Perimeter framing should be mitre jointed at corners, except at the bottom corners where butt jointing is acceptable, with the tested fixing details installed to ensure the stability and integrity of the corner joints. The joints between perimeter and mullion/transoms, and between mullions and transoms, should utilise butt jointing, with the tested fixing details installed to ensure the stability and integrity of all joints.

3.5.2 Approved Door Frame Products

The frame types 'Theuma Mono Plus' and 'Theuma Uni-S', are approved to be used within this application, due to their designs falling within the parameters defined in Section 3.5.1.

The Mono Plus frame was successfully tested in fire tests '2010-Efectis-R0037 Rev 1' and '2012-Efectis-R0145 Rev 1' for 30 minutes integrity, providing KFS with confidence that this would achieve the same result if it were to be tested again when installed in the same configuration.

The Uni-S frame is similar in design to the successfully tested Mono Plus frame, which provides KFS with confidence in the frames ability to provide 30 minutes integrity. However, it is known that the fixing method for the Uni-S differs from that used for the Mono Plus and thus may react differently when subjected to a fire test.

The Uni-S frame does, however, follow the same fixing method (screwed) used for a similar frame product, the 'Theuma Duo Flex', where the Duo Flex has been successfully tested in conjunction with a timber door for 33 minutes as per fire test '2012-Efectis-R0145 Rev.1'. This reinforces KFS's confidence in the Uni-S frame's ability to provide 30 minutes integrity.

Engineering drawings for both systems can be found in [Figures 05163H/A10 and A11](#) in Appendix A.

3.5.3 Four Sided Frames

A 4-sided Uni-S frame is permitted within the scope of this report and may be installed on top of a suitable upstand up to 200mm in height. Where a 4-sided frame is used, the permitted height of the door (see Appendix B) includes the height of the upstand. For example, if a 200mm upstand is to be used, the overall permitted height of the door leaf is 200mm less.

3.6 Glazed Apertures

The proposed door leaves can include glazed apertures subject to the following limitations;

Maximum area of aperture(s) per leaf	-	0.3m ²
Maximum vertical length of aperture	-	1440mm
Maximum horizontal width of aperture	-	250mm
Minimum distance from leaf edge (top)	-	160mm
Minimum distance from leaf edge (sides)	-	160mm
Minimum distance from bottom of leaf	-	160mm

The following glass types are approved, subject to the incorporation of expansion allowances recommended by the glass manufacturer;

7mm thick Pyrobelite (AGC Flat Glass)

The glazing materials to be utilised include a 40 x 2mm Palusol or 40 x 1mm Interdens liner to the aperture and Lorient System 36/6 channel.

The approved bead size and profile, and relevant fixing details, are shown on the [Figure 05163H/A05](#) in Appendix A.

Glazing beads must have a minimum measured density of 640kg/m³ and of appropriate quality in accordance with BS EN 942: 2007. Moisture content to be 11 ± 2% for UK market in heated buildings between 12-21°C (or to suit internal joinery moisture content specification of export countries) at 15% moisture content.

3.7 Hardware

Some of the various items of hardware to be used with the proposed door assemblies will have a positive contribution to the overall performance ('essential hardware') and others are classed as 'non-essential'. However, in all cases it must be ensured that choice of items, or their installation within the assemblies, does not have a detrimental effect upon their achievement of the required period of fire resistance.

The following notes are given as general guidance, however, any hardware beyond the scope of this general guidance must have been subjected to fire resistance testing and/or assessed by KFS to support its use in doors of a similar construction.

General guidance for all items of hardware is outlined below, based upon the range of items tested.

3.7.1 Hinges

The hinges utilised in testing, the Scharnier 3½" (96-CVB-R0534 and 96-CVB-R0948) and Paumelle Plus lift off (99-CVB-R0486 and 1999-CVB-R1180) models, may be utilised in the assessed door assemblies. Fluence lift off models may also be utilised in the assessed door assemblies. A minimum of two hinges per leaf should be utilised. (See Section 3.9 for installation details.)

The hinges should be set 250 ±25mm from the head and the bottom of the leaf to the middle of the hinge, with additional hinges positioned between these hinges, as required.

The perimeter framing is secured to the supporting construction with a proprietary two-part adjustable clamping system. These clamping systems must be employed at hinge positions, where the hinges are fixed into the perimeter framing. The hinge should be secured to the clamping system, within the frame, at the above stated positions, as tested in 96-CVB-R0948.

In mullion sections, hinges are fixed with proprietary brackets, such that the hinge is secured into the section. There are two types of brackets, depending upon the hinge used; i.e. as tested in 96-CVB-R0534 with Paumelle Plus lift off hinges, (see [Figure 05163H/A06](#) in Appendix A), which is also suitable for Fluence lift off hinges, or as tested in 99-CVB-R0486 and 1999-CVB-R1180 with Scharnier 3½" hinges.

Additional security of fixing can be given by the utilisation of hinge bolts, as tested, located 200mm from the head and base of the frame jamb. Details of the fixings required are given in [Figure 05163H/A07](#) in Appendix A. Hinge bolts are not considered essential to the performance of door assemblies without overpanels or transomed overpanels, and so can be included as an option. Where rebated or square overpanels are included, hinge bolts must also be included.

3.7.2 Mortice Latches/Locks

The mortice latch/locks used in the tests were Nemef 649/5 KV, Lips Lock Art No. 2040, but other mortice latches/locks may be used, such as TJL locks, subject to compliance with the specifications below.

Mortice latches or locks should be centred at 1050 ± 100 mm above the bottom of the door leaf and be positioned centrally within the rebate of over-rebated leaves, or centrally in the door thickness of leaves that fit flush within the frame reveal.

Maximum dimensions:	Forend plate:	235mm long x 24mm wide or 240mm long x 22mm wide
	Latch body:	165mm high x 100mm wide x 18mm thick
	Strikeplate:	235mm long x 24mm wide

Latches must have no essential part of their structure made from polymeric or other low melting point (<800°C) materials and should not contain any flammable materials.

The mortice for the lock or latch must be lined on all faces, and the forend and strike plate must be bedded on, Interdens or Therm-A-Strip intumescent sheet material, at least 1mm thick.

Over-morticing is to be avoided and gaps around the case should not exceed 2mm at the side and 5mm at the top and bottom. Holes for spindles or cylinders should be kept as small as is compatible with the operation of the ironmongery.

Where glazing apertures are permitted/specified and are positioned such that locks/latches are included in the margin between aperture and door edge, care must be taken to ensure that the effective door 'stile' is not weakened by the mortice. It is a condition of this assessment that, except where tubular latches are employed, the margin between the back of the lock mortice and the aperture must be at least 135mm.

3.7.3 Door Closers

Where required by regulatory guidance or specific fire strategy, each hinged door leaf must be fitted with a self-closing device unless it is normally kept locked shut and labelled with an appropriate sign which complies with BS5499: Part 1: 2002. Closers may be used subject to compliance with the specifications below.

- a. Face-fixed overhead door closer (and accessories such as soffit brackets) that have been tested, assessed or subject to third party certification on cellulosic door leaves in steel frames may be used. Any accessory that is located within the door reveal must have appropriate test or assessment evidence or third party certification. In addition, where areas of uninsulated glazing are adjacent to the closer, the selected closer type must have been tested on the unexposed face of an uninsulated steel door, or a fully glazed door fitted with uninsulating glass, to demonstrate that the closer does not emit flammable fluids onto the glass face that would otherwise cause integrity failure before the required period of fire resistance.
- b. Concealed jamb mounted closers (e.g. Perko/Perkomatic) may be used in single leaf door assemblies, subject to there being sufficient force to close the door against the action of the latch bolt, and smoke seals, where fitted. The mortice in the door must be cut carefully to prevent voids within the construction. (Provision must be made to accept the anchor plate in the frame without adversely affecting the fire resistance).

It is essential that all closers are of the correct power rating for the width and weight of the doors (minimum power size 3). They must be fitted according to the manufacturer's instructions and be adjusted so that they are capable of fully closing the door leaf, against any friction imposed by the latch (and smoke seals, if fitted), from any position of opening.

3.7.4 Flush Bolts

'Trumpf' flush bolts were used in test WARRES 11732, but other bolts may be used, subject to compliance with the specifications below.

Unless specific fire test evidence is available, all bolts shall be steel. The following limitations and protection apply;

- Flush bolts shall be edge-fixed in the passive leaf closing edge. In door assemblies with rebated meeting stiles, bolts shall be installed centrally within the rebate in the leaf, and flush bolts in doors with square meeting stiles shall be installed centrally in the leaf thickness. Intumescent seals fitted into the meeting edges shall be fitted into the 'active' leaf edge so that they oppose the flush bolt.
- Maximum size of flush bolt is 150mm long x 17mm wide x 10mm deep.
- The recess for the flush bolts shall be lined with 1mm thick Interdens intumescent sheet material.
- Surface mounted barrel bolts shall not exceed 400mm in length, but there is no limitation on their width, but may only be fitted to the non-fire risk side of the door leaf. They shall be fixed so that there is a minimum of 50mm between the bolt and the door edge. Screws for fixing bolts must be at least 25mm long and have thread for the full screw length.

3.7.5 Non-Essential Hardware Items

- Push plates, kick plates, etc: Plastic, pvc or metal plates may be surface-mounted to the doors, but, if more than 800mm in length by nominally 200mm wide, they must be attached in a way that would prevent them distorting the door leaf, e.g. glued with thermally softening adhesive or screwed with short aluminium screws and fitted in such a way so they will not be prevented from falling away by being trapped under door stops, glazing beads or handle escutcheons etc.
- Pull handles: These may be fixed to the doors, provided that the fixing points are no greater than 800mm apart. Pull handles that are fixed through the leaf should use clearance holes as close fitting as possible to the bolt.

3.8 Sidelights and/or Fanlights

The door assemblies approved, herein, may include sidelights and/or fanlights. They can include a sidelight on one or both sides of the doors, (and overpanel, where permitted), and a fanlight over the doors, as required. The overall size of the assembly should not exceed 3 metres high x 2.4 metres wide. The arrangement and positioning of the mullion and transom members is limited by the maximum pane sizes outlined below.

Where the assembly includes mullions and/or transom members, it is assumed that each mullion will be the full height of the assembly, and that the transom will be connected to one, or both sides of the mullion; as applicable.

The frame members separating the doors from the sidelights and/or fanlights will be formed utilising transom and mullion framing, as outlined in Section 3.5. The apertures formed by the perimeter, transom and mullion framing next to the doors will be glazed. Apertures above the doors may include glass or a solid overpanel.

Beading to retain the glass in position consists of the integral framing section on one side of the aperture and two options of bead for the other.

The first option, shown as Option 1 in [Figure 05163H/A04](#) in Appendix A, utilises a proprietary glazing clip system, as tested in 96-CVB-R0534, 99-CVB-R0486 and 1999-CVB-R1180. The glazing clips are formed such that they are secured into the framing, with PVC cover trim inserted over the glazing clips. All details, and dimensions of components shall be as tested.

The second option, shown as Option 2 in [Figure 05163H/A04](#) in Appendix A utilises a snap on bead, either 14-17mm x 15mm, for over-rebated frame detail, or 34-35mm x 15mm, for flush frame detail; utilising Jansen steel glazing bead and Jansen glazing studs. All details and dimensions of components shall be as recommended by Jansen for use on fire resisting assemblies.

The following glass types are approved, subject to the incorporation of expansion allowances recommended by the glass manufacturer;

6mm thick Pyroshield 2 (Pilkington)

7mm thick Pyran S (Schott)

7mm Pyrobelite (AGC Flat Glass) The maximum dimensions of glass panes, and therefore maximum aperture sizes which can be included within the overall construction, are as follows;

Maximum overall height:	2100mm	Associated maximum width:	1000mm
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or

Maximum overall width:	2000mm	Associated maximum height:	600mm
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Note 8 These proposed glass types only provide integrity under fire test conditions. It is the responsibility of others to liaise with the approving authorities to establish that insulation is not required for sidelights/fanlights.

3.9 Installation, Supporting Construction and Door Edge Gaps

3.9.1 Installation of Door Assemblies

The frames forming the perimeter of each door assembly must be fixed back to the supporting construction with the proprietary two-part adjustable clamping system fixed within the frame section; as utilised in the tests outlined in Appendix C. The clamping system should be employed at maximum 250mm from the top and bottom of the jambs and at maximum 800mm centres.

At the head of door assemblies without sidelights, no clamping system fixing is required. Where a sidelight is included, one clamping system fixing is required centrally in the overall frame width.

Where the hinges are fixed into the perimeter framing, the hinge is fixed back to the clamping system, within the frame, as tested in 96-CVB-R0948.

Where hinges are included at mullions, proprietary fixing brackets are employed, such that the hinges are secured into the section. The brackets should be either as tested in 99-CVB-R0486 and 1999-CVB-R1180 with Scharnier 3½" hinges, or as tested in 96-CVB-R0534 with Paumelle Plus lift off hinges. Fluence lift off hinges should utilise the brackets tested with Paumelle Plus lift off hinges.

3.9.2 Installation of Overpanels

Overpanels should be installed using the proprietary hinge bolt and carrier system utilised in tests 96-CVB-R0948 and 99-CVB-R0486. The fixing and installation details are outlined in [Figure 05163H/A08](#) in Appendix A, for flush and over-rebated overpanels.

3.9.3 Supporting Construction

The supporting construction may be either plasterboard clad partitions, (with timber or steel studs), or blockwork, brickwork or concrete walls, of minimum wall thickness 70mm. In all cases, the construction shall be of a type that has been tested or assessed to provide at least 30 minutes fire resistance, at the required size, when incorporating door assembly openings. If fitted into timber or steel stud partitions, the method of forming the door assembly aperture must be as tested by the partition and/or door assembly manufacturer.

The size of opening, the condition of the material forming the opening, and the alignment of frame within the opening, shall all be such that they will allow positive engagement of the proprietary clamping system for the frames, to ensure secure fixing and retention.

Reference to steel stud partitions is in the context of permanent elements, such as those designed and proven by the plasterboard manufacturers. This report does not approve use of the proposed door assemblies in proprietary 'demountable' partitions, which must be subject to a full and independent appraisal of the particular system and door assemblies therein.

The fire test reports do not refer to firestopping, or sealing, at the frame perimeter. This assumes that the frame forms a close fit against both faces of the wall. If this is not the case, or if sealing against the passage of air/gases is required for aesthetic, or other purposes, then test evidence to BS476: Part 22: 1987 shall be available to demonstrate that the sealing materials will not adversely affect the overall fire resistance of timber door leaves in steel frames, when fitted in the proposed arrangements.

3.9.4 Door Edge Gaps

The gap between the door and the frame (and between door(s) and overpanel, where applicable) should be 1-3mm. Gaps between the doors at meeting stiles of double doors should be 1-3mm. Gaps under the door(s) should not exceed 6mm for fire performance, although, if smoke control is also required, these gaps should only be 3mm, or smoke seals should be included (see also Section 3.11 regarding suitability of smoke seals).

3.10 Intumescent Seals

The intumescent seal specifications, widths, and positions are shown in Appendix B, based upon details tested.

3.11 Ambient Temperature Smoke Seals

Smoke seals, or combined intumescent/smoke seals (using the specification approved in Appendix B), that have been tested in accordance with BS EN 1634-3: 2004 (ambient temperature) or BS476: Part 31: Section 31.1: 1983 and shown not to leak by more than 3m³/m/hr at 25Pa may be used in conjunction with the proposed door assemblies to provide smoke control.

The orientation of the seals, door edge gaps, degree of hardware interruption, and leaf configuration, will need to be as tested in accordance with BS EN 1634-3: 2004 (ambient temperature) or BS476: Part 31: Section 31.1: 1983 to achieve the desired level of smoke control, unless these conflict with the intumescent seal widths and positions as described in Appendix B, in which case, the latter shall take precedence.

Suitably tested seals to BS476: Part 31: Section 31.1: 1983 are produced by Polynorm Bruynzeel in TPE and PVC. Separate evidence should be sought to show that they have been tested to BS476: Part 22: 1987 to demonstrate that they will not adversely affect the required overall fire resistance performance.

Where smoke sealing is required for the doors approved, herein, it should be ensured that the perimeter framing/supporting construction and glass/framing interfaces, where necessary, are sealed using products proven in similar situations. Test evidence to BS476: Part 22: 1987 shall be available to demonstrate that the sealing will not adversely affect the required overall fire resistance of the construction, when fitted in the proposed arrangement.

4. Conclusion

It is the opinion of Kiwa Fire Safety Compliance that if the proposed door assemblies utilising 40mm thick flaxboard cored door leaves hung in steel frames, (with, or without, sidelights and/or fanlights) were manufactured and installed within the limitations of this Field of Application Report and tested for fire resistance, they would satisfy the integrity criteria of BS476: Part 22: 1987 for 30 minutes.

Unless stated otherwise, herein (for door assemblies with concealed intumescent seals, see **Figure 05163H/A09** in Appendix A where a fire risk side needs to be identified), this Field of Application considers the scope of approval for door assemblies that may be installed in either orientation, that being with either face exposed to fire conditions.


5. Declaration by the Applicant

KFS Field of Application Report	IFCA/05163 Revision H
Client	Theuma NV
Project Address	Zandstraat 10 3460 Bekkevoort Belgium

We the undersigned confirm that we have read and complied with the obligations placed on us by the

Passive Fire Protection Forum (PFPF) - Industry Standard Procedure 2021 'Guide to Undertaking Technical Assessments of Fire Performance of Construction Products Based on Fire Test Evidence'

- We understand that this assessment is based on test evidence and will be withdrawn should evidence become available that causes the conclusion to be questioned. In that case, we accept that new test evidence may be required.
- We are not aware of any information that could affect the conclusions of this assessment. If we subsequently become aware of any such information, we agree to ask the assessing authority to withdraw the assessment.

Signature	
Name	KATINKA DE BRUYN
Position	R&D Manager
Company Name	Theuma NV
Date	18/12/2023

6. Limitations

This report addresses itself solely to the ability of the proposed assemblies described to satisfy the criteria of the fire resistance test and does not imply any suitability for use with respect to other unspecified criteria.

It is the responsibility of others to establish whether the proposed product meets any other relevant requirements, including any other requirements for fire performance and life safety, as defined in documents such as the Building Regulations, and the Fire Strategy/Risk Assessment for the project.

This document only considers the door assemblies described, herein, and assumes that the surrounding construction will provide no less restraint than the tested assembly and that it will remain in place and be substantially intact for the full fire resistance period.

This assessment is issued on the basis of test data and information to hand at the time of issue. If contradictory evidence becomes available to Kiwa Fire Safety Compliance the assessment will be unconditionally withdrawn and the applicant will be notified in writing. Similarly, the assessment evaluation is invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence.

As per the guidance outlined in the [Passive Fire Protection Forum \(PFPF\): 'Guide to undertaking technical assessments of fire performance of construction products based on fire test evidence, 2021, Industry Standard Procedure'](#), appropriate action has been taken to mitigate the risk of a conflict of interest arising during the preparation of this report. All individuals involved in the production, or subsequent review, of this assessment have declared any perceived conflicts of interest, with regards to the sponsor or subject(s) of this report, prior to working on this project.

The assessor and reviewer have been deemed suitable for involvement in the production of this assessment in accordance with the guidance outlined in the [Passive Fire Protection Forum \(PFPF\): 'Guide to undertaking technical assessments of fire performance of construction products based on fire test evidence, 2021, Industry Standard Procedure'](#).

Where the constructional information in this report is taken from details provided to Kiwa Fire Safety Compliance and/or from fire resistance test reports referenced herein, it is, therefore, limited to the information given in those documents. It is necessarily dependent upon the accuracy and completeness of that information. Where constructional or manufacturing details are not specified, or discussed, herein, it should not, therefore, be taken to infer approval of variation in such details from those tested or otherwise approved.

The analysis and conclusions within this report are based upon the likely fire resisting performance of a complete door assembly that is manufactured and installed in accordance with this document, and offered for fire resistance testing in 'perfect' condition. In practice, management procedures must be in place in any building where the door assemblies are installed, to ensure that no parts of the assembly are damaged or faulty. Further, the doors must open and close without the use of undue force. The edge gaps/alignment of door leaves must be in accordance with the tolerances defined, herein, when the doors are closed. Any such shortfalls in respect to the condition of the assemblies will invalidate the approval by KFS, and may seriously affect the ability of the assemblies to provide the required level of fire resistance performance. Determination of what constitutes wear or damage, and any corrective actions in order to return assemblies to the required condition, should only be carried out following consultation with the manufacturer and KFS.

This report is not intended to be a complete specification for the proposed assemblies and it is the responsibility of others to ensure that the assemblies are suitable for the intended purpose; whilst incorporating the requirements of this report. Further, the assemblies must be manufactured/installed by experienced/trained personnel using appropriate and established working practices/techniques.

This report applies to fire door assemblies that are evaluated to BS476: Part 22: 1987; which is an applicable test method currently referenced within guidance to Building Regulations in the United Kingdom, and in building codes in some other countries. However, KFS have a duty of care to advise that introduction of CE Marking may become compulsory for fire resisting doorsets marketed in the EU, during the validity period of this report; in which case, users should contact KFS for further details/advice.

Where the assessed constructions have not been subject to an on-site audit by Kiwa Fire Safety Compliance, it is the responsibility of anyone using this report to confirm that all aspects of the assemblies fully comply with the descriptions and limitations, herein.

Any materials specified in this report have been selected and judged primarily on their fire performance. KFS do not claim expertise in areas other than fire safety. Whilst observing all possible care in the specification of solutions, we would draw the reader's attention to the fact that during the construction and procurement process, the materials used should be subjected to more general examination regarding the wider Health and Safety, and CoSHH Regulations. Designers, manufacturers and installers are reminded of their responsibilities under the CDM Regulations; but particularly with regard to installation and maintenance of heavy or inaccessible items.

This assessment considers the fire resistance performance of the door assemblies when tested with the leaves in the closed position, within the frame reveal; either retained by the latch, or self-closing device, or locked shut, as applicable. The door assemblies will only provide the assessed fire performance when in a similar configuration; and it is the responsibility of the building occupants/owner to ensure that this is the case.

This Report is provided to the sponsor on the basis that it is a professional independent engineering evaluation as to what the fire performance of the construction/system would be should it to be tested to the named standard. It is KFS's experience that such an evaluation is normally acceptable in support of an application for building approvals, certainly throughout the UK and in many parts of Europe and the rest of the world.

However, unless KFS have been commissioned to liaise with the Authorities that have jurisdiction for the building in question for the purpose of obtaining the necessary approvals, KFS cannot assure that the document will satisfy the requirements of the particular building regulations for any building being constructed.


It is, therefore, the responsibility of the sponsor to establish whether this evidence is appropriate for the application for which it is being supplied and KFS cannot take responsibility for any costs incurred as a result of any rejection of the document for reasons outside of our control. Early submittal of the Report to the Authorities will minimise any risks in this respect.

7. Validity

This Field of Application Report has been prepared based on Kiwa Fire Safety Compliance's present knowledge of the products described, the stated testing regime and the submitted test evidence. For this reason, anyone using this document after December 2028 should confirm its ongoing validity.

This Field of Application Report is not valid unless it incorporates the declaration by the applicant given in Section 5 duly signed by the applicant.

Prepared by:



Richard Smart
MEng AIFireE ACABE
Fire Safety Engineer
Kiwa Fire Safety Compliance.
(part of the Kiwa UK Group)

Reviewed by:



Will Lightfoot
BEng (Hons) MSc AIFireE ACABE
Senior Fire Safety Engineer
Kiwa Fire Safety Compliance.
(part of the Kiwa UK Group)

Reviewed by:

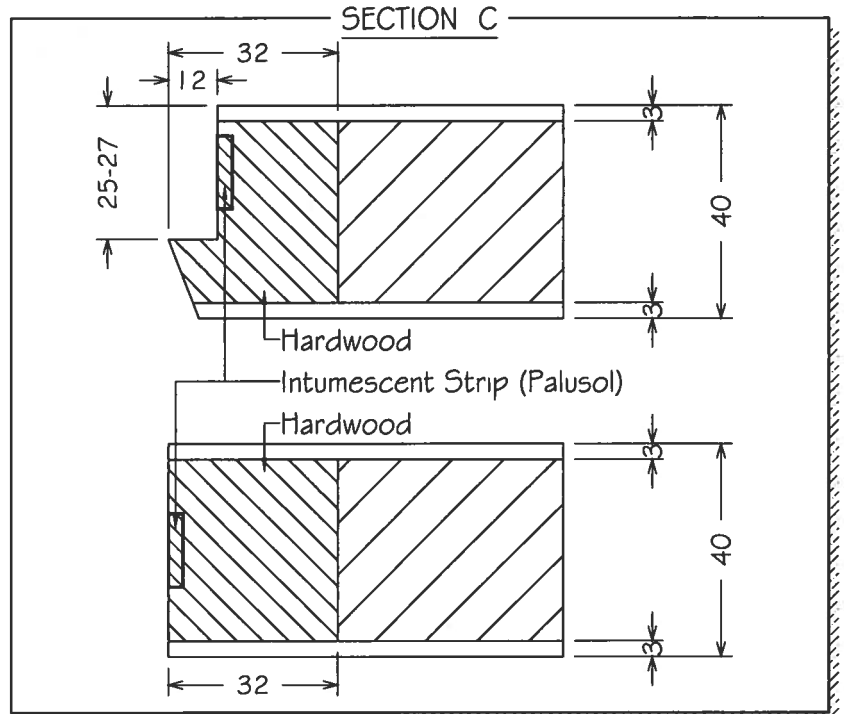
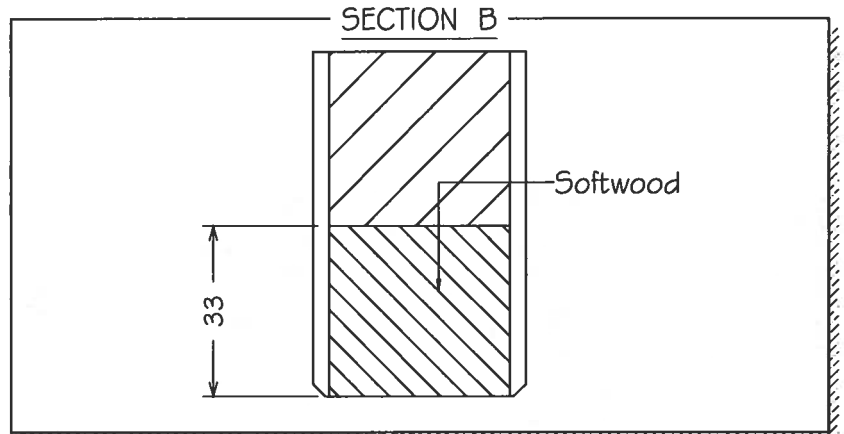
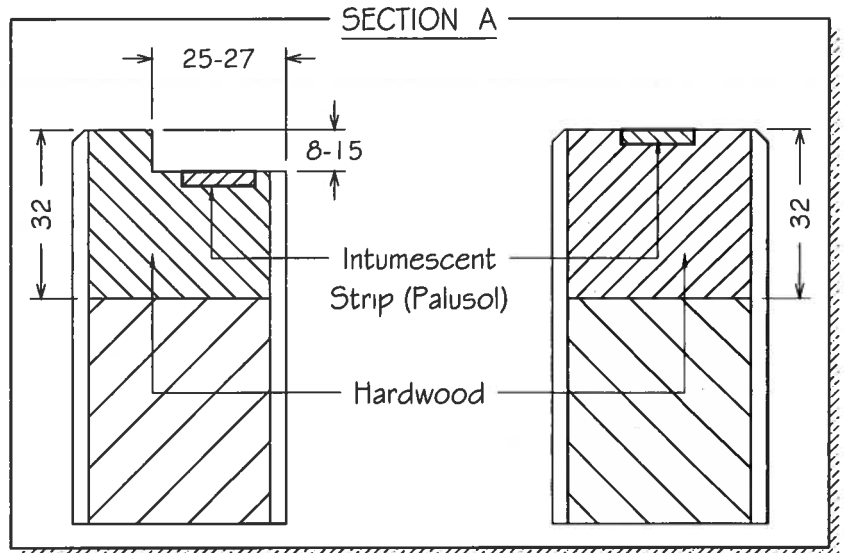
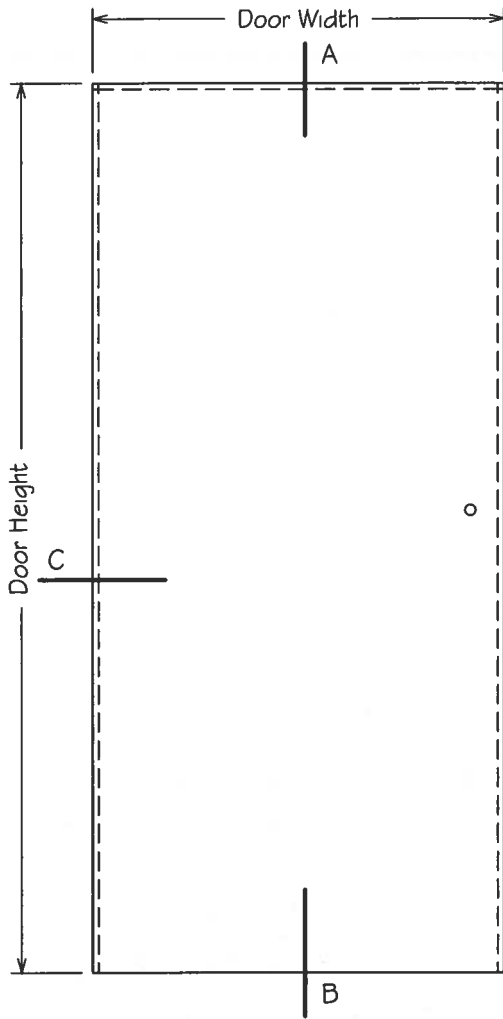


Chris Houchen
BSc. AIFireE
Associate Director of Product Evaluation
Kiwa Fire Safety Compliance.
(part of the Kiwa UK Group)

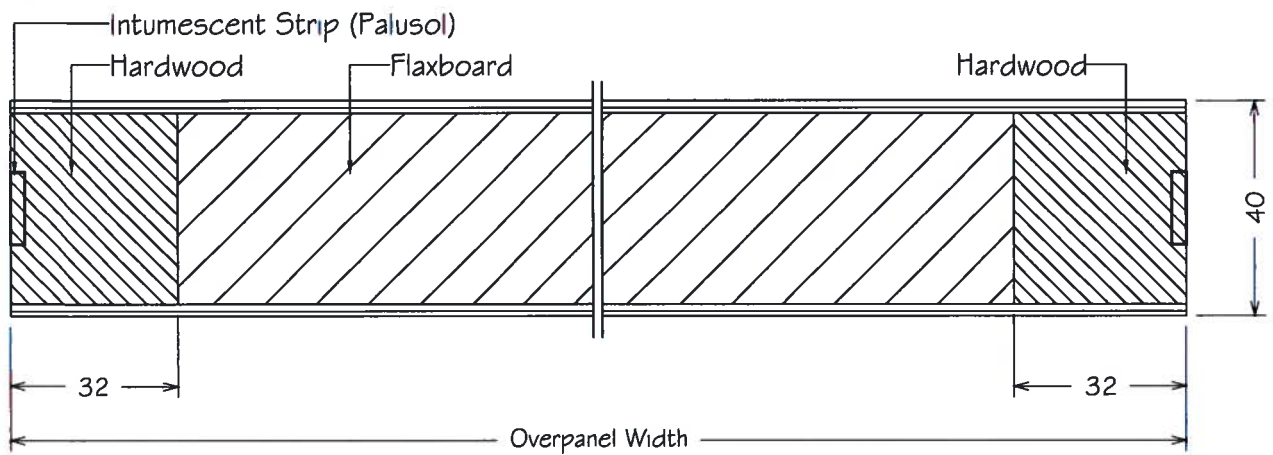
Appendix A Construction Details

Figures 05163H/A01 to A11

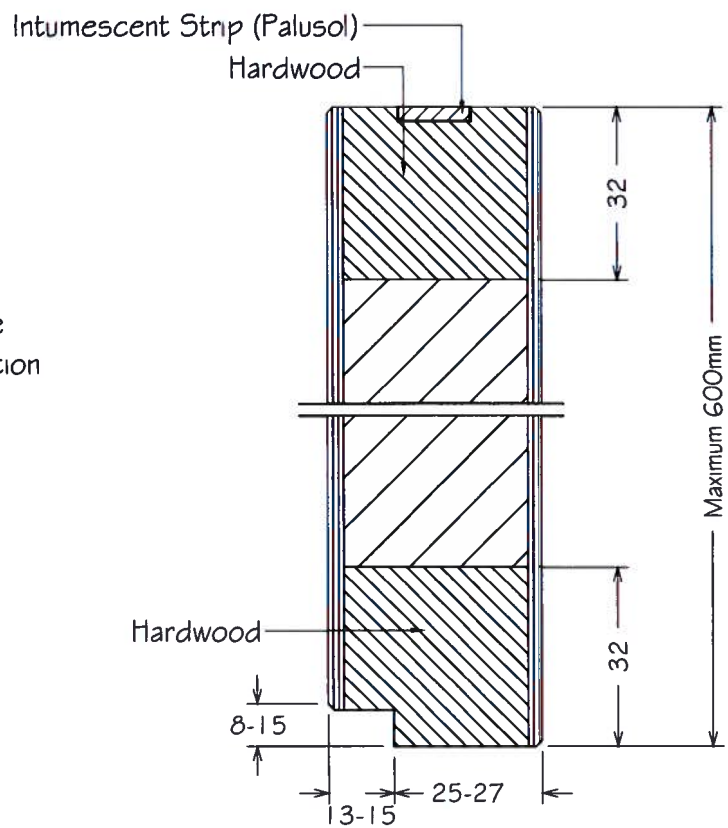
The figures in this Appendix are not included in the sequential page numbering of this report



Full details of door leaf construction are given in Section 3.4 of Field of Application Report IFCA05163 Revision H

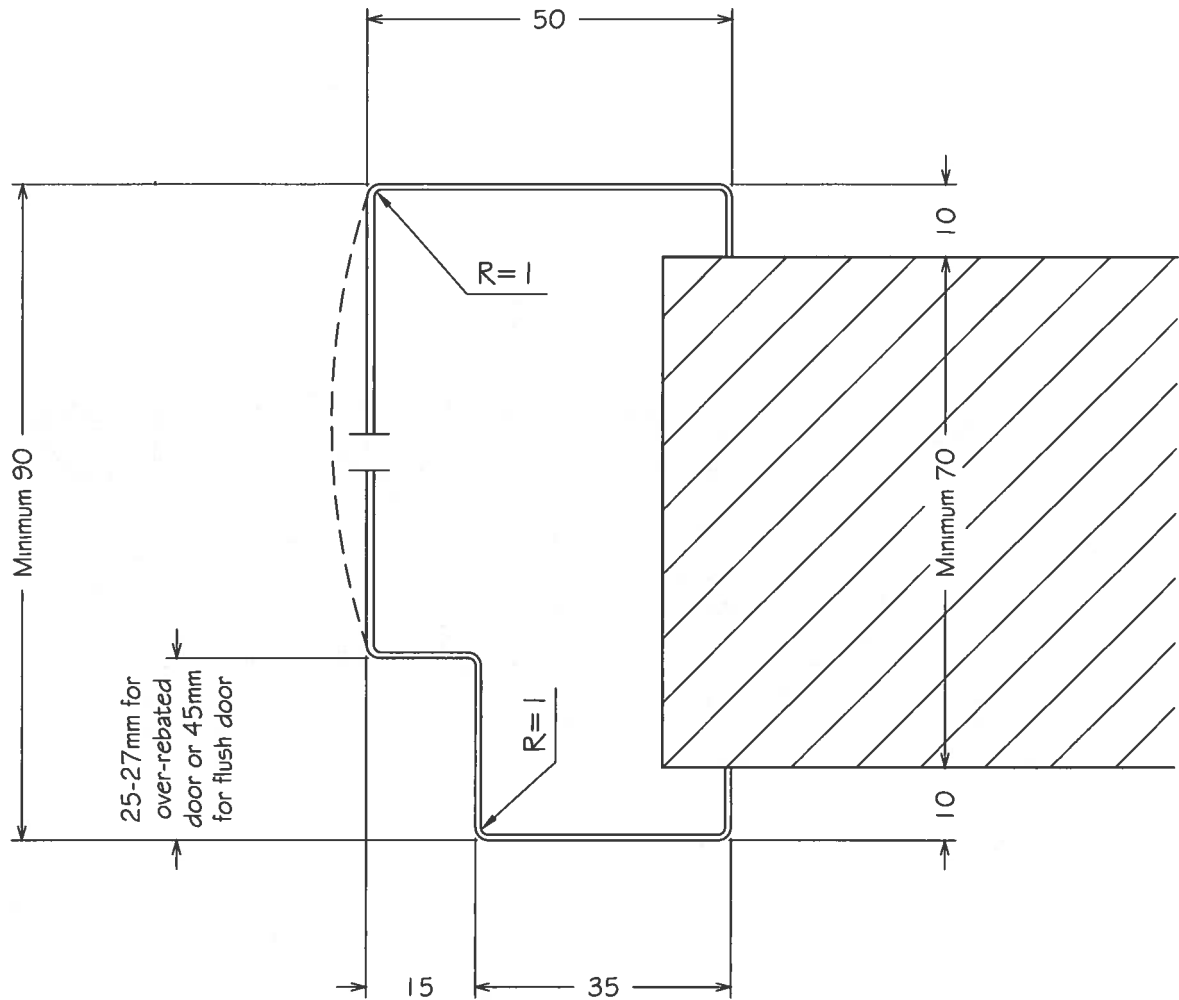


HORIZONTAL SECTION



VERTICAL SECTION

Full details of door leaf construction are given in Section 3.4 of Field of Application Report IFCA/05 | 63 Revision H



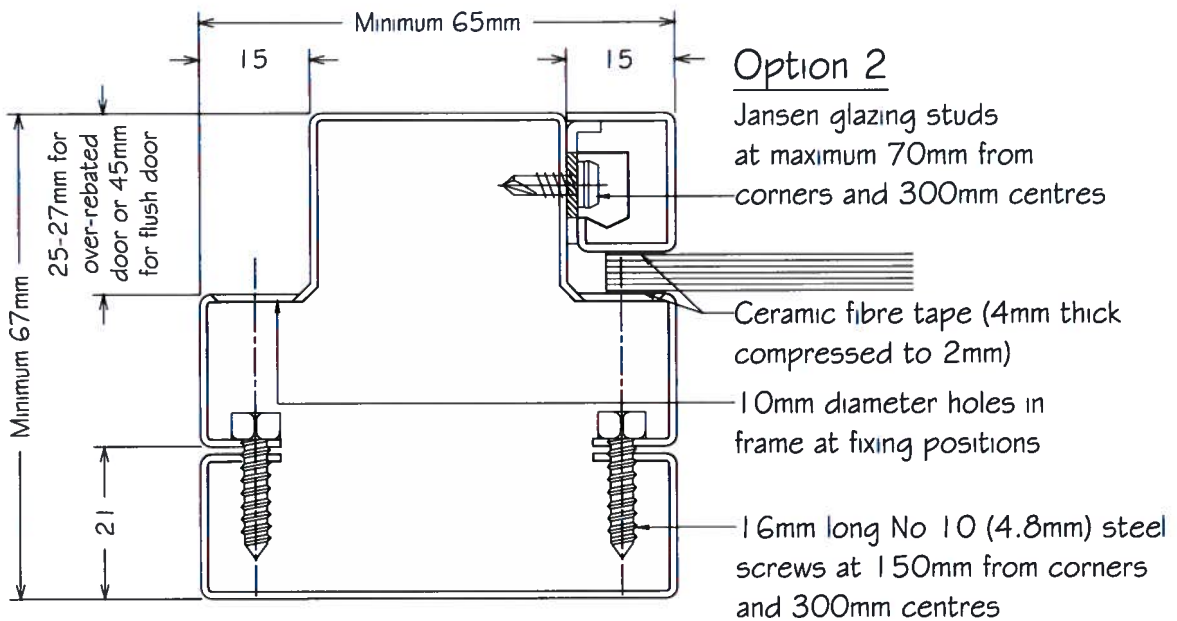
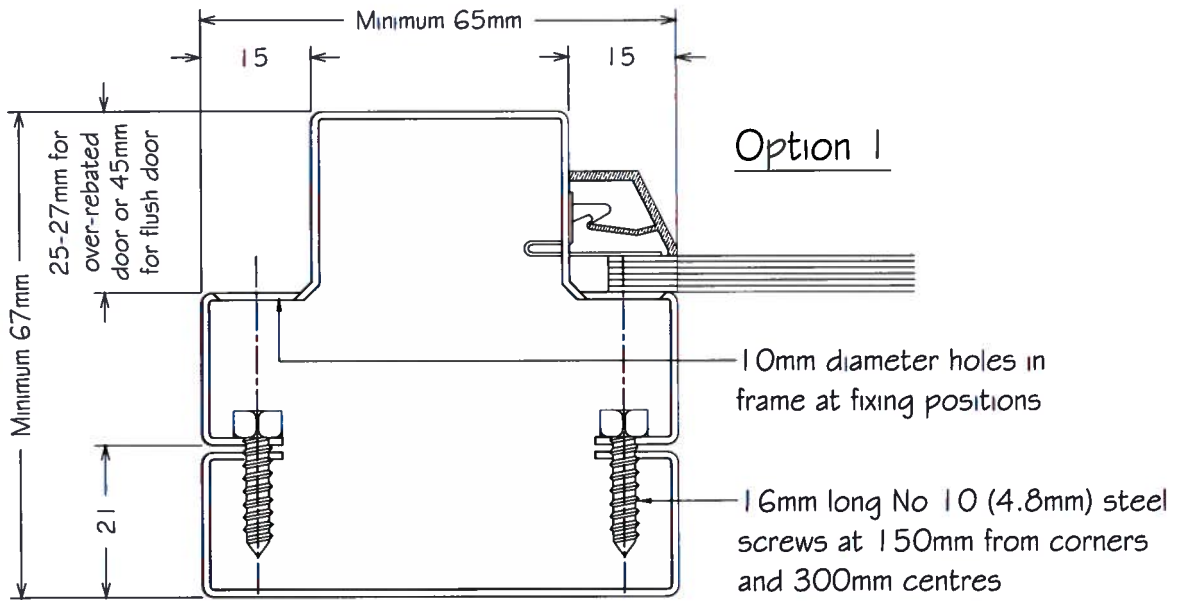
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Field of Application Report
 IFCA/05163 Revision H
 Theuma NV

Perimeter Frame Section
 for over-rebated doors

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05163H/A03	



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Mullion & Transom Frame
 Section Options Showing
 Sidelight / Fanlight
 Glazing Details

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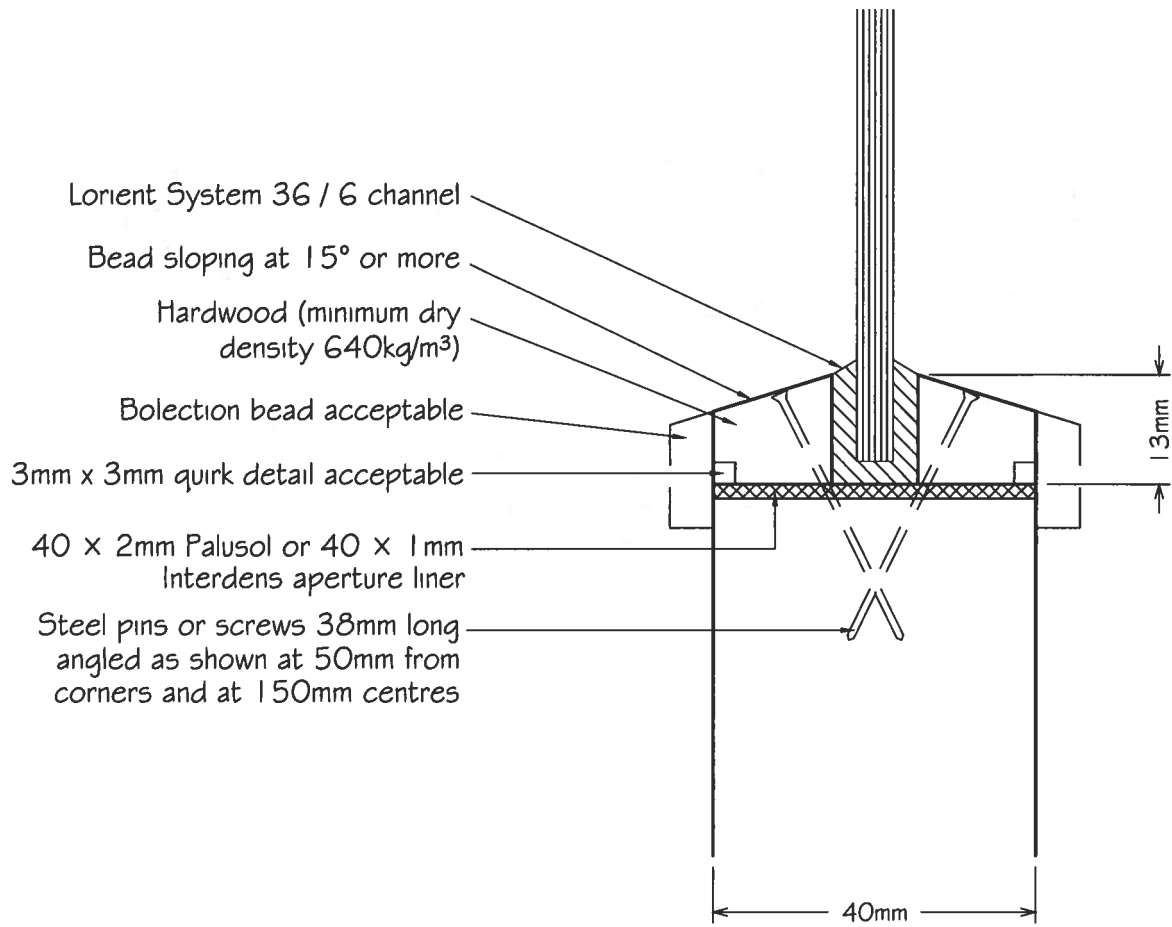
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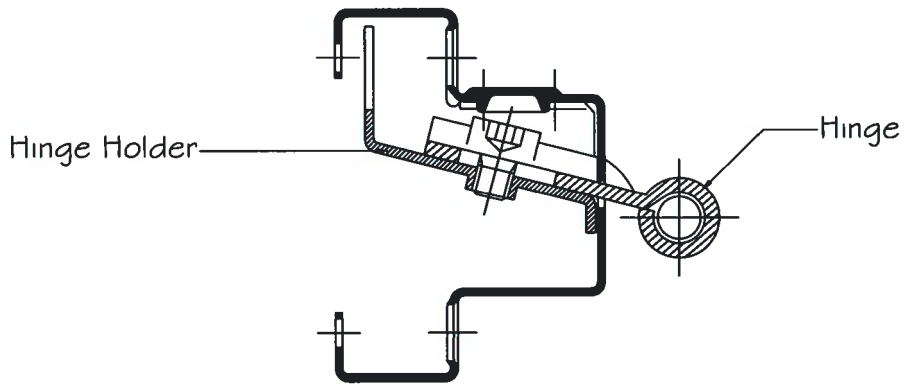
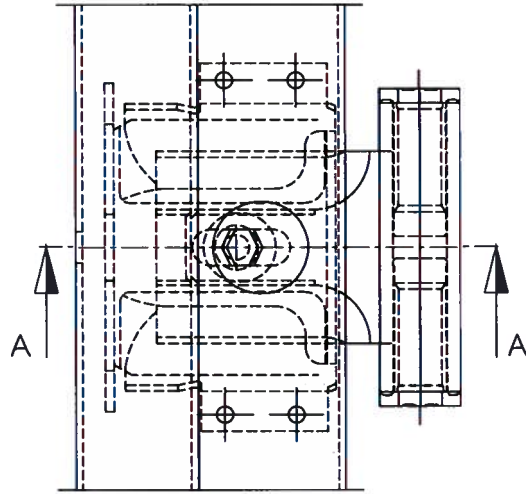
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05163H/A04

GLASS TYPES

7mm thick Pyrobelite (AGC Flat Glass)





SECTION A - A

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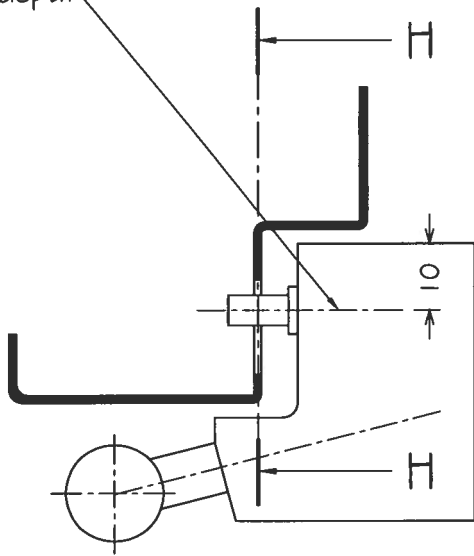
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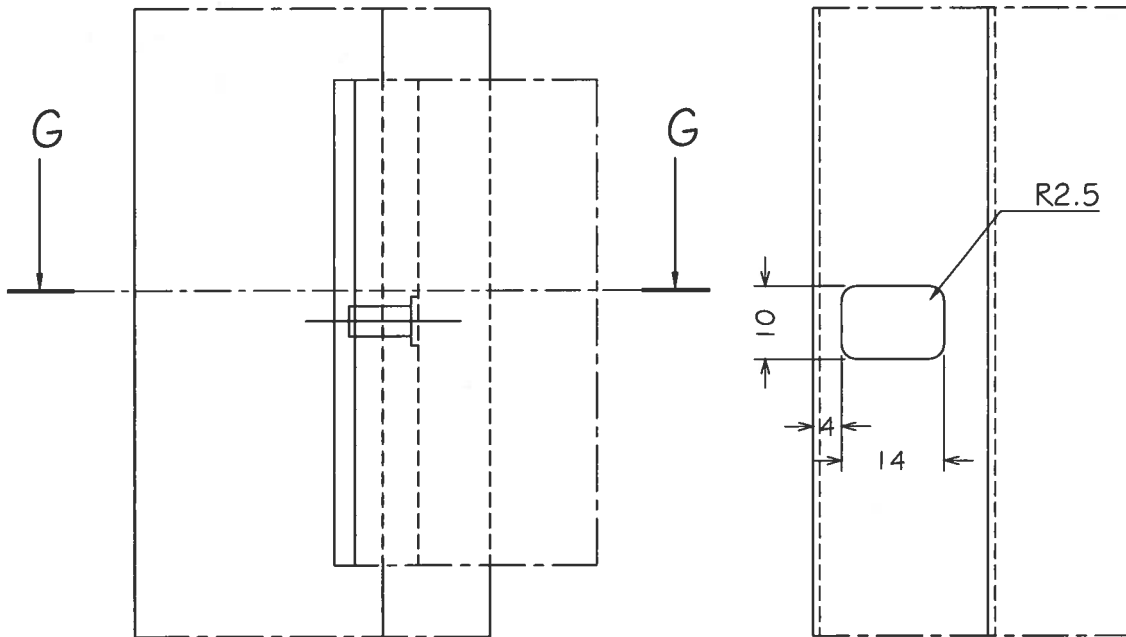
Hinge Holder for
 Paumelle Plus and Fluence
 Lift Off Hinges in Mullions

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05163H/A06	

4mm diameter predrilled hole in door leaf
30mm depth

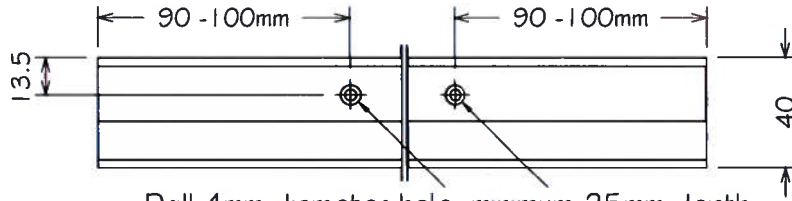


SECTION GG



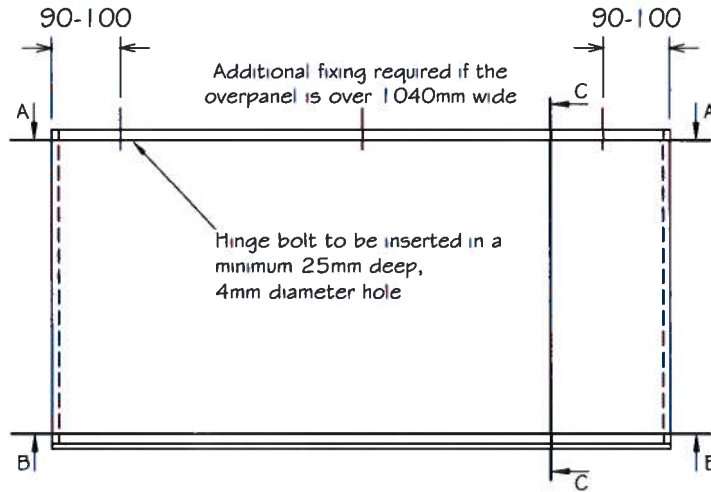
SECTION HH

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				Drawn by: CSP	Checked by: DJC
				Not To Scale	Drawn: Nov 2023
				05163H/A07	



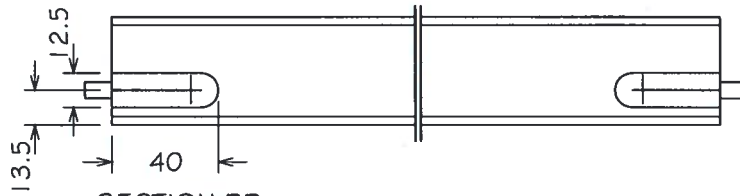
Drill 4mm diameter hole, minimum 25mm depth

SECTION AA

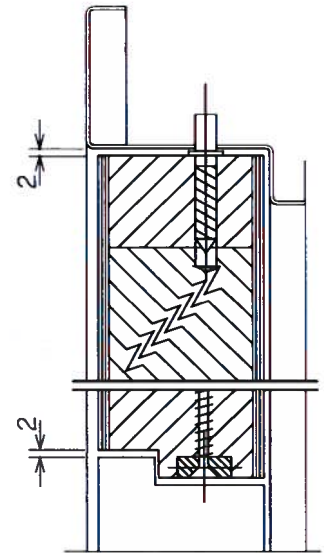


Additional fixing required if the overpanel is over 1040mm wide

Hinge bolt to be inserted in a minimum 25mm deep, 4mm diameter hole

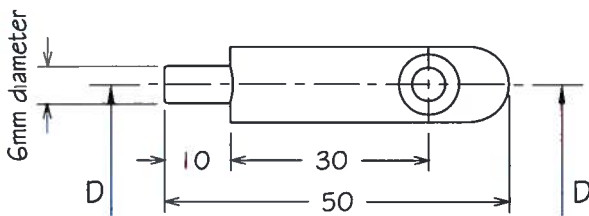


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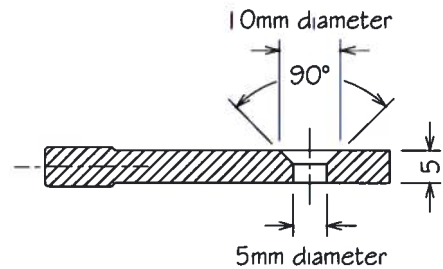


SECTION CC

Typical Section for overpanel fitted flush in frame



Overpanel Carrier



SECTION DD

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Typical Overpanel Fixings

Job number: 24420

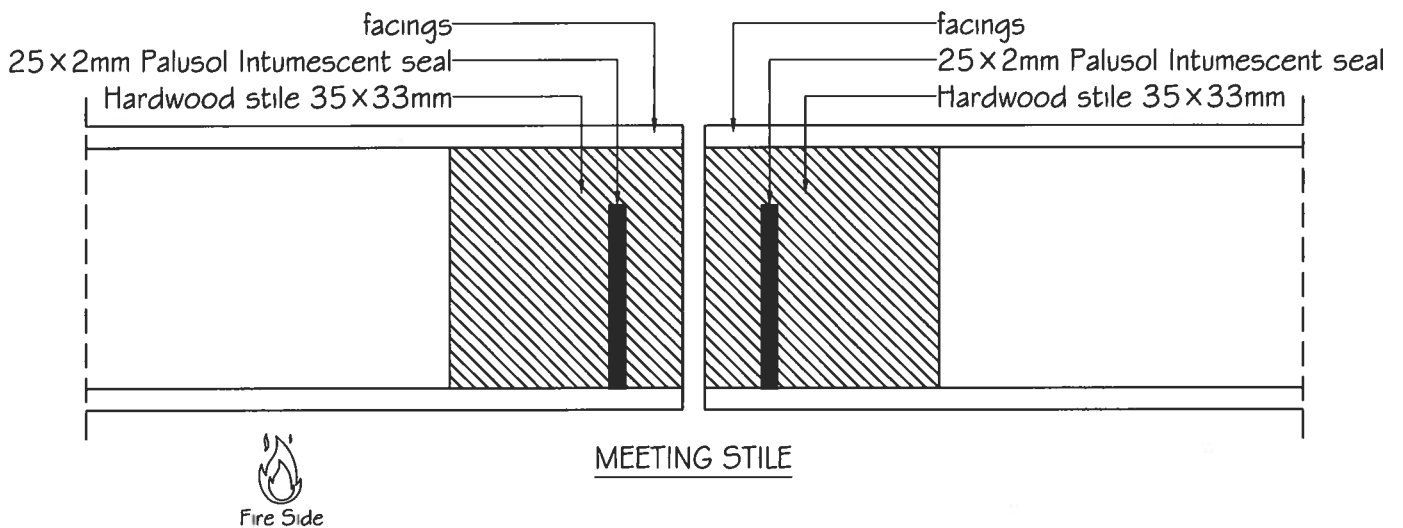
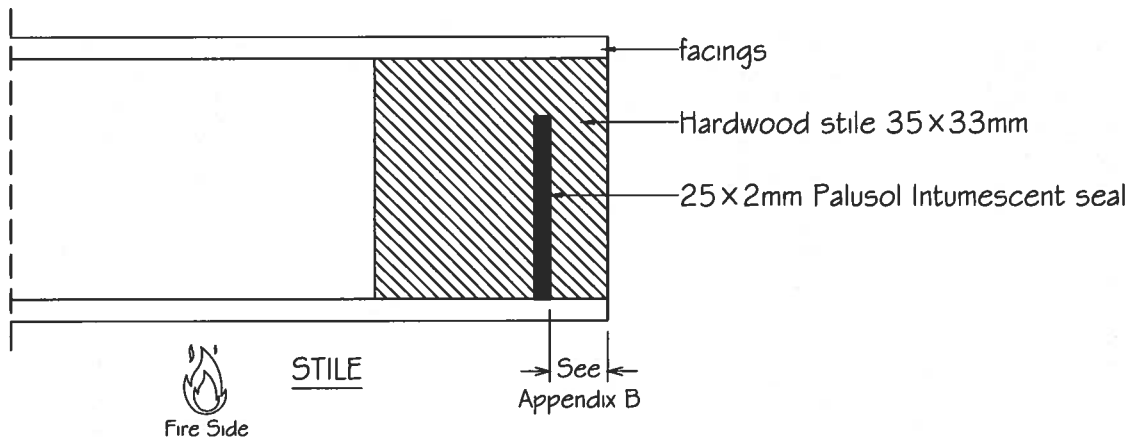
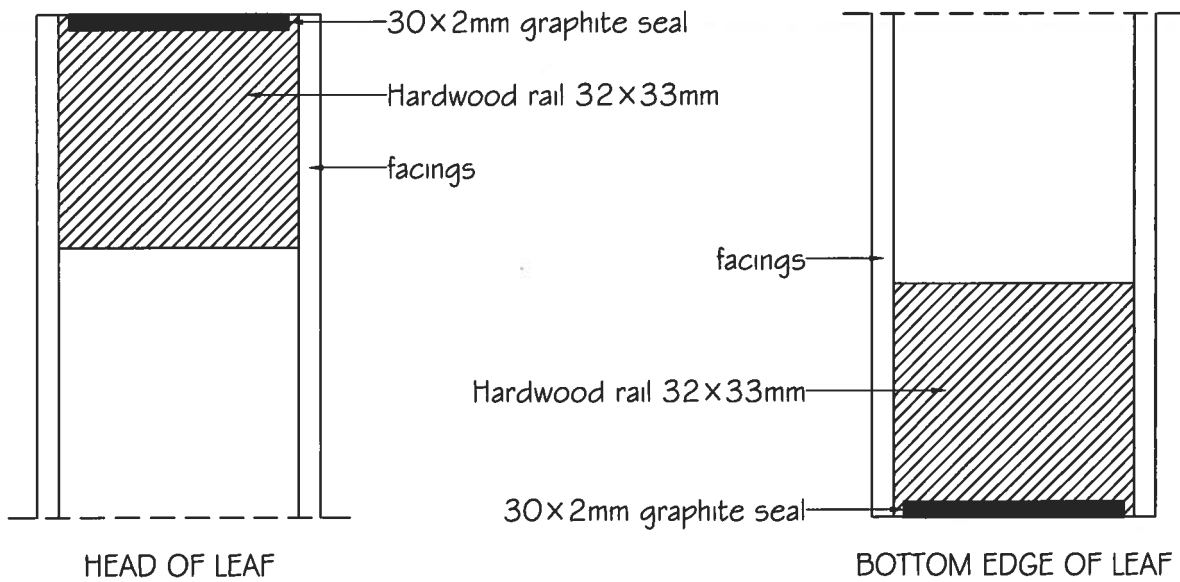
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05163H/A08



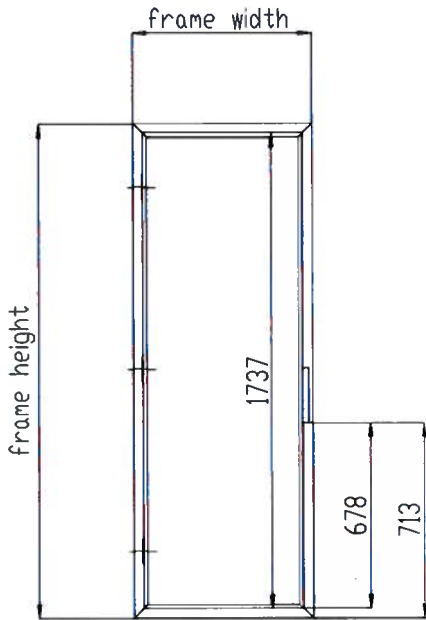
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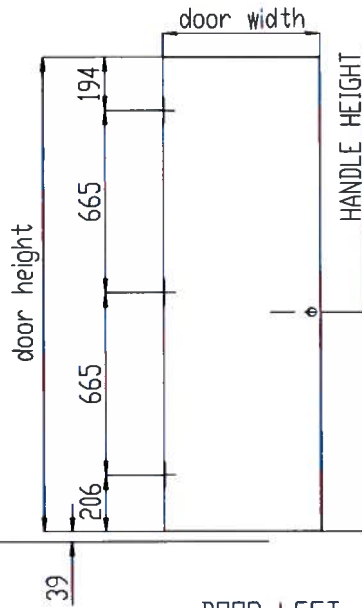
Field of Application Report
 IFCA/05 | 63 Revision M
 Theuma NV

Concealed Enhanced
 Intumescent Seal
 Specification

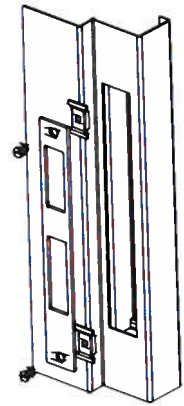
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05 63H/A09	



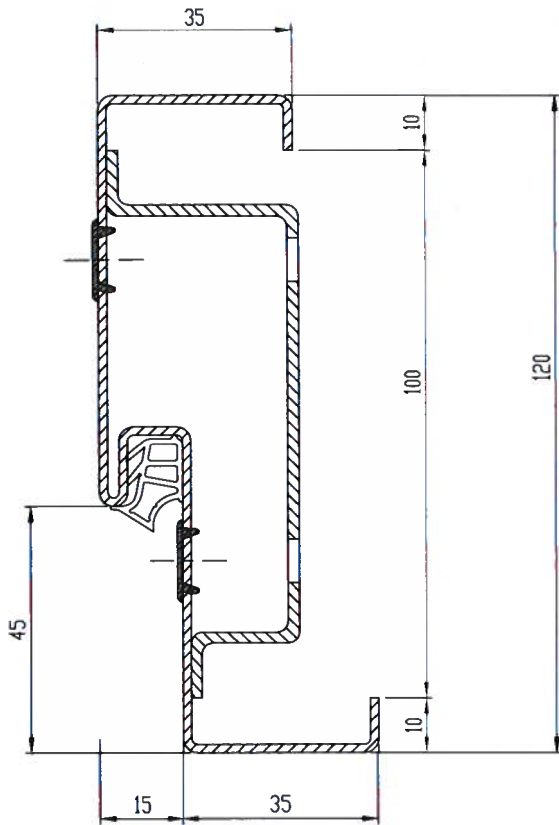
WINDOW FRAME LEFT



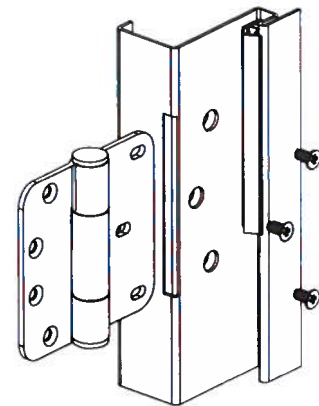
DOOR LEFT



STRIKE PLATE



PROFILE SECTION
1.5 mm, SENDZIMIR



LIFT-OFF HINGE
TYPE: 3.5" LIFT-OFF

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UNI-5 Frame

Job number: 24420

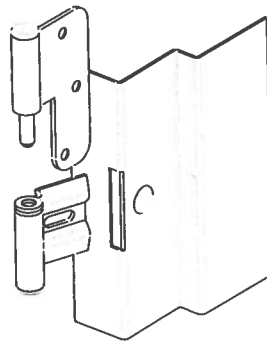
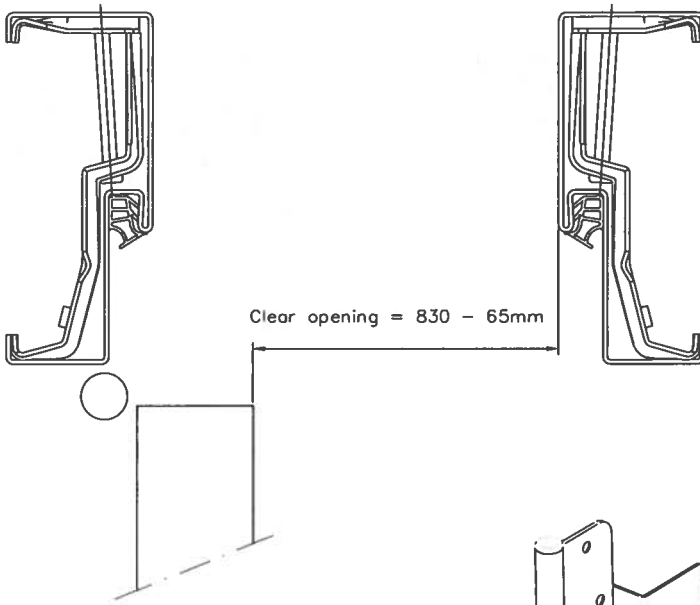
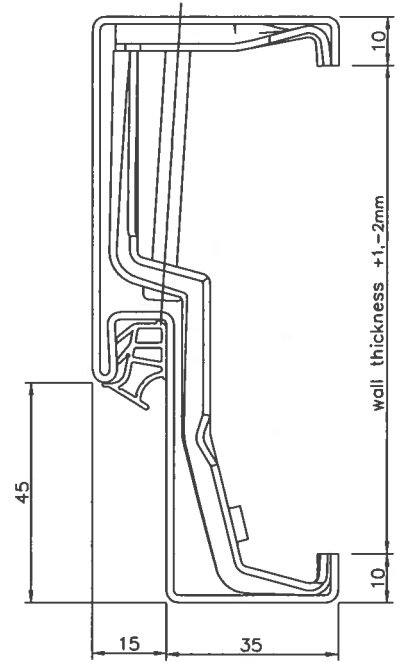
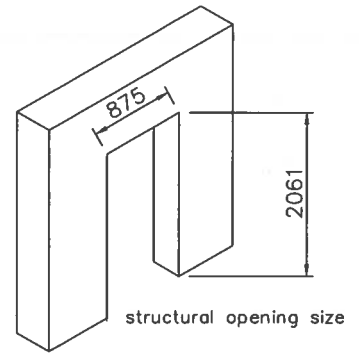
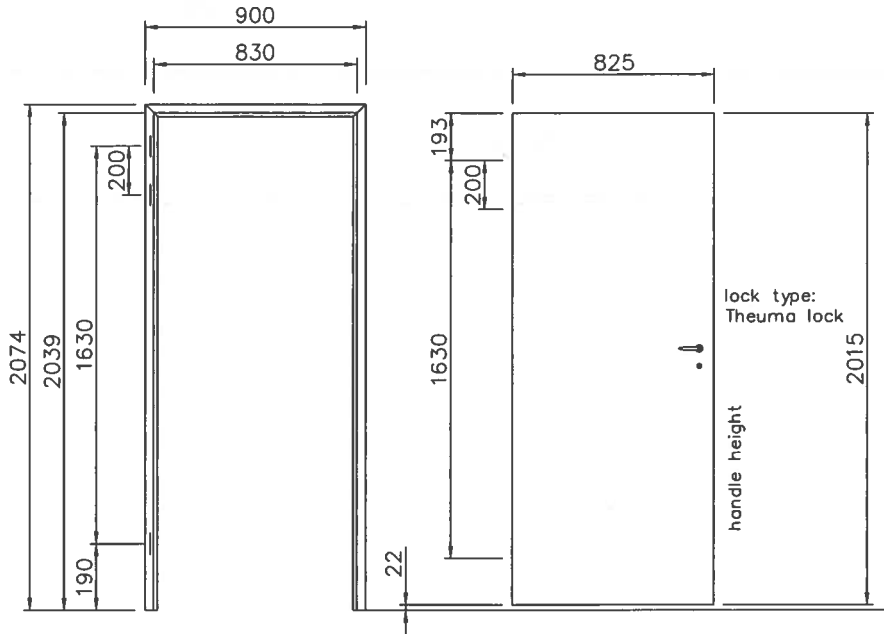
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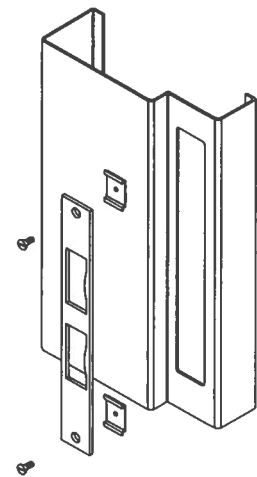
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05163H/A10



fluence hinge



strike plate

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Mono Plus Frame

Job number: 24420

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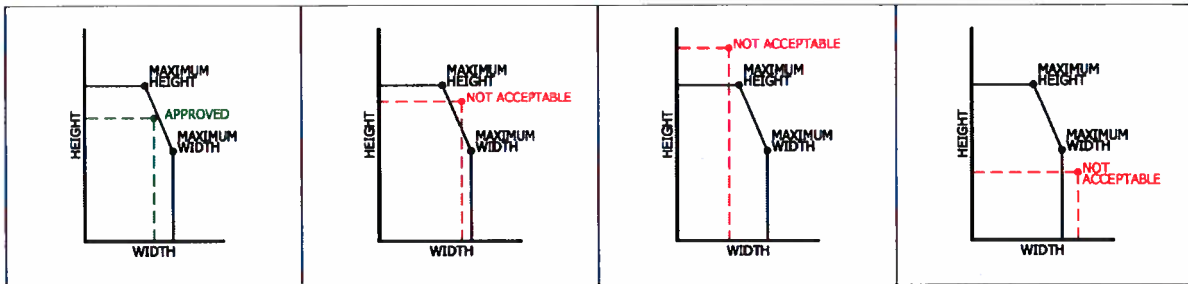
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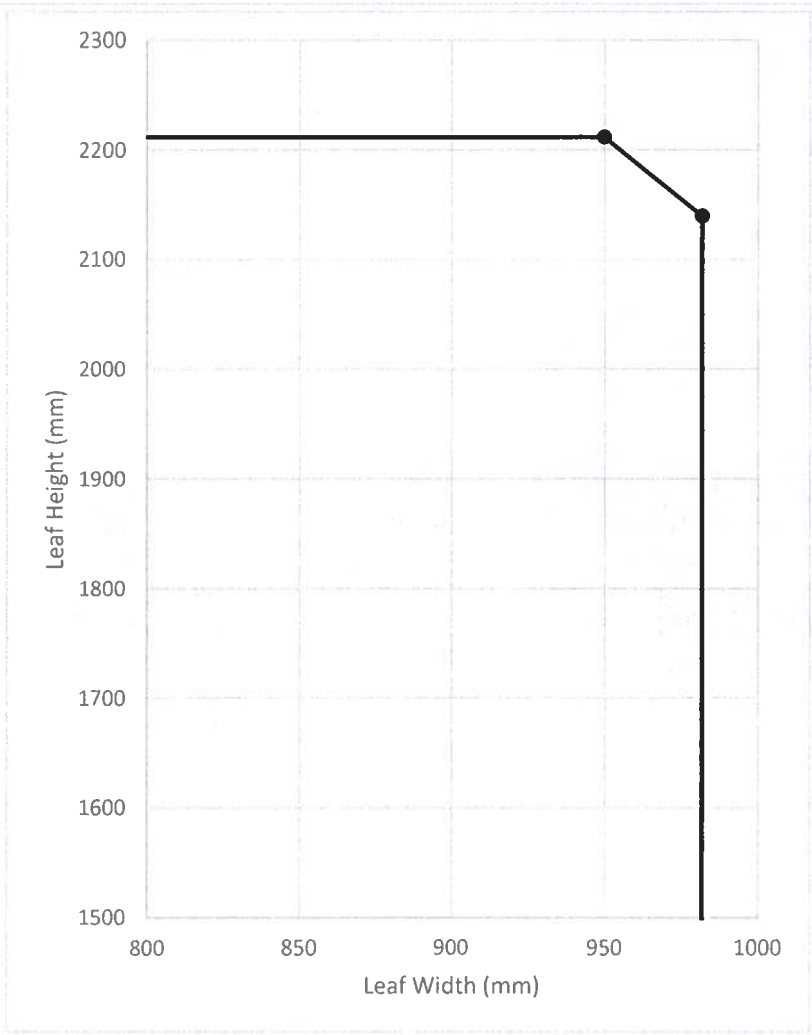
Appendix B Assessed Leaf Size Envelopes

Figures 05163H/B01 and B04



B01 LATCHED, SINGLE ACTING, SINGLE DOOR ASSEMBLIES WITH STANDARD INTUMESCENT SEAL SPECIFICATION

LSASD	
HEIGHT	WIDTH
2140mm	982mm
2212mm	950mm
FLUSH/REBATED OVERPANELS	
Yes - Optional	
TRANSOMED OVERPANEL	
Yes - Optional	
OVERPANEL HEIGHT	
Maximum 600mm	



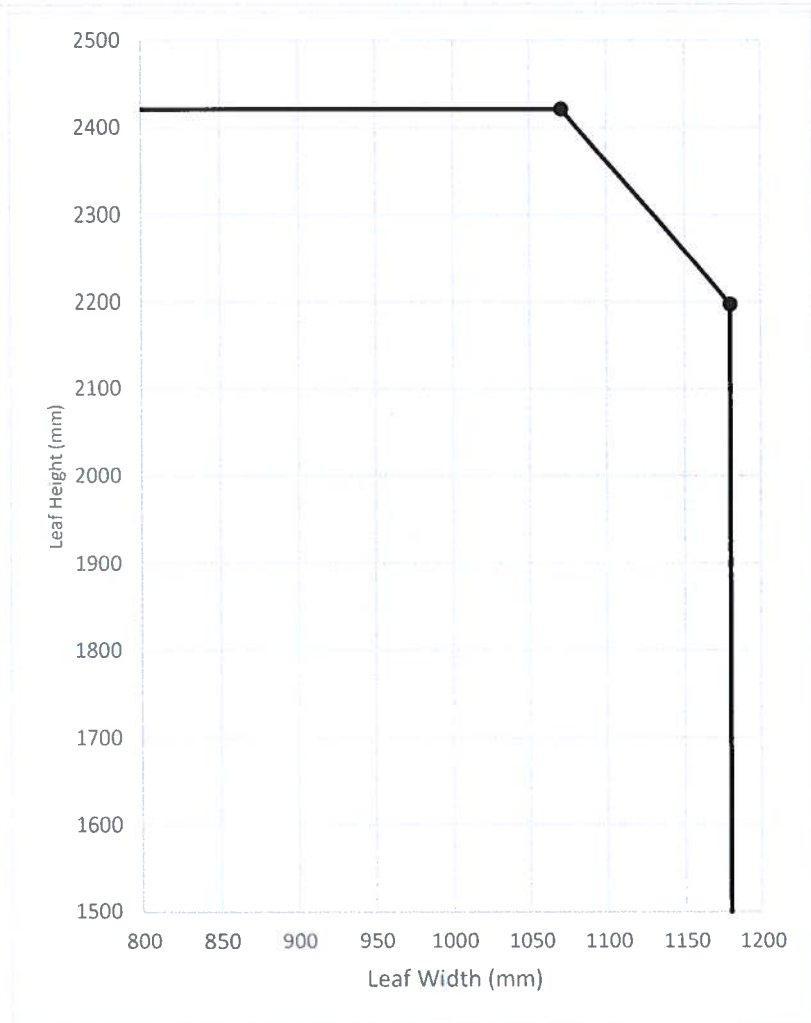
INTUMESCENT SPECIFICATION – STANDARD

STILES/JAMBS	1no. 10mm wide Palusol
HEAD	1no. 10mm wide Palusol
BOTTOM LEAF EDGE	None Required (unless a four-sided Uni-S frame is utilised in which case the seal specification must be as per the stile/jambs)
INTERFACE BETWEEN OVERPANEL AND FRAME	1no. 10mm wide Palusol
OVERPANEL/LEAF HEAD JUNCTION	1no. 10mm wide Palusol

B02

**LATCHED, SINGLE ACTING, SINGLE DOOR ASSEMBLIES
WITH ENHANCED EXPOSED INTUMESCENT SEAL SPECIFICATION**

LSASD	
HEIGHT	WIDTH
2197mm	1180mm
2421mm	1071mm
FLUSH/REBATED OVERPANELS	
Yes - Optional	
TRANSOMED OVERPANEL	
Yes - Optional	
OVERPANEL HEIGHT	
Maximum 600mm	



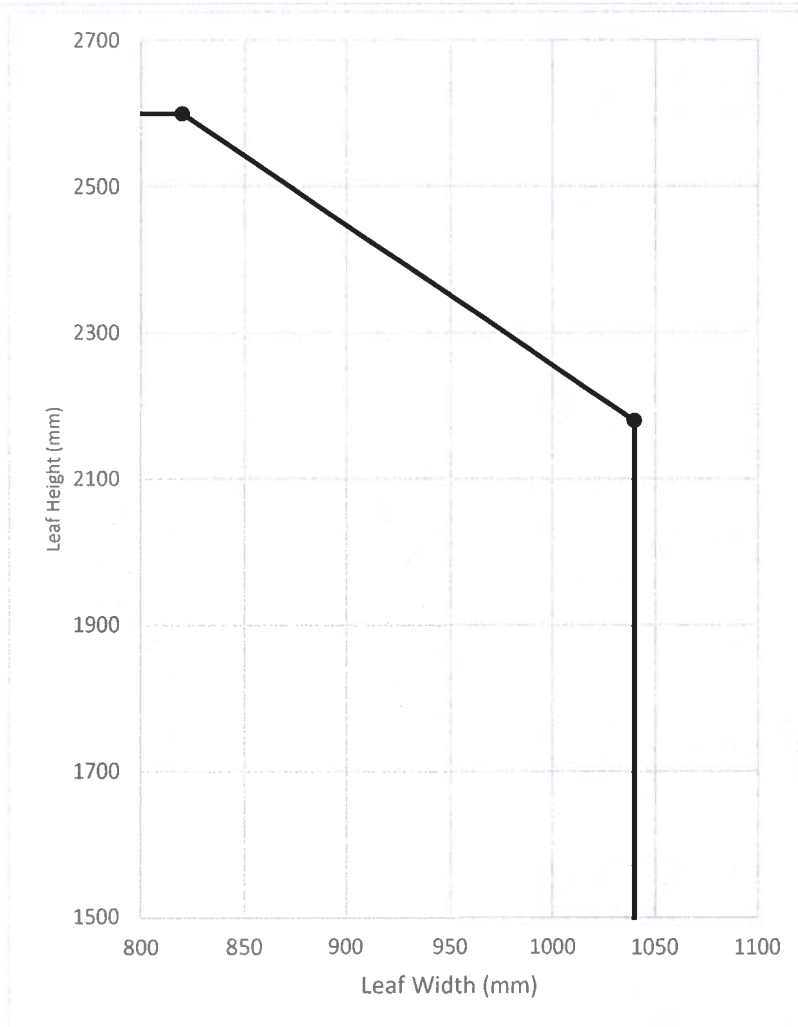
INTUMESCENT SPECIFICATION – ENHANCED EXPOSED

STILES/JAMBS	1no. 20mm wide Palusol
HEAD	1no. 20mm wide Palusol
BOTTOM LEAF EDGE	None Required (unless a four-sided Uni-S frame is utilised in which case the seal specification must be as per the stile/jambs)
INTERFACE BETWEEN OVERPANEL AND FRAME	1no. 20mm wide Palusol
OVERPANEL/LEAF HEAD JUNCTION	1no. 20mm wide Palusol

B03

**LATCHED, SINGLE ACTING, SINGLE DOOR ASSEMBLIES
WITH ENHANCED CONCEALED INTUMESCENT SEAL SPECIFICATION**

LSASD	
HEIGHT	WIDTH
2180mm	1040mm
2600mm	820mm
FLUSH/REBATED OVERPANELS	
-Not permitted	
TRANSOMED OVERPANEL	
Yes - Optional	
OVERPANEL HEIGHT	
Maximum 600mm	



INTUMESCENT SPECIFICATION – ENHANCED CONCEALED

STILES/JAMBS	1no. 25 x 2mm Palusol
HEAD	1no. 30 x 2mm graphite based intumescent strip surface mounted, centrally grooved into the leaf edge
BOTTOM LEAF EDGE	1no. 30 x 2mm graphite based intumescent strip surface mounted, centrally grooved into the leaf edge
INTERFACE BETWEEN OVERPANEL AND FRAME	Not Permitted
OVERPANEL/LEAF HEAD JUNCTION	Not Permitted

B04

**LATCHED, SINGLE ACTING, DOUBLE DOOR ASSEMBLIES
WITH ENHANCED CONCEALED INTUMESCENT SEAL SPECIFICATION**

**LSADD – SQUARE OR
REBATED MEETING
STILES**

HEIGHT	WIDTH
2133mm	1085mm
2425mm	936mm

**LSADD – SQUARE
MEETING STILES**

HEIGHT	WIDTH
2438mm	1134mm
2520mm	1097mm

**FLUSH/REBATED
OVERPANELS**

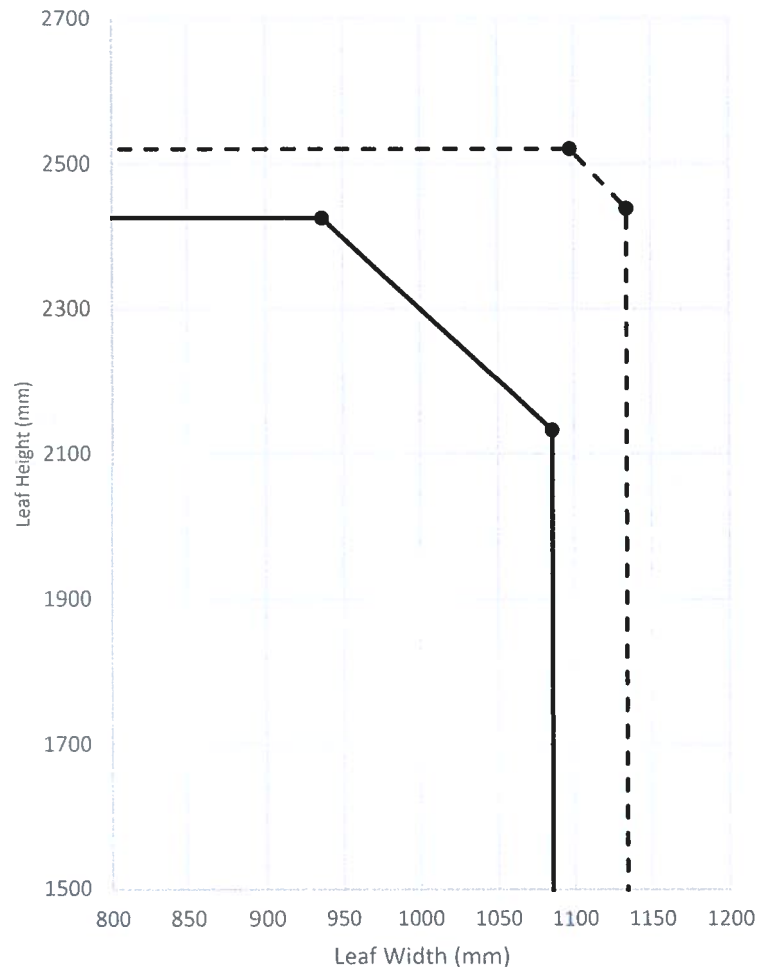
Not permitted

**TRANSOMED
OVERPANEL**

Yes - Optional

OVERPANEL HEIGHT

Maximum 600mm



INTUMESCENT SPECIFICATION – ENHANCED CONCEALED

STILES/JAMBS	1no. 25 x 2mm Palusol
HEAD	1no. 30 x 2mm graphite based intumescent strip surface mounted, centrally grooved into the leaf edge
BOTTOM LEAF EDGE	1no. 30 x 2mm graphite based intumescent strip surface mounted, centrally grooved into the leaf edge
MEETING STILES	1no. 25 x 2mm Palusol, in the meeting edge of both leaves

Notes:

- Palusol seals, used in the exposed intumescent seal specification, can be 2mm thick non-PVC encased or 4mm thick PVC encased.
- Graphite based seals, used in the concealed intumescent seal specification, are to be non-PVC encased.
- Single seals, used in the exposed intumescent seal specification to be fitted centrally within the leaf edge of doors hung flush within the frame, and fitted centrally within the leaf rebate in doors hung over-rebated with the frame.
- At the meeting stiles, where 4no. seals are specified, they should be installed as follows:
 - Square meeting stiles: 2no. seals centrally fitted in each leaf edge, spaced 10mm apart
 - Rebated meeting stiles: 1no. seal centrally fitted in the rebate and the nib of each leaf edge
- Intumescent seals used in the concealed specification should be installed as detailed in **Figure IFCA/05163H:A09** in Appendix A.
- Concealed intumescent seals at the stiles, and meeting edges, shall be installed so that the seal is fitted tight to the hardboard facing at the exposed face of the leaf, and at a distance of 10mm from the leaf edge.

Appendix C Summary of Fire Test Evidence

TEST REPORT	TEST DATE	CONFIGURATIONS TESTED	TESTED LEAF SIZE (OVERPANEL SIZE)	INTEGRITY PERFORMANCE
96-CVB-R0534	8 March 1996	Latched, single acting, single leaf doorset, with sidelights and fanlights	2115 x 959mm	32 minutes
96-CVB-R0948	30 May 1996	Latched, single acting, single leaf doorset	2600 x 935mm	26 minutes <i>Note iii</i>
		Latched, single acting, single leaf doorset, with rebated head overpanel	2107 x 935mm (487 x 935mm)	30 minutes
99-CVB-R0486	3 February 1999	Latched, single acting, single leaf doorset, with rebated head overpanel	2114 x 1026mm (510 x 1028mm)	37 minutes
1999-CVB-R1180	26 March 1999	Latched, single acting, single leaf doorset, with sidelights and fanlights	2114 x 1026mm	34 minutes
WF 158455 Issue 2	18 October 2006	Latched, single acting, single leaf doorset	2070 x 926mm	36 minutes
		Latched, single acting, single leaf doorset	2070 x 926mm	38 minutes
WF 11732	6 November 1998	Latched, single acting, double leaf doorset	2280 x 1068 + 1044mm	32 minutes
WF 158455 Issue 2 – Door A	18 October 2006	Latched, single acting, single leaf doorset	2070 x 926mm	36 minutes
WF 158455 Issue 2 – Door B	18 October 2006	Latched, single acting, single leaf doorset	2070 x 926mm	38 minutes
2010- Efectis- R0037 Rev 1	23 November 2009	Latched, single acting, double leaf doorset	2400 x 1080 +1080mm	32 minutes
2012- Efectis- R9322a	21 August 2012	Latched, single acting, single leaf doorset	2315 x 980mm	30 minutes
2012- Efectis- R0145 Rev.1	22 December 2011	Latched, single acting, single leaf doorset	2315 x 980mm	33 minutes

Notes:

- Note i Some of the tests referenced above were carried out to the Belgium test procedure as described in NBN 713.020 Addendum 1 (1982). Test method NBN 713.020 Addendum 1 (1982) is similar to International Standards Organisation (ISO) method 3008: 1976 which is based upon ISO 834 and incorporates the requirements needed for evaluating the fire resistance of doorsets. The ISO 834 procedure is also the basis of the British Standard test BS476: Part 20: 1987, as it uses identical temperature/time exposure conditions. The major difference between the British and Belgium test methods is to do with the positioning of the neutral pressure axis. In the British method this is set at approximately 1 metre from the bottom of the specimen, in Belgium it is set at the bottom of the specimen. As a consequence, the overpressure at the head of the specimen is greater in the Belgium method, which could make tests carried out to this method more onerous. As a consequence, tests to NBN 713.020 Addendum 1 (1982) can be used as a basis for assessments to BS476: Parts 20 & 22 due to the use of similar furnace conditions, criteria and instrumentation.
- Note ii Where appropriate, fire test evidence from glass, hardware, and intumescent seal manufacturers has also been considered when preparing this Field of Application Report.
- Note iii The integrity failure in this specimen occurred due to design features that have subsequently been modified. The doorsets approved within this report include the enhanced design.
- Note iv Where appropriate, fire test evidence from glass, hardware, and intumescent seal manufacturers has also been considered when preparing this Field of Application Report.
- Note v The appropriate performance of fire resisting doorsets is defined in Approved Document B of the Building Regulations (2006 Edition with 2010 and 2013 Amendments), the Scottish Building Standards Technical Handbook (2013 Edition) or the Building Regulations (Northern Ireland) 2012.

Table B1 in Appendix B of Approved Document B, which applies to England and Wales, identifies doorsets by their performance under test to BS EN 1634-1 or BS476: Part 22: 1987, in terms of integrity for a period of minutes, (e.g. E30/E60, if their performance is measured in terms of EN 1634-1, or FD30/FD60 for BS476: Part 22: 1987). It should be noted that a suffix (S) is added for doors where restricted smoke leakage at ambient temperatures is needed. The Scottish and Northern Ireland documents also refer to the British and European Standards in Section 2D and Section B3 respectively of these documents.

These guidance documents thus give a parity of performance between the two test methods, and although the EN 1634-1 and the BS476: Part 22: 1987 test procedures are both generally based upon the ISO 834 fire resistance test method, there are differences.

There are other minor procedural matters that also increase the severity of the EN method. These mean that the EN 1634-1 test is generally accepted as being a more onerous test than BS476: Part 22: 1987. This is borne out by IFC's experience of fire resistance testing already performed since the introduction of the European test standard.

As such, it is the opinion of IFC that any test results on doorsets tested to EN 1634-1 can be utilised in situations requiring a performance defined against the BS476: Part 22 test method, or when making assessments and judgements against the BS476 criteria, but not vice versa.

