CERTIFICATE OF APPROVAL
No CF 684

This is to certify that, in accordance with
TS00 General Requirements for Certification of Fire Protection Products
The undermentioned products of

VETROTECH SAINT-GOBAIN INTERNATIONAL

Bernstrasse 43, CH-3175 Flamatt, Switzerland
Tel: +41 313368181 Fax: +41 313368119
Website: www.vetrotech.com

Have been assessed against the requirements of the Technical Schedule(s) denoted below and are approved for use subject to the conditions appended hereto:

CERTIFIED PRODUCT	TECHNICAL SCHEDULE
Pyroswiss Fire Resisting Glass	**TS 25 Fire Resistant Glass, Glazing Systems and Materials**

Signed and sealed for and on behalf of Warringtonfire Testing and Certification Limited

Paul Duggan
Certification Manager

Issued: 12th May 2009
Reissued: 28th May 2019
Next Audit Test Due: 28/05/2022
Frequency: Every 3 Years
Valid to: 27th May 2024

CERTIFICATE No CF 684
VETROTECH SAINT-GOBAIN INTERNATIONAL

PYROSWISS FIRE RESISTING GLASS

This certification is provided to the client for its own purposes and we cannot opine on whether it will be accepted by Building Control authorities or any other third parties for any purpose.This Certificate of Approval must be read in conjunction with CERTIFIRE Technical Schedule TS25, Fire Resistant Glass, Glazing Systems and materials.

This Certificate of Approval relates to the fire resistance of Pyroswiss glass when used in the following applications, as defined in BS 476: Part 22: 1987 subject to the undermentioned conditions.

Glass	Application	Fire Resistance Performance Integrity - (mins)	Page No.
Pyroswiss	Timber Doorsets	30	5 – 8
Pyroswiss	Insulated Glazed Units in Timber doorsets	30	9
Pyroswiss	Timber Screens	30	11
Pyroswiss	Insulated Glazed Units in Timber Screens	30	12
Pyroswiss	Steel Doorsets	30	13
Pyroswiss	Insulated Glazed Units in steel doorsets	30	14
Pyroswiss	Steel Screens	30	15
Pyroswiss	Insulated Glazed Units in Steel Screens	30	17
Pyroswiss	Aluminium Doorsets	30	19
Pyroswiss	Aluminium Screens	30	20 – 21
Pyroswiss	Stainless Steel Screens	30	22
Pyroswiss	Smoke Screens	30	24
Pyroswiss	Smoke Screens	120*	25
Pyroswiss	Timber Doorsets	60	26
Pyroswiss	Steel Doorsets	60	28
Pyroswiss	Steel Screens	60	29

*For heat exposure at 600°C as EN 12101-1:2006 Clause D.4.3.1.

This product is approved on the basis of:

i) Initial type testing.
ii) A design appraisal against TS25.
iii) Certification of quality management system to ISO 9001: 2008.
iv) Inspection and surveillance of factory production control.
v) Audit testing.

This Certificate of Approval must be read in conjunction with CERTIFIRE Technical Schedule TS25, Fire Resistant Glass, Glazing Systems and materials.

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PYROSWISS FIRE RESISTING GLASS

General Requirements

Where the glass is installed in a timber or steel framed screen, the orientation of the screen shall be no more than ±10º from the vertical.

There is no restriction to the direction of exposure for the glass i.e. the glass is symmetrical. Orientation may, however, be restricted by the requirements of a non-symmetrical framing system or certain double glazed unit specifications.

The edge cover to each pane of Pyroswiss Glass shall be as stated or identified on the relevant drawings contained within this scope approval .

The Pyroswiss glass is approved in a nominal thickness of 6, 8, 10, 12 and 15 mm (depending on application).

Acid Etching, Tinting, Screen Printing and Patterned Glass

The Pyroswiss glass (6,8,10,12 or 15 mm thick) may be provided with surface finishes including acid etching, tinting, screen printing and patterned both single and double glazed systems. The printing may account for any area of the glass.

The reference for these type of glass are as follows:

- Acid etched – Pyroswiss Satinovo
- Tinted – Pyroswiss Parsol
- Patterned – Pyroswiss Mastercarre
- Screen printed - Pyroswiss Seralit

Laminated Glass

The Pyroswiss glass (6, 8, 10, 12 or 15 mm thick, depending on application) may be laminated to float or toughened glass having a minimum thickness of 4 mm and a maximum thickness of 8 mm using a PVB interlayer with 0.38 mm minimum thickness and 1.52 mm maximum thickness with the laminated glass unit orientated such that the Pyroswiss glass faces the side of the assembly to be fire protected (i.e Pyroswiss to non-fire risk side). Where this side is not known, laminated glass utilising a toughened glass layer shall not be used.

The Pyroswiss glass (6, 8, 10, 12 or 15 mm thick, depending on application) may be laminated to a Pyroswiss glass having a minimum thickness of 6 mm and a maximum thickness of 15 mm using a PVB interlayer with 0.38 mm minimum thickness and 1.52 mm maximum thickness. Laminated glass of this specification may be used without limit on the exposure direction.

The Pyroswiss glass, when laminated as described above, may be used in any timber or steel framed assemblies for up to 60 minutes integrity as covered by this certificate.

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PYROSWISS FIRE RESISTING GLASS

Insulated Glazed Units (IGU's)

The Pyroswiss IGU glass may be assembled with either aluminium or steel spacer bars (6 mm minimum). The Pyroswiss IGU glass may be composed of two panes of Pyroswiss 6 mm when the fire risk is known to be from either side. Alternatively, if the fire risk side is known, the IGU may comprise one pane of Pyroswiss 6 mm and one pane of any type (including toughened, float, laminated, coated, acid etched, patterned or screen printed). In this case the Pyroswiss glass MUST be positioned to the non-fire risk side of the element.

Applied Films
Adhesive/adherent polyester/polyethylene terephthalate (PET) or polyvinyl Chloride (PVC) films may be applied to the free vision area of a glazed element. They may have a thickness between 25 and 250 µm. The applied film MUST be positioned to the fire risk side of the element.

Note:
The fire resistant pane of the IGU construction can be used as a single glazed pane in any previously fire tested or CERTIFIRE approved system.

As indicated steel profiled door and screen framing systems shall have test evidence (applicable systems from Jansen or Forster for example), or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

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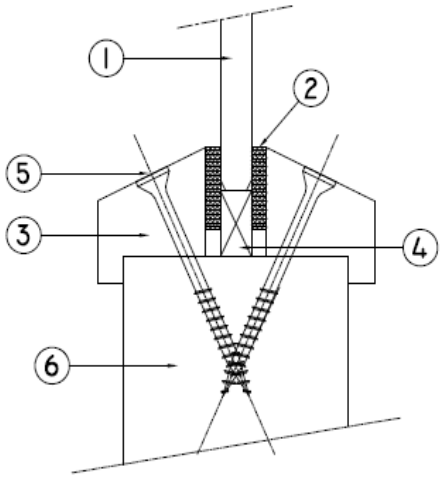
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in timber door leaves for periods of 30 minutes integrity

The glass shall be glazed within a previously fire tested or CERTIFIRE approved timber based doorset utilising the following basic specification:



1. PYROSWISS 6 to 15 mm (edge–cover 8 mm)
2. 15 x 3 mm Hodgsons Sealants Firetape Ceramic
3. 25 x 21 mm (h x w) hardwood glazing beads minimum density 650 kg/m3 (including 5 x 5 mm (h x w) bolection with 25° chamfer)
4. Non–combustile / hardwood setting blocks glass thickness x 12 x 80 mm (w x h x d) (2 pieces per glass, on the bottom only)
5. 50 mm long steel screws at 130 mm centres (30° to glass)
6. Nominally 44 mm thick FD30 door leaf

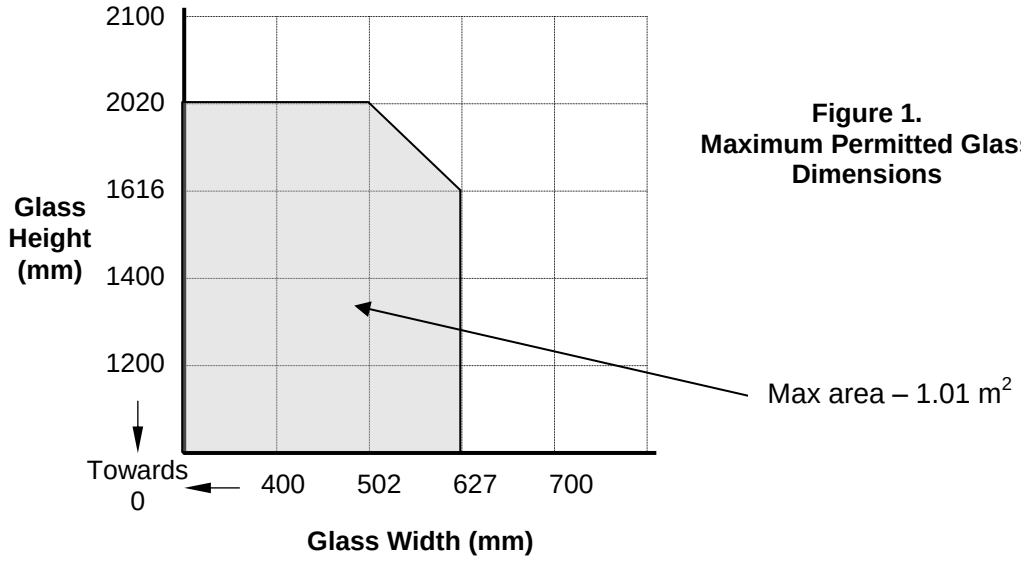


Figure 1.
Maximum Permitted Glass Dimensions

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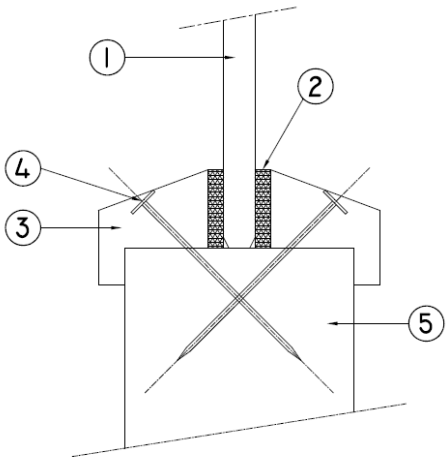
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in timber door leaves for periods of 30 minutes integrity

The glass shall be glazed within a previously fire tested or CERTIFIRE approved timber based doorset utilising the following basic specification:



1. PYROSWISS 6 to 15 mm (edge cover = 13mm vertical edges, 11mm top edge, 15mm bottom edge) *NOTE* – edge cover without setting block as detailed.
2. 15 x 5 mm Sealmaster Intumescent Foam Glazing Tape
3. 22 x 21 mm (h x w) MDF, hardwood or softwood glazing beads (including 7 x 5 mm (h x w) bolection with 20° chamfer)
4. 1.6mm ø x 40 mm long steel pins at 150 mm centres (45° to glass)
5. Nominally 44 mm thick FD30 door leaf

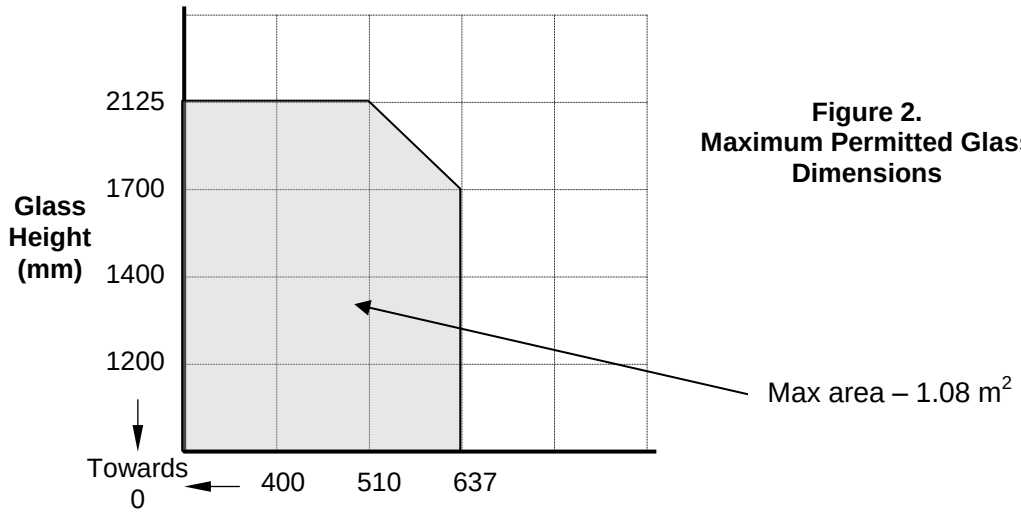


Figure 2.
Maximum Permitted Glass Dimensions

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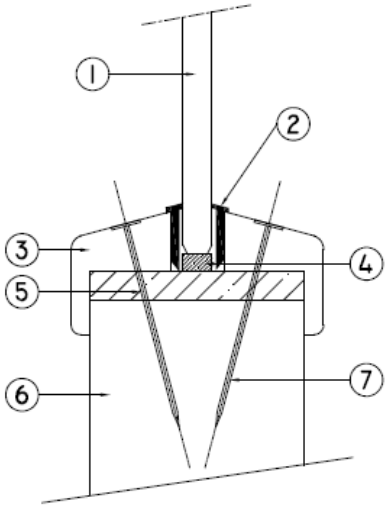
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in timber door leaves for periods of 30 minutes integrity

The glass shall be glazed within a previously fire tested or CERTIFIRE approved timber based doorset utilising the following basic specification:



1. 6 mm Pyroswiss glass (bead edge–cover 9.5 mm)
2. Lorient Polyproducts Ltd FF1 glazing gasket
3. 21 mm wide x 25 mm high MDF beads, with 13 mm rebate depth, 15° bead angle and 5 mm x 12 mm bolection
4. 3.5 mm hardwood setting blocks
5. 6 mm hardwood lining to aperture – minimum 550 kg/m3
6. Nominally 44 mm thick FD30 door leaf
7. 38 x 1.8 mm dia. steel pins at a maximum of 150 mm centres

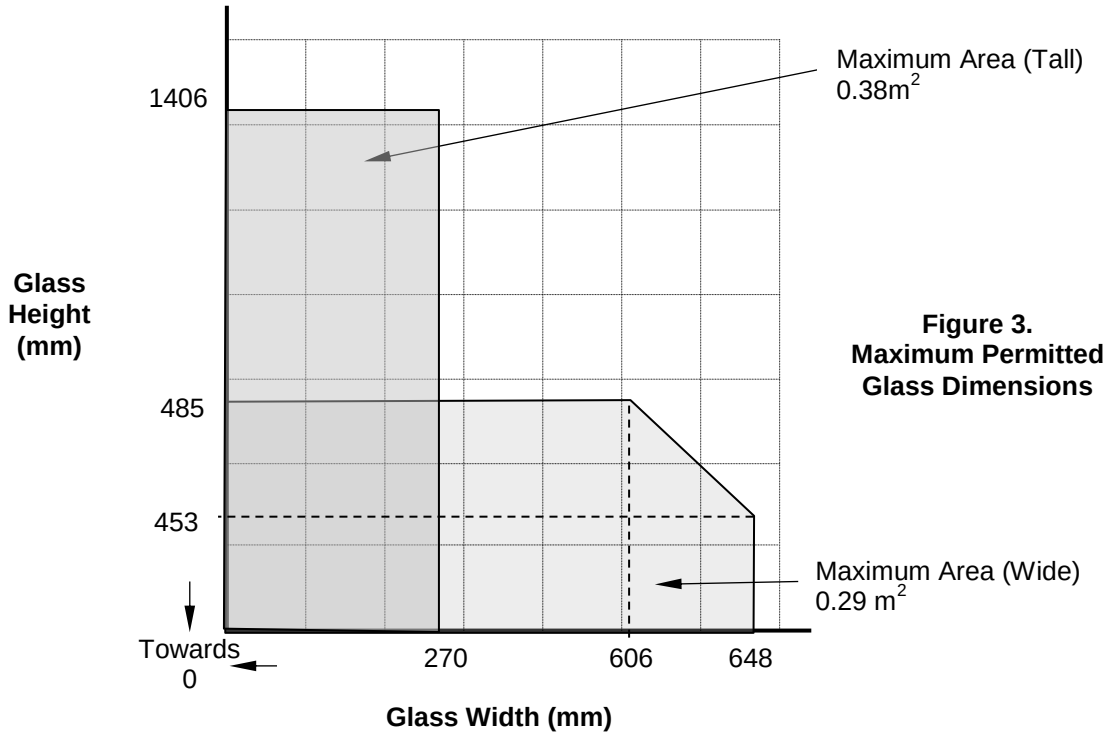


Figure 3. Maximum Permitted Glass Dimensions

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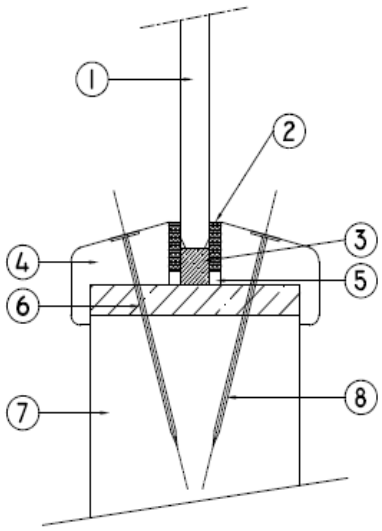
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in timber door leaves for periods of 30 minutes integrity

The glass shall be glazed within a previously fire tested or CERTIFIRE approved timber based doorset utilising the following basic specification:



1. 6 mm Pyroswiss glass (edge–cover 10 mm)
2. UK Industrial Tapes Ltd Ref. 78130 12 x 2 mm closed cell PVC foam glazing tape
3. 7 mm hardwood setting blocks
4. 22 mm wide x 22 mm high MDF beads with 15 mm rebate height, 15° bead angle and 5 mm x 7 mm bolection
5. Acrylic intumescent mastic to void, both sides
6. 6 mm hardwood lining to aperture – minimum 550 kg/m3
7. Nominally 44 mm thick FD30 door leaf
8. 38 x 1.8 mm dia. steel pins at a maximum of 150 mm centres

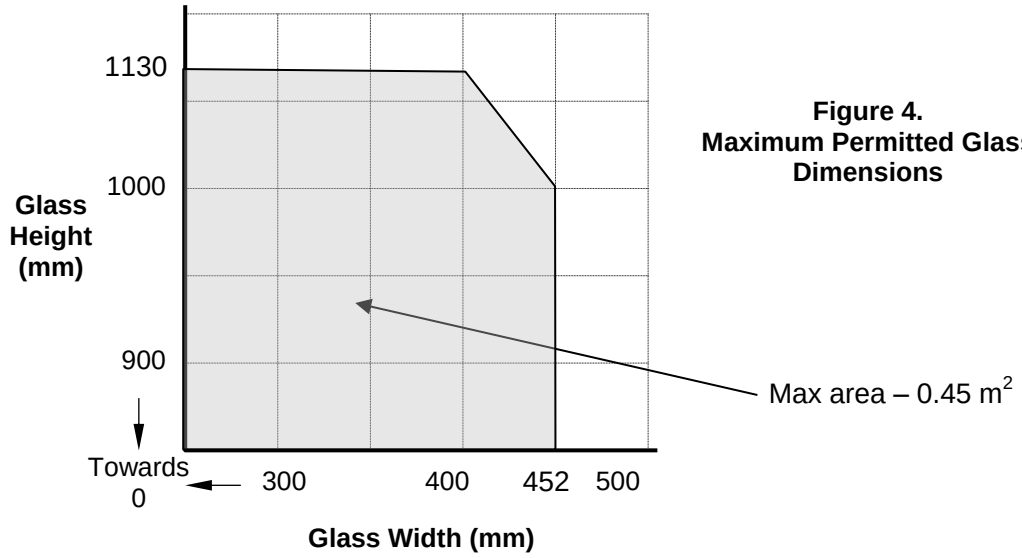


Figure 4.
Maximum Permitted Glass Dimensions

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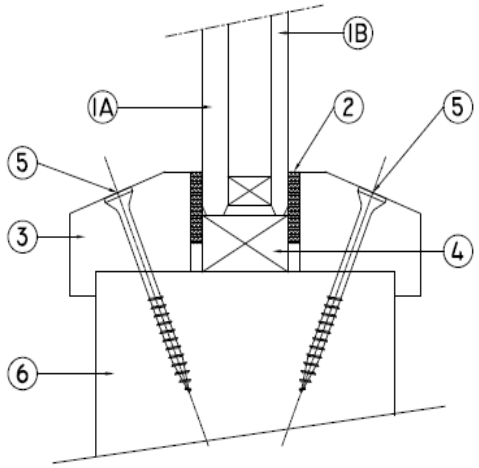
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass (Insulated Glazed Units) in timber door leaves for periods of 30 minutes integrity

The glass shall be glazed within a previously fire tested or CERTIFIRE approved timber based doorset utilising the following basic specification:



(IA) Pyroswiss 6 mm (edge–cover 8 mm)

(IB) Glass used subject to the conditions specified on page 4 (insulated glazed unit – IGU)

(2) 15 x 3 mm Gluske Kerafix (compressed to 2.5 mm)

(3) 26 x 28.5 mm (h x w) hardwood glazing beads minimum density 700 kg/m3 (including 6 x 6 mm (h x w) bolection where applicable with 25° chamfer minimum)

(4) Non–combustile / hardwood setting blocks glass thickness x 12 x 80 mm (w x h x d) (2 pieces per glass, on the bottom only)

(5) 40 mm long steel screws at 150 mm centres (30° to glass)

(6) Nominally 82 mm thick FD30 door leaf

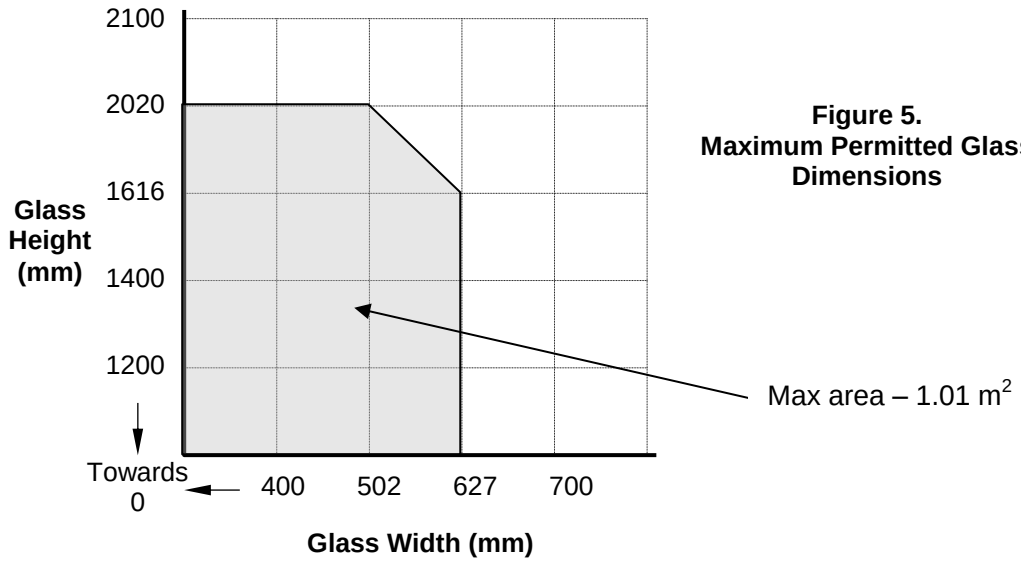


Figure 5.
Maximum Permitted Glass Dimensions

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PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in timber door leaves for periods of 30 minutes integrity

For this application, the following conditions shall apply:

1. The doorset, including door frame and associated building hardware, should have achieved at least 30 minutes integrity when tested, or subsequently assessed by one of the laboratories approved by CERTIFIRE as acceptable for this purpose, to BS 476: Part 22: 1987 or BS EN 1634-1..
2. If the proposed doorset is to be used in double-leaf configuration, the test or assessment evidence should be applicable to double-leaf configurations.
3. Likewise, if the proposed doorset is to be used in the unlatched configuration, the available evidence should be applicable to unlatched doorsets.
4. The proposed doorset should also have included a glazed aperture or apertures of the intended size, shape, area and number.
5. When used to glaze CERTIFIRE approved doorsets which have smaller apertures than allowed in this certificate, the aperture sizes specified in the doorset certificate shall take precedence.
6. The door leaves shall consist of timber faces coupled with timber or other cellulosic cores of minimum overall leaf thickness, 44 mm.
7. When an alternative CERTIFIRE approved glazing system is used, the system shall have been shown to be capable of including Pyroswiss glass. The maximum permitted aperture dimensions shall be as detailed below or included within the relevant CERTIFIRE certificate for the glazing system, whichever is the lesser.
8. Other CERTIFIRE approved glazing seals may be acceptable subject to the limitations within the relevant certificate. This Certificate of Approval relates to the sizes of Pyroswiss glass shown in Figure 1-5 above, when used in conjunction with above systems. The aspect ratio of the glass may be unlimited within these aperture dimensions.

Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.

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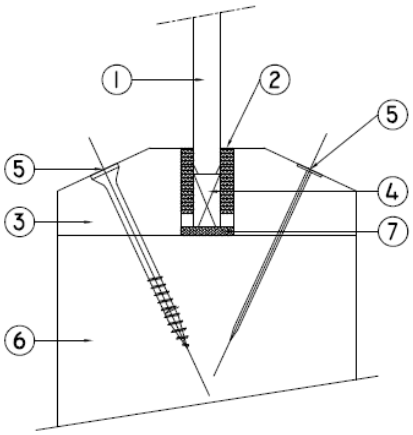
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in timber framed screens for periods of 30 minutes integrity

The glass shall be glazed utilising the following basic specification:

The screens shall be no greater than 4000 mm high unless suitable tie backs and/or fire protected structural supports are provided.

Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.



1. Pyroswiss 6 to 15 mm (edge–cover 8 mm)
2. 15 x 3 mm Gluske Kerafix (compressed to 2.5 mm)
3. 20 x 28.5 mm (h x w) hardwood glazing beads minimum density 700 kg/m3 (with 25° chamfer minimum)
4. Non–combustile / hardwood setting blocks glass thickness x 12 x 80 mm (w x h x d) (2 pieces per glass, on the bottom only)
5. 60 mm long steel pins or screws at 150 mm centres (30° to glass)
6. 68 x 40 mm minimum hardwood frame minimum density 700 kg/m3
7. 11 x 2 mm Gluske Blahpapier intumescent impregnated ceramic fibre (used in conjunction with setting blocks)

Other CERTIFIRE approved glazing seals may be acceptable subject to the limitations within the relevant certificate. This Certificate of Approval relates to the sizes of Pyroswiss glass shown in Figure 6 below, when used in conjunction with above system. The aspect ratio and shape (rectilinear only) of the glass may be unlimited within these aperture dimensions.

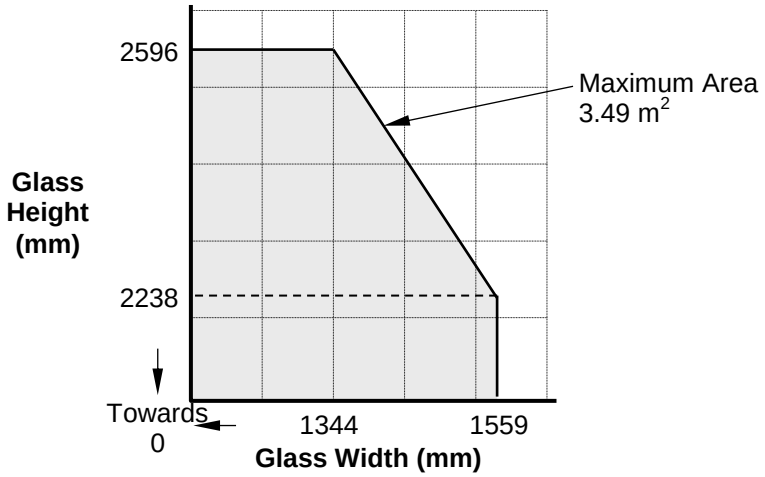


Figure 6. Maximum Permitted Glass Dimensions

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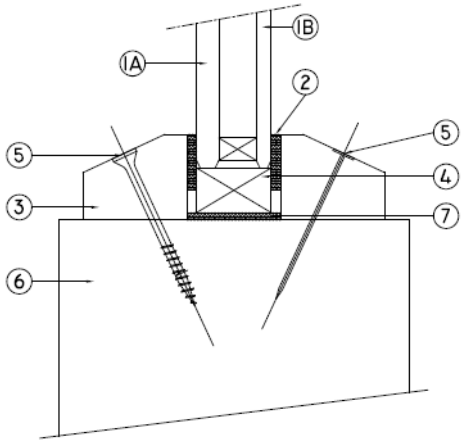
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Insulated Glazed Units (IGU's) Glass in timber framed screens for periods of 30 minutes integrity

The glass shall be glazed utilising the following basic specification:

The screens shall be no greater than 4000 mm high unless suitable tie backs and/or fire protected structural supports are provided.



(IA) Pyroswiss 6 mm (edge–cover 8 mm)

(IB) Glass used subject to the conditions specified on page 4 (Insulated Glazed Unit – IGU)

(2) 15 x 3 mm Gluske Kerafix (compressed to 2.5 mm)

(3) 26 x 28.5 mm (h x w) hardwood glazing beads minimum density 700 Kg/m3 (including 6 x 6 mm (h x w) bolection where applicable with 25° chamfer minimum)

(4) Non–combustible / hardwood setting blocks glass thickness x 12 x 80 mm (w x h x d) (2 pieces per glass, on the bottom only)

(5) 40 mm long steel pins or screws at 150 mm centres (30° to glass)

(6) 94 x 40 mm minimum hardwood frame minimum density 700 kg/m3

(7) 11 x 2 mm minimum Gluske Blahpapier Intumescent Impregnated ceramic fibre (used in conjunction setting blocks)

Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.

Other CERTIFIRE approved glazing seals may be acceptable subject to the limitations within the relevant certificate. This Certificate of Approval relates to the sizes of Pyroswiss IGU shown in Figure 7 below, when used in conjunction with above system. The aspect ratio and shape (rectilinear only) of the glass may be unlimited within these aperture dimensions.

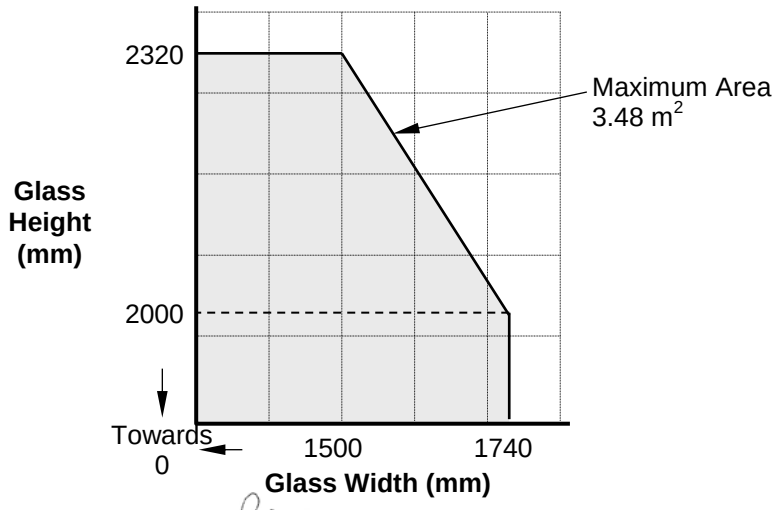


Figure 7. Maximum Permitted Glass Dimensions

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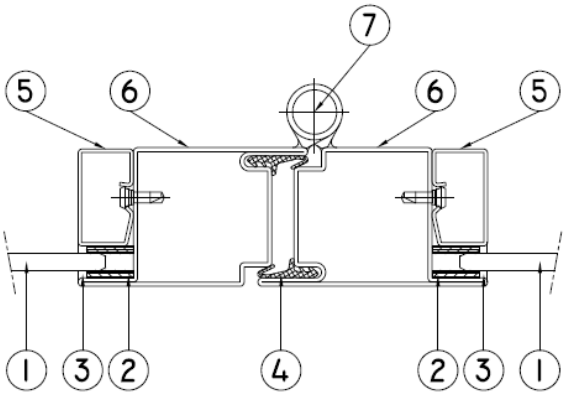
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in steel doorsets for periods of 30 minutes integrity

The glass shall be glazed within a previously fire tested (see example below) or a CERTIFIRE approved steel profiled door leaf framing system.

Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.



1. PYROSWISS 6 to 15 mm (edge-cover 10 mm)
2. Ceramic fibre based glazing tape
3. Fire silicone capping
4. Door weathership, flame retardant
5. Steel bead
6. Steel section
7. Weld-on hinge

The steel profiled door framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions. If the proposed doorset is to be used in double-leaf configuration, the test or assessment evidence should be applicable to double-leaf configurations. Likewise, if the proposed doorset is to be used in the unlatched configuration, the available evidence should be applicable to unlatched doorsets. When used to glaze CERTIFIRE approved doorsets which have smaller apertures than allowed in this certificate, the aperture sizes specified in the doorset certificate shall take precedence.

This Certificate of Approval relates to the sizes of Pyroswiss glass shown in Figure 8 below, when used in conjunction with the above system. The aspect ratio and shape (rectilinear only) of the glass may be unlimited within these aperture dimensions.

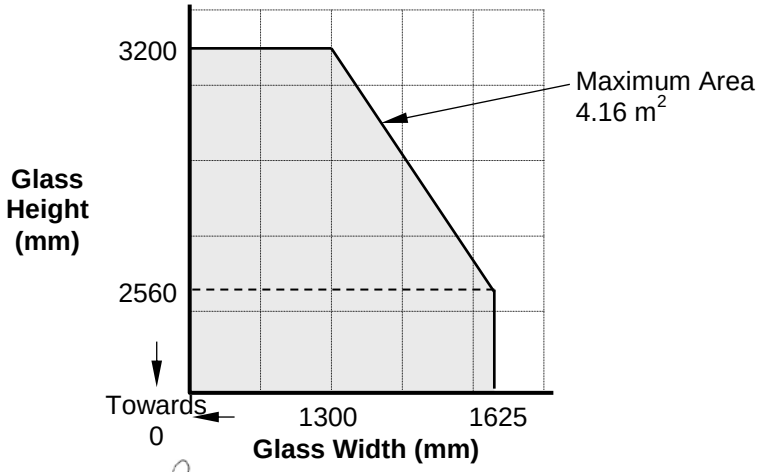


Figure 8. Maximum Permitted Glass Dimensions

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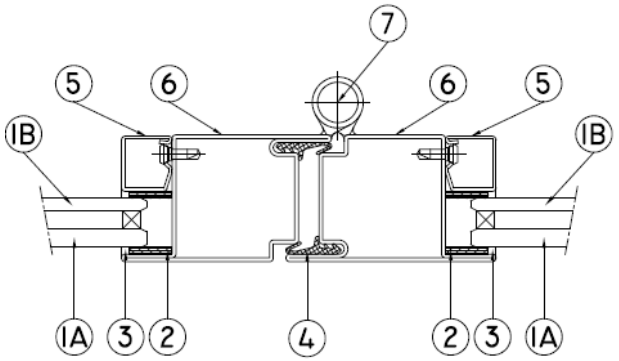
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Insulated Glazed Units (IGU's) in steel doorsets for periods of 30 minutes integrity

The glass shall be glazed within a previously fire tested (see example below) or a CERTIFIRE approved steel profiled door leaf framing system.

Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.



IA PYROSWISS 6 or 8 mm (edge-cover 10 mm)
IB Glass used subject to the conditions specified page 4 (Insulated Glazed Unit - IGU)
2 Ceramic fibre based glazing tape
3 Fire silicone capping
4 Door weathership, flame retardant
5 Steel bead
6 Steel section
7 Weld-on hinge

The steel profiled door framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions. If the proposed doorset is to be used in double-leaf configuration, the test or assessment evidence should be applicable to double-leaf configurations. Likewise, if the proposed doorset is to be used in the unlatched configuration, the available evidence should be applicable to unlatched doorsets. When used to glaze CERTIFIRE approved doorsets which have smaller apertures than allowed in this certificate, the aperture sizes specified in the doorset certificate shall take precedence.

This Certificate of Approval relates to the sizes of Pyroswiss IGU shown in Figure 9 below, when used in conjunction with the above system. The aspect ratio and shape (rectilinear only) of the glass may be unlimited within these aperture dimensions.

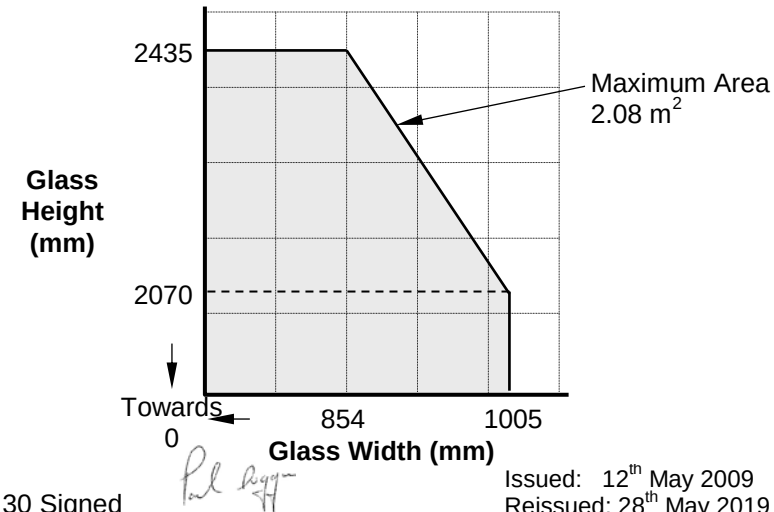


Figure 9. Maximum Permitted Glass Dimensions

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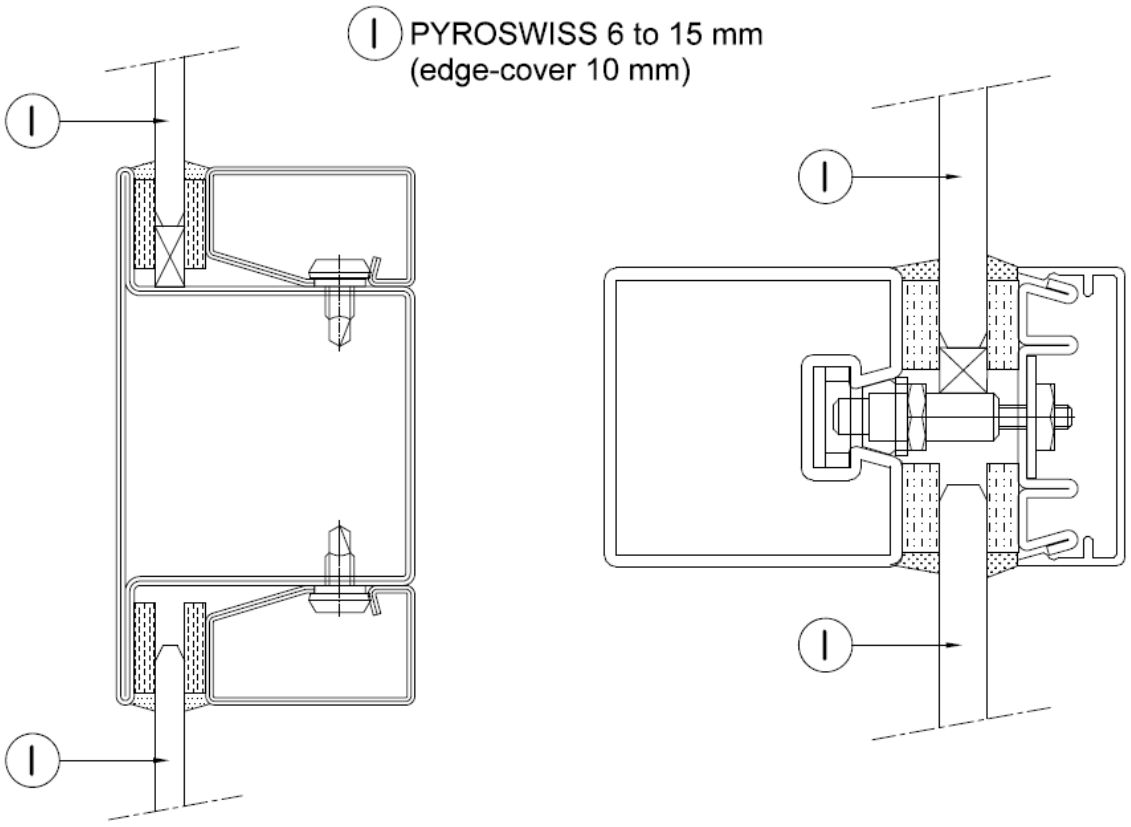
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in steel framed screens for periods of 30 minutes integrity

The screens shall be no greater than 4000 mm high unless suitable tie backs and/or fire protected structural supports are provided.

The glass shall be installed into a previously tested framing system (which is covered appropriately by test or assessment evidence or is CERTIFIRE approved) using pressure plate glazing, screw-fixed or clip-on retaining beads, see examples below. The glass shall be glazed into the screen with ceramic fibre gasket on both faces and set on setting blocks which comprise of calcium silicate material (or similar) to determine the correct edge cover.

Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.



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PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in steel framed screens for periods of 30 minutes integrity (continued)

This Certificate of Approval relates to the sizes of Pyroswiss glass shown in Figure 10 below, when used in conjunction with above systems. The aspect ratio and shape (rectilinear only) of the glass may be unlimited within these aperture dimensions.

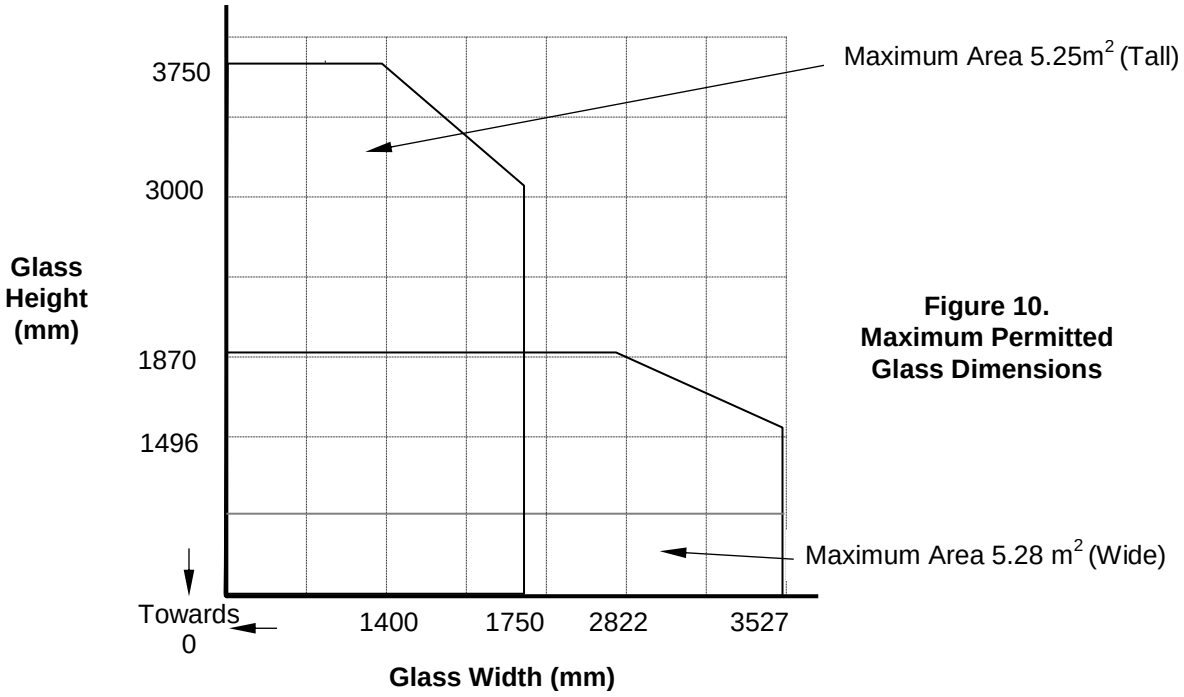

Figure 10. Maximum Permitted Glass Dimensions

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PYROSWISS FIRE RESISTING GLASS

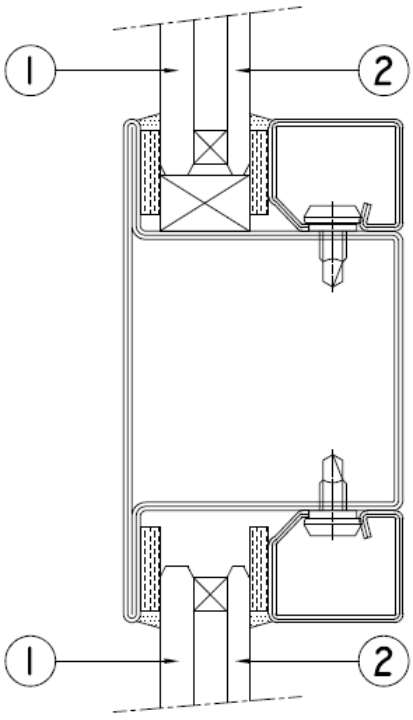
Pyroswiss Glass within Insulated Glazed Units (IGU's) in steel framed screens for periods of 30 integrity

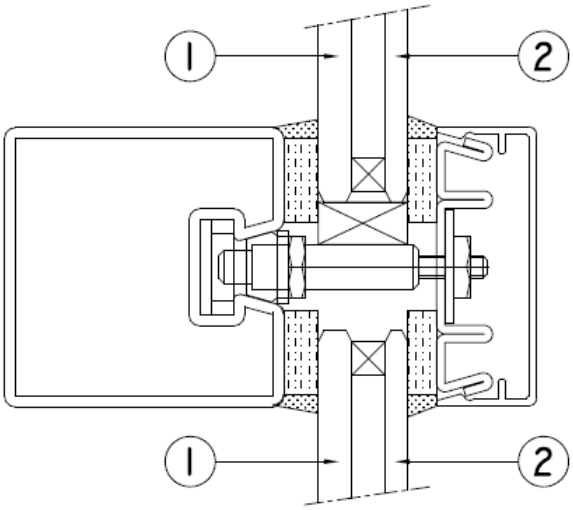
The screens shall be no greater than 4000 mm high unless suitable tie backs and/or fire protected structural supports are provided.

The glass shall be installed into a previously tested framing system (which is covered appropriately by test or assessment evidence or is CERTIFIRE approved) using screw-fixed or clip-on retaining beads. The glass shall be glazed into the screen with ceramic fibre gasket on both faces and set on setting blocks, which comprise of calcium silicate material to determine the correct edge cover. Examples of framing systems are shown below.

1 PYROSWISS 6 or 8 mm
(edge-cover 10 mm)

2 Glass used subject to the conditions specified on page 4
(Insulated Glazed Unit - IGU)





Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.

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PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass within Insulated Glazed Units (IGU's) in steel framed screens for periods of 30 integrity (continued)

Maximum Permitted Pane Dimensions

This Certificate of Approval relates to the sizes of Pyroswiss IGU shown in Figure 11, when used in conjunction with above systems. The aspect ratio and shape (rectilinear only) of the glass may be unlimited within these aperture dimensions.

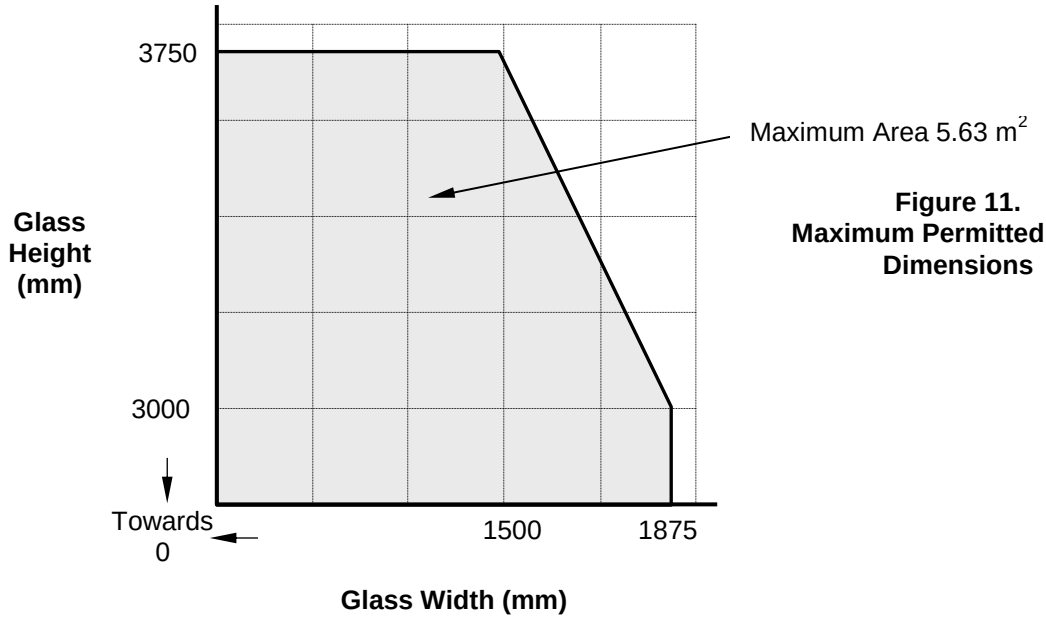

Figure 11.
Maximum Permitted Glass Dimensions

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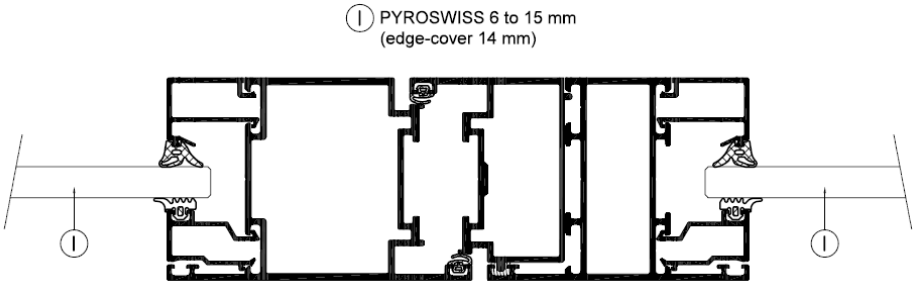
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass within Schuco ADS 65. NI FR30 aluminium doorsets for periods of 30 minutes integrity

The glass shall be installed into Schuco ADS 65.NI FR30 framing system (which is covered appropriately by test or assessment evidence) using clip-on retaining beads, see example below. The glass shall be glazed into the doorset as shown in the figure below and set on non-combustible setting blocks to determine the correct edge cover.



The aluminium door framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions. If the proposed doorset is to be used in double-leaf configuration, the test or assessment evidence should be applicable to double-leaf configurations. Likewise, if the proposed doorset is to be used in the unlatched configuration, the available evidence should be applicable to unlatched doorsets. When used to glaze CERTIFIRE approved doorsets which have smaller apertures than allowed in this certificate, the aperture sizes specified in the doorset certificate shall take precedence.

Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.

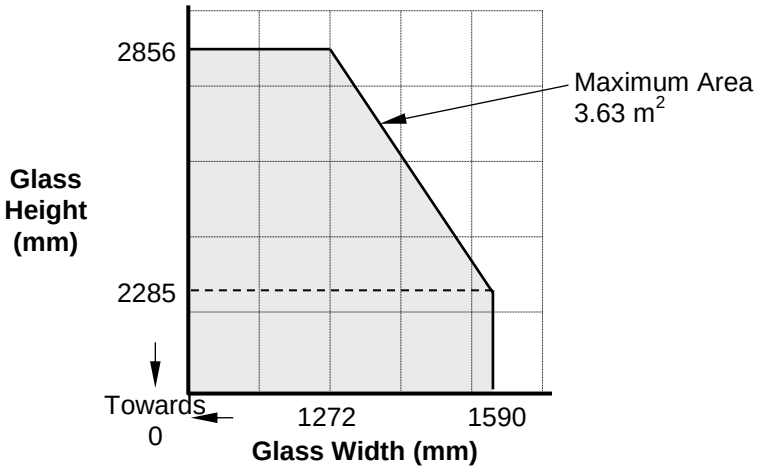


Figure 12. Maximum Permitted Glass Dimensions

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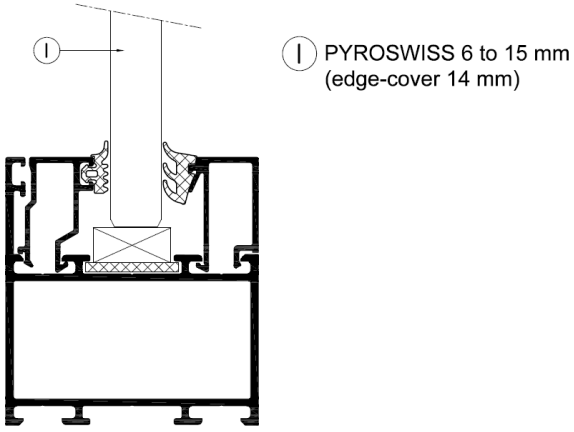
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass within aluminium framed screens for periods of 30 minutes integrity

The screens shall be no greater than 4000 mm high unless suitable tie backs and/or fire protected structural supports are provided.

The glass shall be installed into Schuco ADS 65.NI FR30 framing system (which is covered appropriately by test or assessment evidence) using clip-on retaining beads, see example below. The glass shall be glazed into the screen as described in the table below and set on non-combustible setting blocks to determine the correct edge cover.



Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.

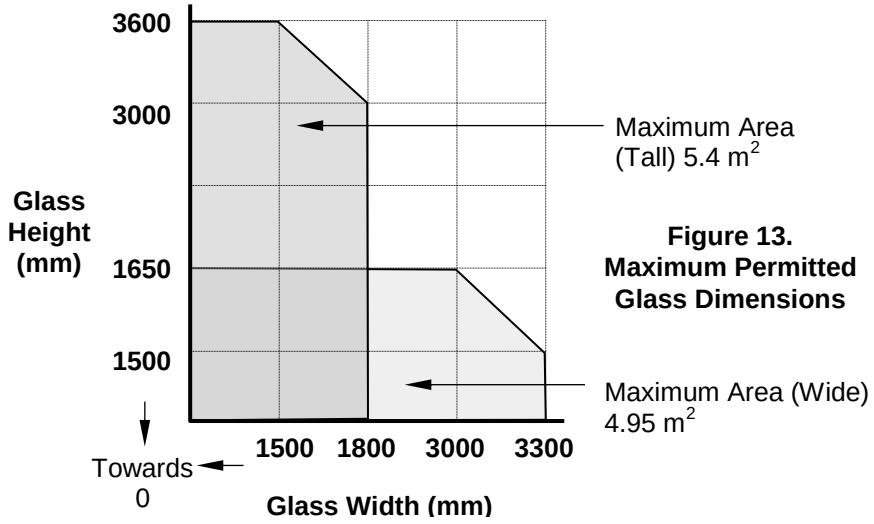


Figure 13. Maximum Permitted Glass Dimensions

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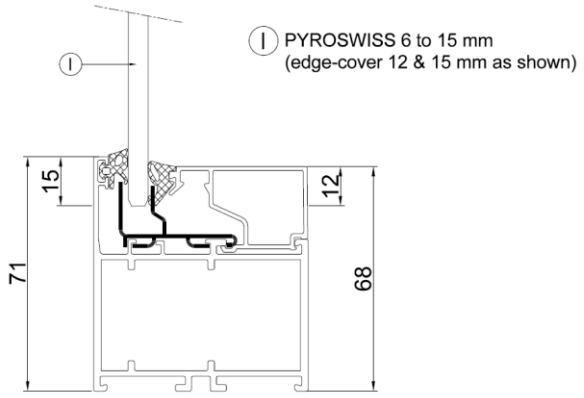
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass within aluminium framed screens for periods of 30 minutes integrity

The glass shall be installed into Hueck Lava 65-30 framing system (which is covered appropriately by test or assessment evidence) using clip-on retaining beads, see example below. The glass shall be glazed into the screen as described in the table below and set on non-combustible setting blocks to determine the correct edge cover.

The screens shall be no greater than 4000 mm high unless suitable tie backs and/or fire protected structural supports are provided



Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.

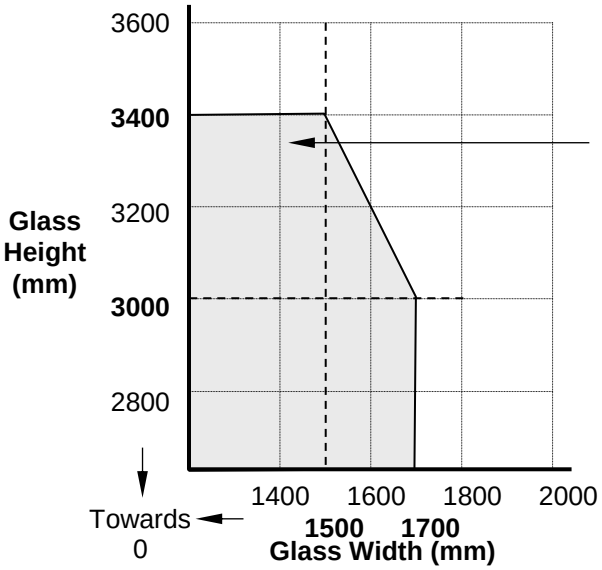


Figure 14. Maximum Permitted Glass Dimensions

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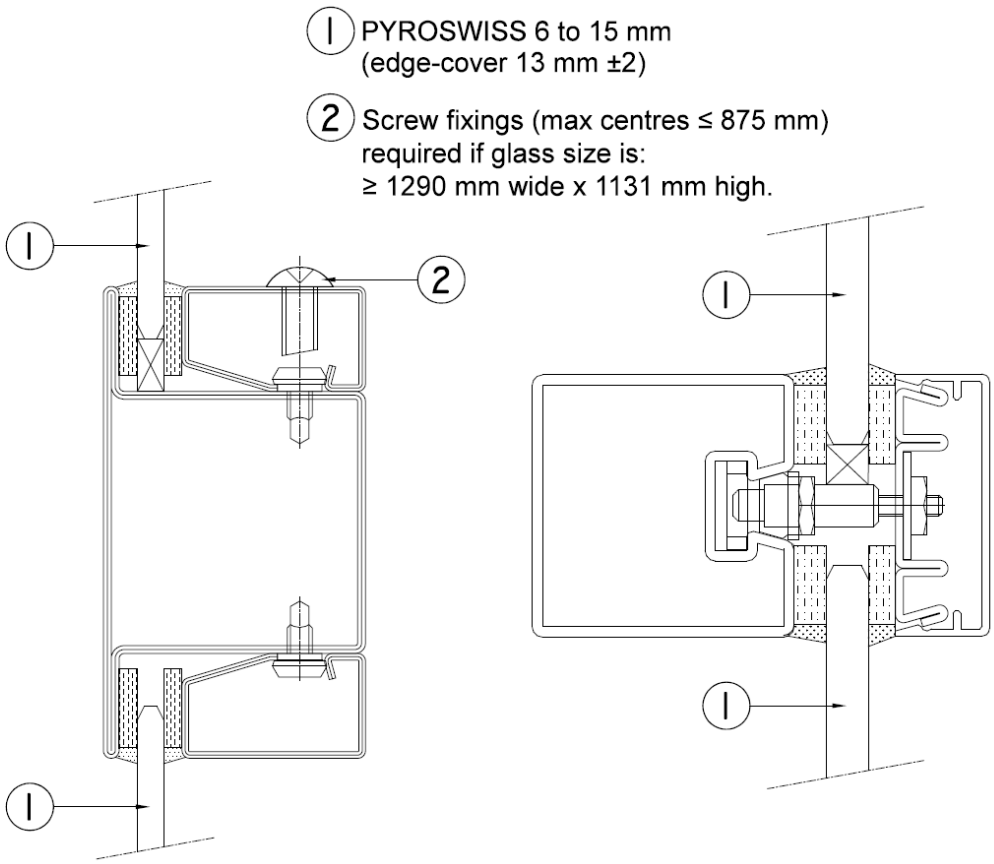
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in stainless steel framed screens for periods of 30 minutes integrity

The screens shall be no greater than 4000 mm high unless suitable tie backs and/or fire protected structural supports are provided.

The glass shall be installed into a previously tested framing system (which is covered appropriately by test or assessment evidence or is CERTIFIRE approved) using pressure plate glazing, screw-fixed or clip-on retaining beads, see examples below. The glass shall be glazed into the screen with ceramic fibre gasket on both faces and set on setting blocks which comprise of calcium silicate material (or similar) to determine the correct edge cover.

Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.



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PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in stainless steel framed screens for periods of 30 minutes integrity (continued)

This Certificate of Approval relates to the sizes of Pyroswiss glass shown in Figure 15 below, when used in conjunction with above systems. The aspect ratio and shape (rectilinear only) of the glass may be unlimited within these aperture dimensions.

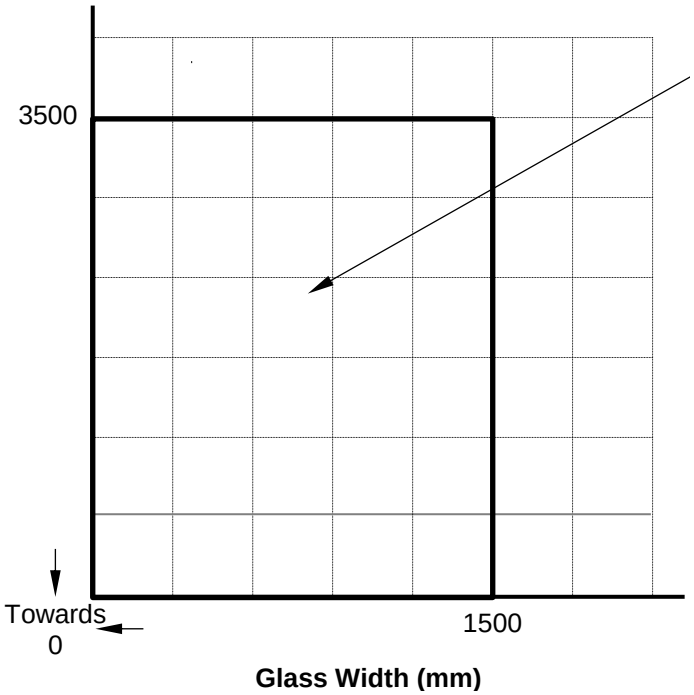

Figure 15. Maximum Permitted Glass Dimensions

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PYROSWISS FIRE RESISTING GLASS

Pyroswiss SBS DH30 glass for use in smoke screens to EN 12101-1:2006 Clause 5.2 Table 2 (utilising the fire conditions of EN 1363-1:2012) for a period of up to 30 minutes

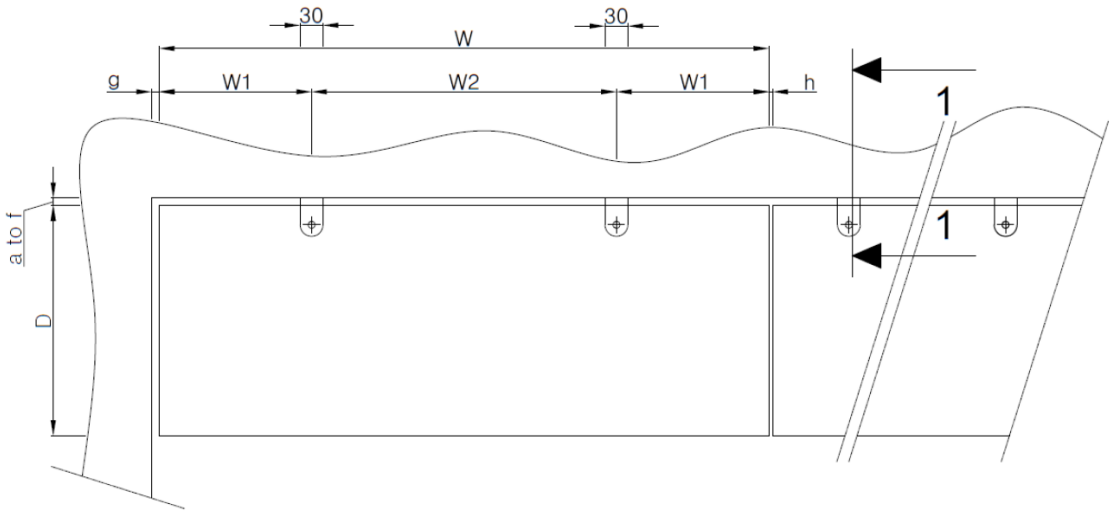
The glass shall be glazed utilising the specifications detailed in classification reports Efectis EFR-17-000880 and EFR-17-000881.

Pyroswiss glass may be used within smoke screen assemblies up to the maximum pane dimensions detailed within the table below:

Glass	Thickness (mm)	Performance to EN 12101-1:2006* (mins)	Maximum Height (mm)	Maximum Width (mm)	Maximum Area (m^2)
Pyroswiss SBS DH30	6 mm	up to 30	1100	2000	2.20
Pyroswiss SBS DH30	6 mm	up to 30	1600	1000	1.60

*When utilising the temperature/time curve for full fire conditions as defined in EN 1363-1:2012

- Smoke screens may be provided at unlimited lengths
- Glass can be with or without Safe film



(mm)	Landscape format	Portrait format
W	≤ 2000	≤ 1000
D	≤ 1100	≤ 1600
W1	100 ≤ W1 ≤ 350	100 ≤ W1 ≤ 250
W2	≤ 1300	≤ 500
a to f	10	
g	20	
h	5	

Please refer to manufacturer for full constructional details and design specification

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PYROSWISS FIRE RESISTING GLASS

Pyroswiss SBS D120 glass for use in smoke screens to EN 12101-1:2006 Clause 5.2 Table 1 (utilising the fire conditions of EN 1363-1:2012 for heat exposure at 600°C) for a period of up to 120 minutes

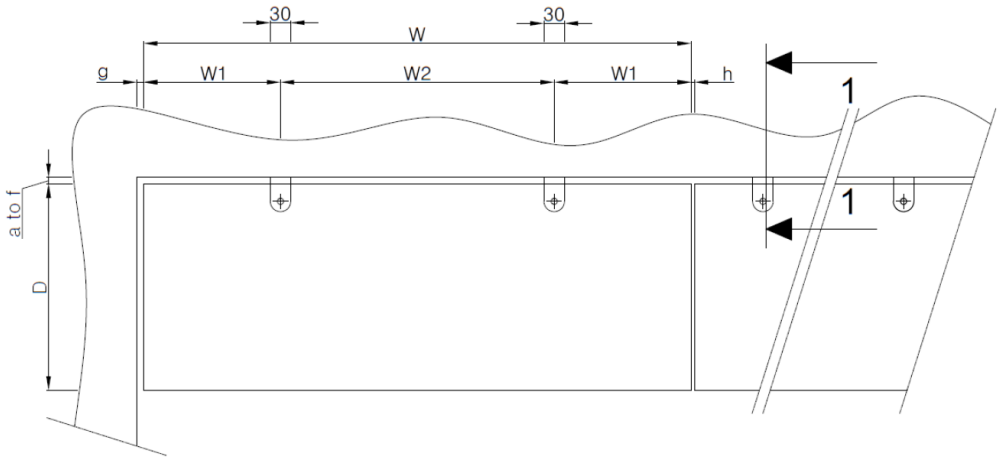
The glass shall be glazed utilising the specifications detailed in classification reports Efectis EFR-17-003183 and EFR-16-E-003143.

Pyroswiss glass may be used within smoke screen assemblies up to the maximum pane dimensions detailed within the table below:

Glass	Thickness (mm)	Performance to EN 12101-1:2006* (mins)	Maximum Height (mm)	Maximum Width (mm)	Maximum Area (m^2)
Pyroswiss SBS D120	6 mm	up to 120	1800	2500	4.50
Pyroswiss SBS D120	6 mm	up to 120	1500	2960	4.44

*When utilising the temperature/time curve as defined in EN 1363-1:2012 for heat exposure at 600°C as EN 12101-1:2006 Clause D.4.3.1.

- Smoke screens may be provided at unlimited lengths
- Glass can be with or without Safe film



(mm)	Landscape format	
W	≤ 2500	≤ 2960
D	≤ 1800	≤ 1500
W1	100 ≤ W1 ≤ 350	100 ≤ W1 ≤ 500
W2	≤ 1800	≤ 1960
a to f	10	
g	20	
h	5	

Please refer to manufacturer for full constructional details and design specification.

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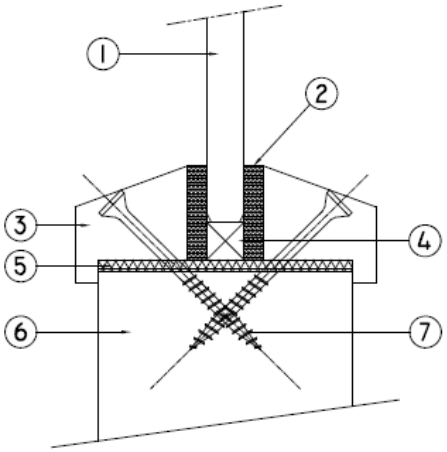
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass (8 mm minimum) in timber door leaves for periods of 60 minutes integrity

The glass shall be glazed within a previously fire tested or CERTIFIRE approved timber based doorset utilising the following basic specification:



1. PYROSWISS 8 to 15 mm (edge cover 12 mm)
2. 20 x 5.8 mm Intumescent Seals ISL 60 Plus glazing tape
3. 25 x 24 mm (h x w) hardwood glazing beads minimum density 650 kg/m3 (including 5 x 5 mm (h x w) bolection with 20° chamfer)
4. Non-combustile / hardwood setting blocks glass thickness x 8 x 25 mm (w x h x d) (2 pieces per glass, on the bottom only)
5. 54 x 2.5 mm Sealmaster Fireglaze Tape
6. Nominally 54 mm thick FD60 door leaf
7. 4 mm ø x 64 mm long steel screws at 150 mm centres (45° to glass)

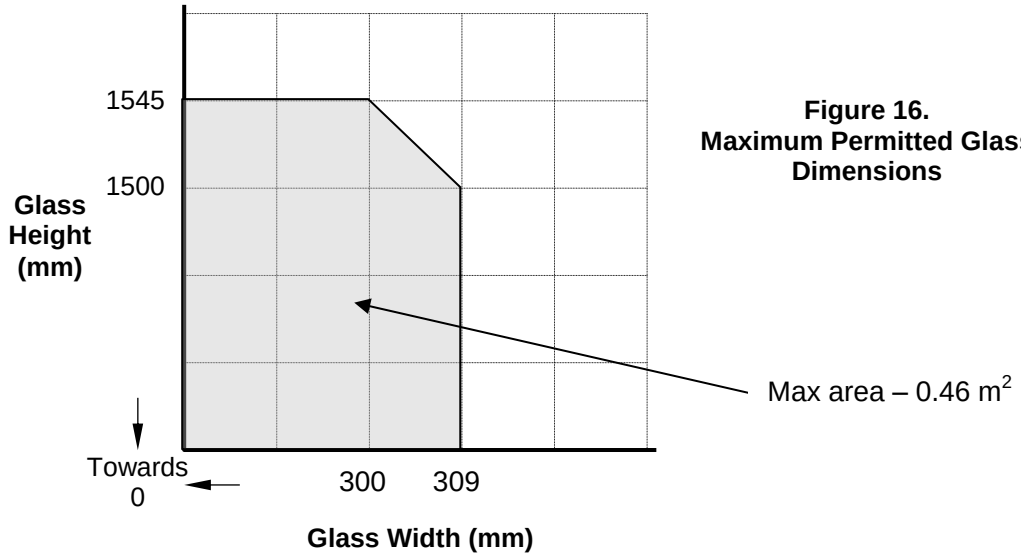


Figure 16.
Maximum Permitted Glass Dimensions

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PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in timber door leaves for periods of 60 minutes integrity

For this application, the following conditions shall apply:

1. The doorset, including door frame and associated building hardware, should have achieved at least 60 minutes integrity when tested, or subsequently assessed by one of the laboratories approved by CERTIFIRE as acceptable for this purpose, to BS 476: Part 22: 1987 or BS EN 1634-1..
2. If the proposed doorset is to be used in double-leaf configuration, the test or assessment evidence should be applicable to double-leaf configurations.
3. Likewise, if the proposed doorset is to be used in the unlatched configuration, the available evidence should be applicable to unlatched doorsets.
4. The proposed doorset should also have included a glazed aperture or apertures of the intended size, shape, area and number.
5. When used to glaze CERTIFIRE approved doorsets which have smaller apertures than allowed in this certificate, the aperture sizes specified in the doorset certificate shall take precedence.
6. The door leaves shall consist of timber faces coupled with timber or other cellulosic cores of minimum overall leaf thickness, 54 mm.
7. When an alternative CERTIFIRE approved glazing system is used, the system shall have been shown to be capable of including Pyroswiss glass. The maximum permitted aperture dimensions shall be as detailed below or included within the relevant CERTIFIRE certificate for the glazing system, whichever is the lesser.
8. Other CERTIFIRE approved glazing seals may be acceptable subject to the limitations within the relevant certificate. This Certificate of Approval relates to the sizes of Pyroswiss glass shown in Figure 16 above, when used in conjunction with above systems. The aspect ratio of the glass may be unlimited within these aperture dimensions.

Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.

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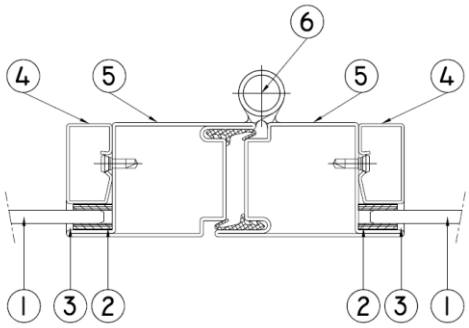
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in steel doorsets for periods of 60 minutes integrity

The glass shall be glazed within a previously fire tested (see example below) or a CERTIFIRE approved steel profiled door leaf framing system.

Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.



1. PYROSWISS 6 to 15 mm (edge-cover 14 mm)
2. Kerafix Flexlit (15 x 5 mm)
3. Fire silicone capping
4. Steel bead
5. Steel section
6. Weld-on hinge

The steel profiled door framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions. If the proposed doorset is to be used in double-leaf configuration, the test or assessment evidence should be applicable to double-leaf configurations. Likewise, if the proposed doorset is to be used in the unlatched configuration, the available evidence should be applicable to unlatched doorsets. When used to glaze CERTIFIRE approved doorsets which have smaller apertures than allowed in this certificate, the aperture sizes specified in the doorset certificate shall take precedence.

This Certificate of Approval relates to the sizes of Pyroswiss glass shown in Figure 17 below, when used in conjunction with the above system. The aspect ratio and shape (rectilinear only) of the glass may be unlimited within these aperture dimensions.

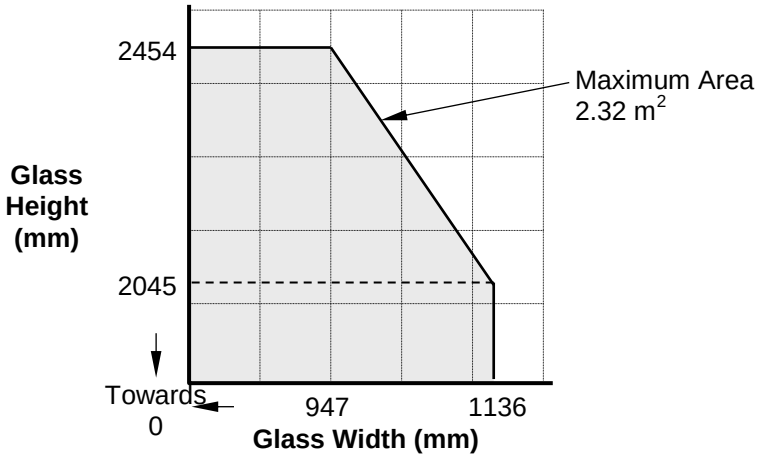


Figure 17. Maximum Permitted Glass Dimensions

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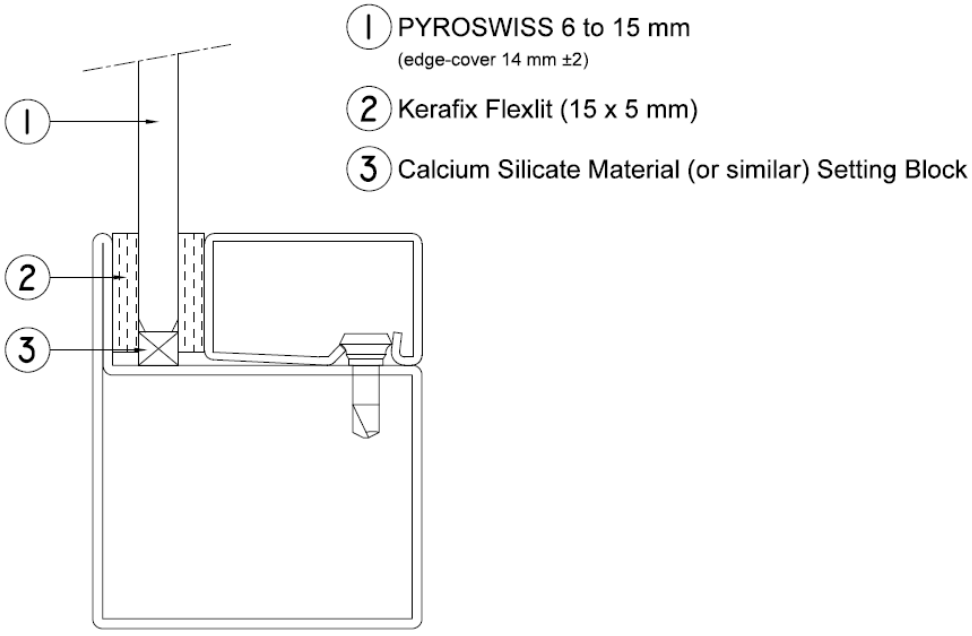
PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in steel framed screens for periods of 60 minutes integrity

The screens shall be no greater than 4000 mm high unless suitable tie backs and/or fire protected structural supports are provided.

The glass shall be installed into a previously tested framing system (which is covered appropriately by test or assessment evidence or is CERTIFIRE approved) using pressure plate glazing, screw-fixed or clip-on retaining beads, see examples below. The glass shall be glazed into the screen with Kerafix Flexit 5 mm x 15 mm gasket on both faces and set on setting blocks which comprise of calcium silicate material (or similar) to determine the correct edge cover.



Note: glass used in this application may be laminated, acid etched, tinted, patterned or screen printed subject to the conditions specified on Page 3 of this document.

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PYROSWISS FIRE RESISTING GLASS

Pyroswiss Glass in steel framed screens for periods of 60 minutes integrity (continued)

This Certificate of Approval relates to the sizes of Pyroswiss glass shown in Figure 18a and 18b below, when used in conjunction with above systems. The aspect ratio and shape (rectilinear only) of the glass may be unlimited within these aperture dimensions.

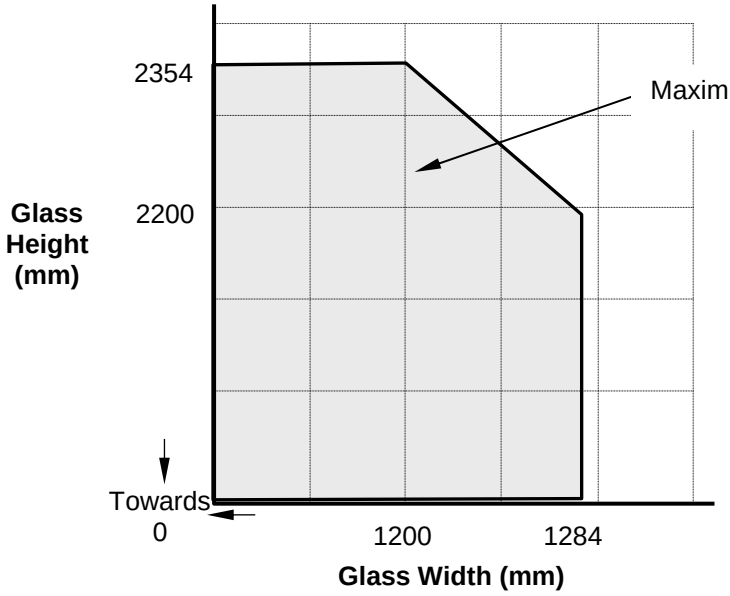

Figure 18a.
Maximum Permitted Glass Dimensions

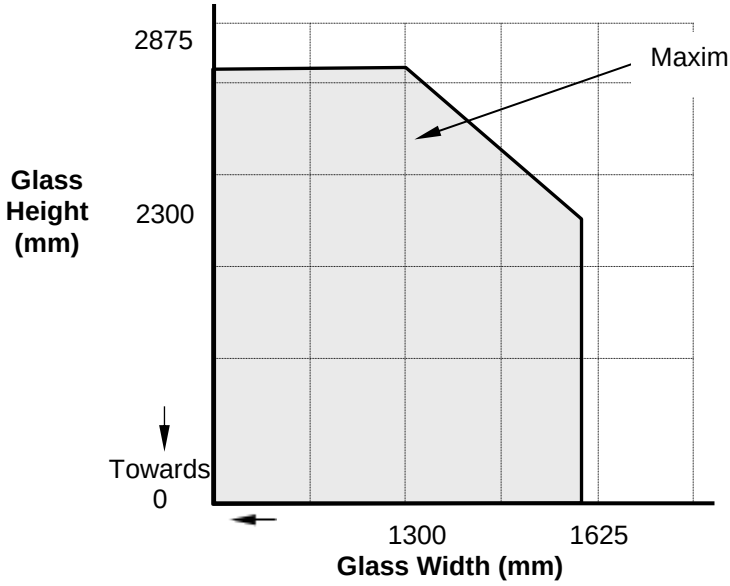

Figure 18b.
Maximum Permitted Glass Dimensions – <u>SCREW FIXED BEADS ONLY</u>

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