
CERTIFICATE OF APPROVAL

No CF 437

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

PYROGUARD UK LIMITED

International House, Millfield Lane, Haydock, WA11 9GA

Tel: 01942 710720 Fax: 01942 710730

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
'Pyroguard EI'
Fire Resisting Glass

TECHNICAL SCHEDULE
TS 25 Fire Resistant Glass,
Glazing Systems and Materials

Signed and sealed for and on behalf of Exova (UK) Limited trading as
Warrington Certification



Paul Duggan
Certification Manager



Issued: 20th February 2006
Revised: 15th November 2017
Valid to: 21st February 2021

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PYROGUARD UK LIMITED

Pyroguard EI Fire Resisting Glass

This Certificate of Approval relates to the fire resistance of Pyroguard UK Limited's 'Pyroguard EI' laminated glass products when used in the following applications, as defined in BS 476: Part 22: 1987 subject to the undermentioned conditions.

Glass Specification	Application	Fire Resistance Performance (mins)		Page No.
		Integrity	Insulation	
Pyroguard EI30 INT Pyroguard EI30 EXT	Timber framed screens	30	30	6-10
	Steel framed screens	30	30	11-13
Pyroguard EI30 INT Pyroguard EI30 EXT	Timber based doorsets	30	30	14-16
	Timber based doorsets	60	30	16
Pyroguard EI30 INT Pyroguard EI30 EXT	Steel based doorsets	30	30	18
	IGUs in Steel based doorsets	30	30	19
	Timber Framed Screens	60	30	20-21
	IGUs in Steel framed screens	30	30	22
	Timber framed screens	60	30	23
Pyroguard EI30 INT VI Pyroguard EI30 EXT VI	IGUs in timber framed screens	30	30	24
	IGUs in steel framed screens	30	30	25
Pyroguard EI30 EXT VI	IGUs in Steel based doorsets	30	30	26
	IGUs in Steel framed screens	30	30	27
Pyroguard EI60 INT Pyroguard EI60 EXT	Timber framed screens	60	60	28-30
Pyroguard EI60 INT Pyroguard EI60 EXT	Timber framed screens	60	60	31
Pyroguard EI60 INT Pyroguard EI60 EXT	IGUs in Timber framed screens	60	60	32
Pyroguard EI60 INT Pyroguard EI60 EXT	Timber based doorsets	60	60	33-34
Pyroguard EI60 INT	Timber joinery style doorsets	60	60	35
Pyroguard EI60 INT Pyroguard EI60 EXT	Steel framed screens	60	60	36

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Pyroguard EI Fire Resisting Glass (continued)

Pyroguard EI60 INT VI Pyroguard EI60 EXT VI	IGUs in timber framed screens	60	60	37
	IGUs in steel framed screens	60	60	38
Pyroguard EI60 INT VI Pyroguard EI60 EXT VI	IGUs in Steel framed screens	60	60	39
Pyroguard EI60 INT Pyroguard EI60 EXT	Steel Based Doorsets	60	60	40
Pyroguard EI60 INT VI Pyroguard EI60 EXT VI	IGU's in Steel Framed Screens	60	60	41
Pyroguard EI60 INT VI Pyroguard EI60 EXT VI in laminated glazed units	Horizontal steel framed screens	60	30/60	42
Pyroguard EI60 INT VI Pyroguard EI60 EXT VI in laminated glazed units	Horizontal steel framed screens	90	0	43
Pyroguard EI60 INT Pyroguard EI60 EXT	Steel based doorsets	60	30	45
Pyroguard EI60 INT Pyroguard EI60 EXT	Steel based doorsets	60	60	46
Pyroguard EI60 INT Pyroguard EI60 EXT	Steel based doorsets	60	60	47
Pyroguard EI60 EXT VI	IGU's in Steel based doorsets	60	60	48
Pyroguard EI60 INT VI Pyroguard EI60 EXT VI	IGUs in Steel based doorsets	60	60	49
Pyroguard EI30 INT Pyroguard EI30 EXT	Butt jointed steel screens	30	30	50
Pyroguard EI60 INT	Butt jointed timber screens	30	30	51
Pyroguard EI60 INT Pyroguard EI60 EXT	Butt jointed steel screens	60	60	52

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Pyroguard EI Fire Resisting Glass

This product is approved on the basis of:

- a) Initial type testing
- b) A design appraisal against TS25
- c) Product surveillance under BS EN ISO 9001: 2008
- d) Audit testing
- e) Inspection and surveillance of factory production control

The glass is approved in the following nominal thicknesses:

Glass Specification	Application	Fire Resistance Performance (mins)	
		Integrity	Insulation
Pyroguard EI30 INT	15 mm thick (internal)	30*	30
Pyroguard EI30 EXT	19 mm thick (external)	30*	30
Pyroguard EI30 INT VI or EI30 EXT VI	Dependent of construction unless specifically referenced	30*	30
Pyroguard EI60 INT	23 mm thick (internal)	60	60
Pyroguard EI60 EXT	27 mm thick (external)	60	60
Pyroguard EI60 INT VI or EI60 EXT VI	Dependent of construction unless specifically referenced	60	60

- may be used to provide 60 minutes integrity depending upon element of construction, as detailed later in this approval.

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

General Requirements

Where the glass is installed in a timber or steel framed screen, the orientation of the screen shall be no more than $\pm 10^\circ$ from the vertical.

The edge cover to each pane shall be no less than 15 mm minimum.

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Pyroguard EI Fire Resisting Glass

Options

All systems may include decorative self adhesive plant on beads to simulate transoms or may be acid etched/sandblasted on one face.

Self adhesive films/foils may be applied to either glass surface.

Insulating Glass Units (IGUs) may incorporate fixed aluminium blinds or Georgian bars within the cavity between the inner and outer glass layers.

Where a fire resistant IGU is required it can be manufactured from any single size glass listed in this certificate for a given fire performance. In this case, the IGU non fire glass must be glazed on the fire side and the IGU glazed into any previously fire tested or CERTIFIRE approved system.

For glazed screens incorporating butt jointed glass options (both 30 and 60 minutes), the butt joint maybe protected/covered with a plastic 'T' section decorative beading, nominally 19 mm by 15 mm.

Within this certification IGU airspace widths vary from 6mm to 29mm for different products. The airspace widths are interchangeable for any product within this range. For larger airspace width contact the owner of this Certification.

Where IGUs are approved and the fire resistant pane is glazed to the non-fire side, the non-fire resistant glass on the fire side can be float, toughened or laminated glass.

The non-fire glass counterpane within the IGU's options considered in this document can be of any thickness (subject to the conditions above and also subject to bead size being maintained).

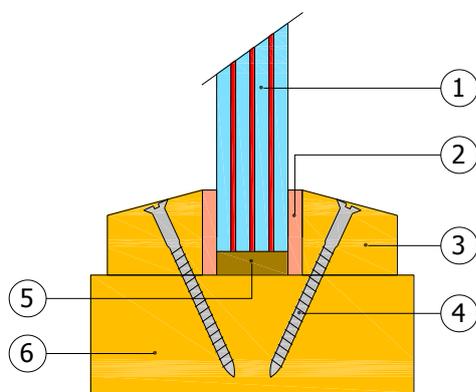
The fire resistant pane of the IGU construction can be used as a single glazed pane in any previously fire tested or CERTIFIRE approved system unless a specific application precludes this (as identified in the scope of this certificate)

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Pyroguard EI30 INT or Pyroguard EI30 EXT glass in timber framed screens for periods of 30 minutes integrity and insulation

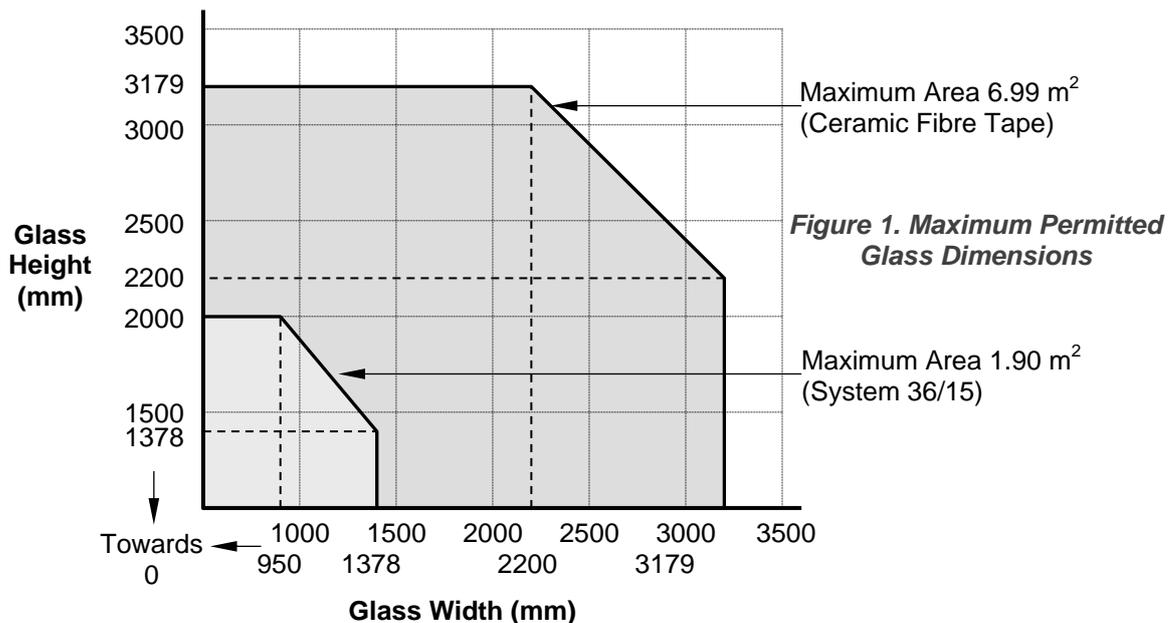
For this application the following conditions shall apply:

The glass shall be glazed utilising the following basic specification:



- ① Pyroguard EI30 INT or Pyroguard EI30 EXT
- ② 20 mm by 6 mm ceramic fibre based glazing tape (eg. 'K' tape) or Lorient System 36/15
- ③ 20 mm high by 23 mm wide square or chamfered (up to 10°) hardwood glazing beads, minimum density 640 kg/m³. (17 mm high for System 36/15)
- ④ 40 mm long steel screws at 400 mm centres (30° to glass)
- ⑤ Non-combustible setting blocks
- ⑥ 68 mm by 40 mm (minimum) hardwood framing sections, minimum density 640 kg/m³

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass shown in Figure 1 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

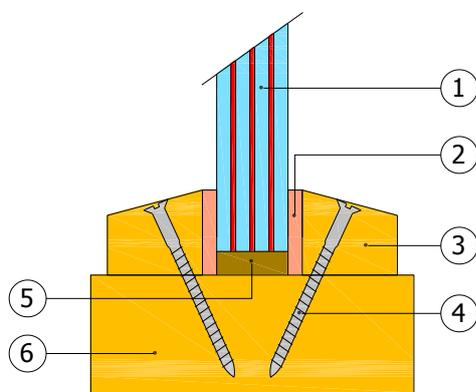


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Pyroguard EI30 INT or Pyroguard EI30 EXT glass in timber framed screens for periods of 30 minutes integrity and insulation continued

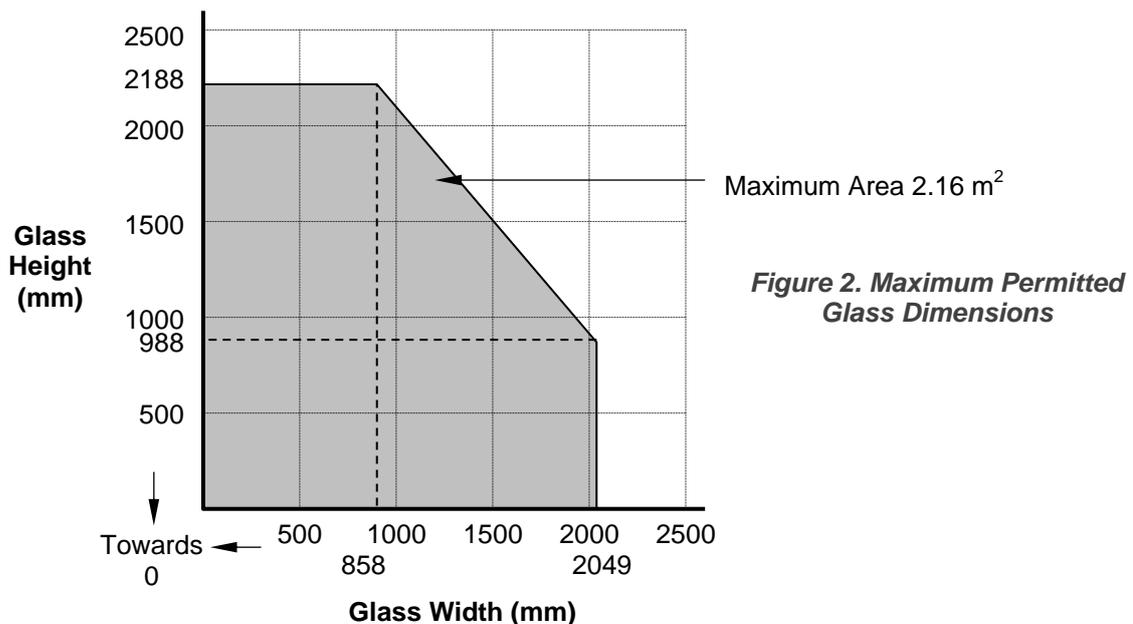
For this application the following conditions shall apply:

The glass shall be glazed utilising the following basic specification:



- ① Pyroguard EI30 INT or Pyroguard EI30 EXT
- ② ISL Therm-A-Glaze 45 (15 x 2 mm)
- ③ 25 mm high by 30 mm wide square or chamfered (up to 16°) hardwood glazing beads, minimum density 650 kg/m³.
- ④ 50 mm long steel screws at 145 mm centres (30° to glass)
- ⑤ Non-combustible setting blocks
- ⑥ 4 mm by 44 mm (minimum) hardwood framing sections, minimum density 650 kg/m³

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass shown in Figure 2 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

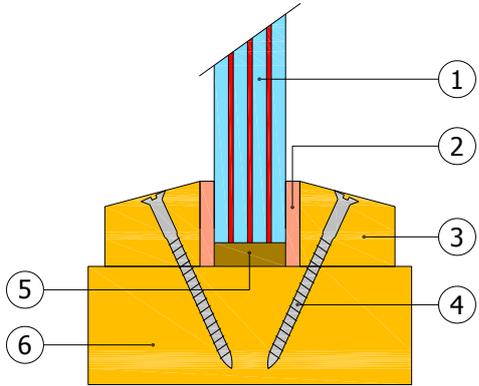


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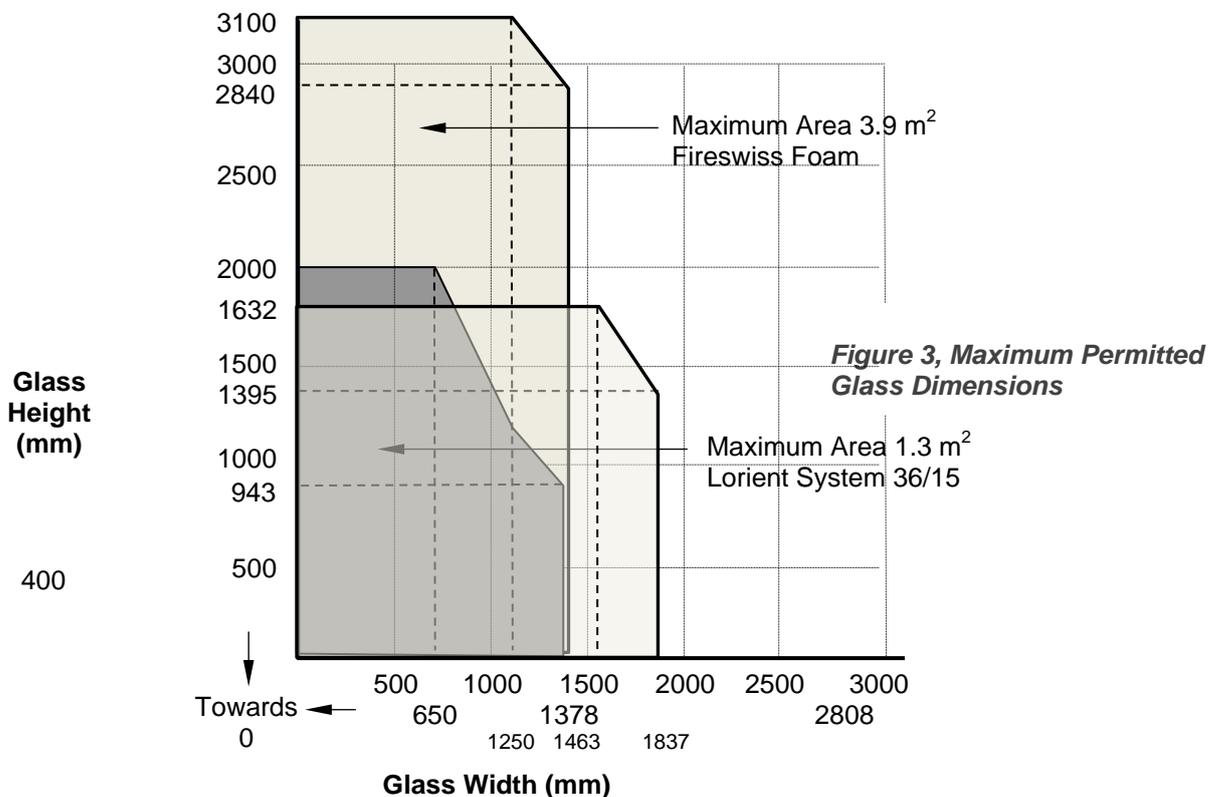
Pyroguard EI30 INT or Pyroguard EI30 EXT glass in softwood framed screens for periods of 30 minutes integrity and 30 minutes insulation

For this application the following conditions shall apply:

The glass shall be glazed utilising the following basic specification:

- | | |
|--|--|
|  | <ol style="list-style-type: none"> 1 Pyroguard EI30 INT or Pyroguard EI30 EXT glass 2 20 mm by 3 mm calcium magnesium silicate fibre based glazing tape or Lorient System 36/15 3 20 mm high by 28mm wide square or chamfered (up to 30°) softwood glazing beads, minimum density 450 kg/m³. (17 mm high for Lorient System 36/15) 4 60 mm long x 4.5 mm steel screws at 200 mm centres (30° to glass) 5 Hardwood or Non-combustible setting blocks 6 75 mm by 40mm (minimum) softwood framing sections, minimum density 450 kg/m³ |
|--|--|

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass shown in Figure 3 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

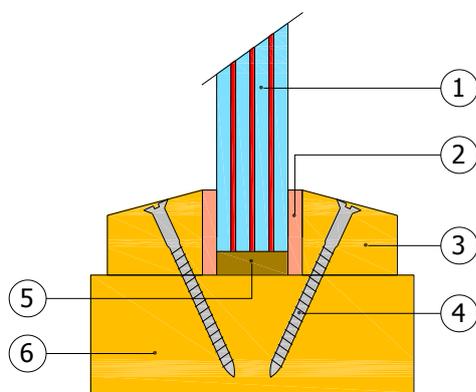


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Pyroguard EI30 INT or Pyroguard EI30 EXT glass in single pane softwood framed screens for periods of 30 minutes integrity

For this application the following conditions shall apply:

The glass shall be glazed utilising the following basic specification:



- ① Pyroguard EI30 INT or Pyroguard EI30 EXT glass
- ② 20 mm by 6 mm 'K tape', ceramic fibre based glazing tape
- ③ 20 mm high by 23 mm wide square or chamfered (up to 10°) hardwood glazing beads, minimum density 640 kg/m³. (17 mm high for System 36/15)
- ④ 50 mm long M4 steel screws at 200 mm centres (30° to glass)
- ⑤ Hardwood or Non-combustible setting blocks
- ⑥ 92 mm by 45 mm (minimum) softwood framing sections, minimum density 450 kg/m³

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT shown in Figure 4 below, when used in conjunction with the above system. The maximum permitted overall screen dimensions are 2506 mm wide and 2706 mm high.

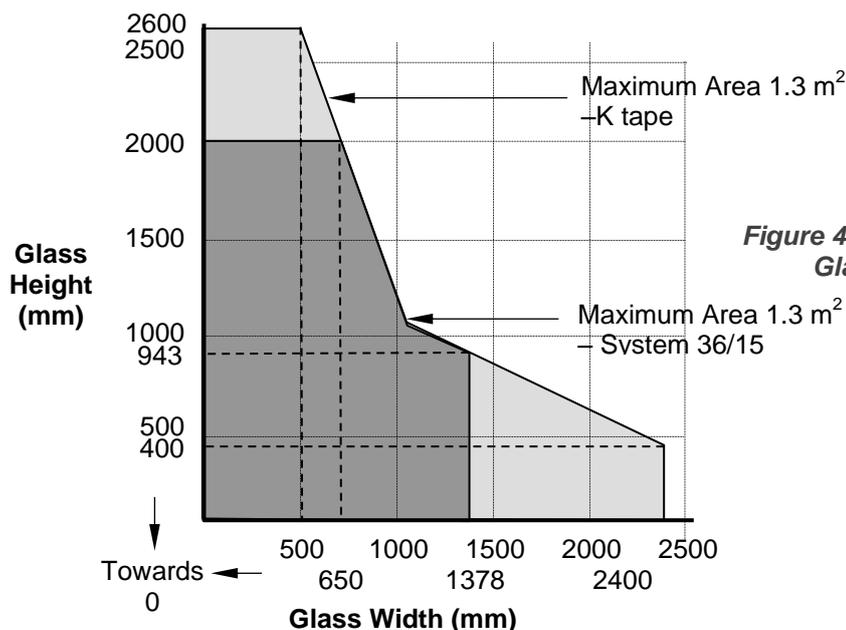


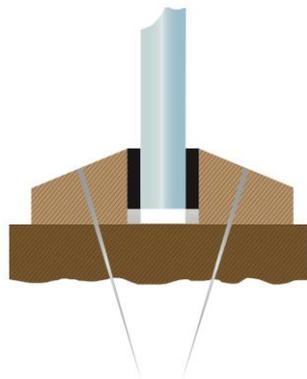
Figure 4. Maximum Permitted Glass Dimensions

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Pyroguard EI30 INT or Pyroguard EI30 EXT glass in hardwood framed screens for periods of 60 minutes integrity and 30 minutes insulation

For this application the following conditions shall apply:

- Pyroguard EI30 INT or Pyroguard EI30 EXT
- Sealmaster Intumescent Foam Glazing Tapee – 15 x 5mm uncompressed
- Screw fixings at 150 mm centres, (No. 8 x 50 mm, angled at 45° unless otherwise stated)
- Fixing to be 50mm from corners in all cases
- Hardwood framing members – 80 x 40mm (510kg/m³ min.)
- Hardwood glazing bead, 20x23mm, square or chamfered (510kg/m³ min.)



System may be used with and without non-combustible setting blocks

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass, shown in Figure 5 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

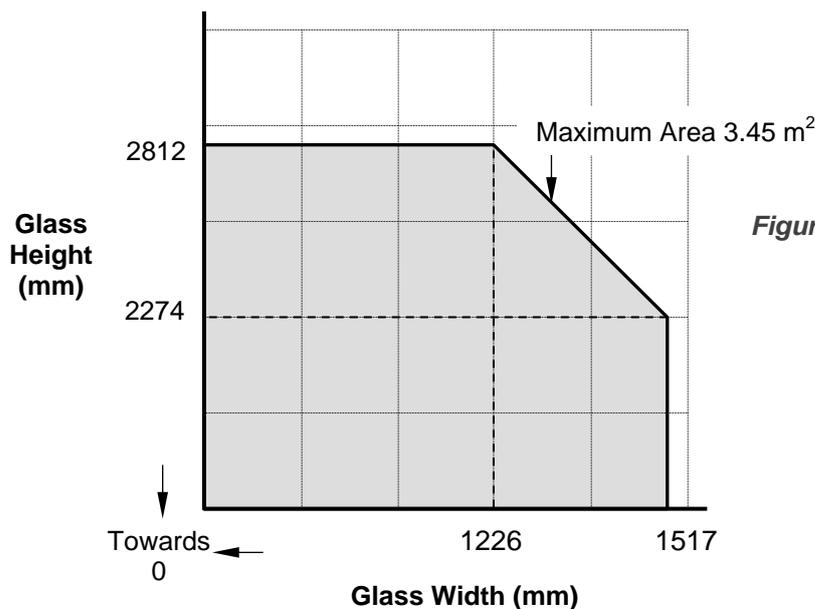


Figure 5. Maximum Permitted Glass Dimensions

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Pyroguard EI30 INT or Pyroguard EI30 EXT glass in steel framed screens for periods of 30 minutes integrity and insulation

For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI30 INT or Pyroguard EI30 EXT glass
- 20 mm by 6 mm ceramic fibre based glazing tape (eg. 'K' tape)
- The edge cover to each pane shall be no less than 15 mm minimum

The insulated steel framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass shown in Figure 6 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

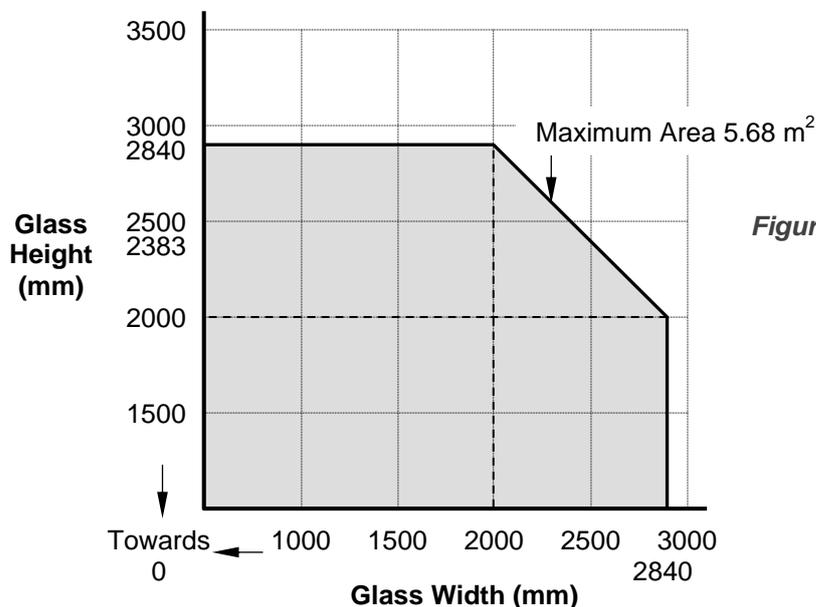


Figure 6. Maximum Permitted Glass Dimensions

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Pyroguard EI30 INT or Pyroguard EI30 EXT glass in steel framed screens for periods of 30 minutes integrity and insulation continued

For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI30 INT or Pyroguard EI30 EXT glass
- Proprietary 20 mm by 5 mm EPDM glazing seal
- The edge cover to each pane shall be no less than 15 mm minimum

The insulated steel framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass shown in Figure 7 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

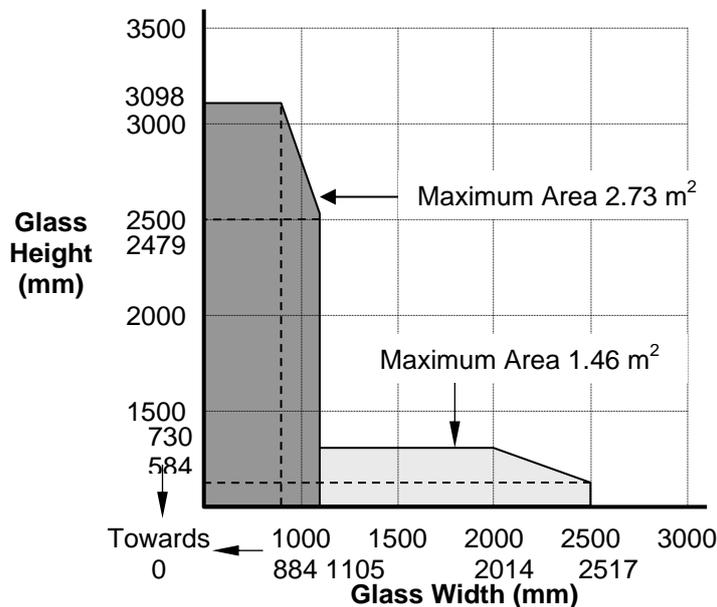


Figure 7. Maximum Permitted Glass Dimensions

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Pyroguard EI30 INT or Pyroguard EI30 EXT glass in steel framed screens for periods of 30 minutes integrity and 30 minutes insulation

For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI30 INT or Pyroguard EI30 EXT glass
- 20 mm by 3 mm calcium magnesium silicate fibre based glazing tape
- The edge cover to each pane shall be no less than 15 mm minimum

The insulated steel framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass shown in Figure 8 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

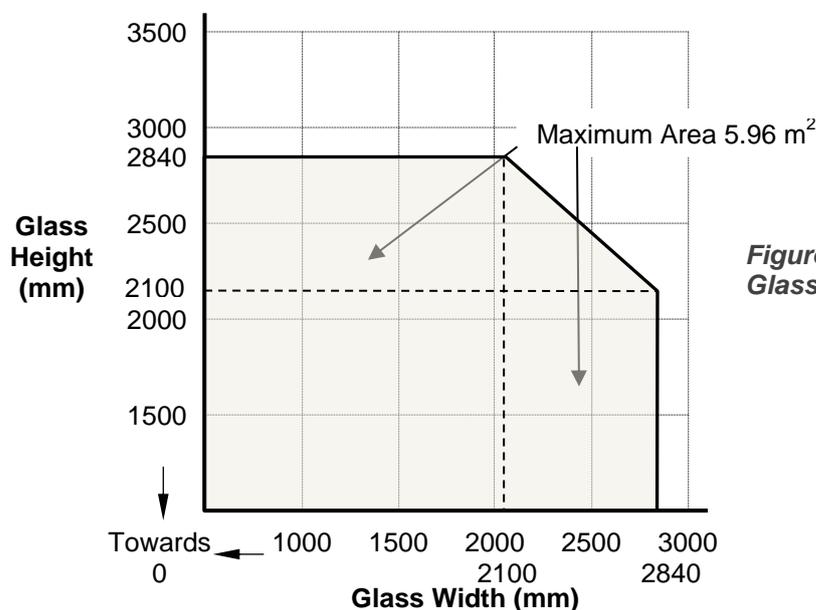


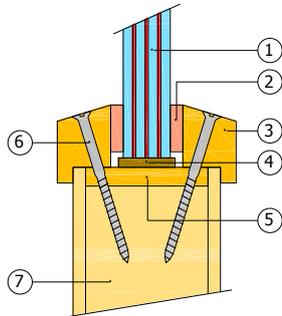
Figure 8, Maximum Permitted Glass Dimensions

CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI30 INT or Pyroguard EI30 EXT, glass in timber based doorsets for periods of 30 minutes integrity and insulation

For this application the following conditions shall apply:

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



- 1 Pyroguard EI30 INT or Pyroguard EI30 EXT glass
- 2 Glazing seal (see below)
- 3 Hardwood glazing beads (or as specified on Pages 8 & 9, see below)
- 4 Non-combustible/hardwood setting blocks
- 5 Liner (see below)
- 6 Fixings (see below)
- 7 Nominally 44 mm thick FD30 door leaf (or thicker if required to accommodate glazing beads)

The doorset shall be CERTIFIRE approved or have test evidence for the inclusion of apertures of the proposed dimensions.

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass shown in the table below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

Glazing System	Maximum Pane dimension – height (mm)	Maximum Pane dimension – width (mm)	Maximum Pane Area (m ²)
Hodgsons Sealants Firestrip 30 ⁽¹⁾	875	758	0.57
Lorient Flexible Figure 1 glazing system ⁽²⁾	1236	750	0.72
Lorient Flexible Figure 1 glazing system ⁽³⁾	1353	800	0.95
Lorient System 36/15 ⁽⁴⁾	1800	600	1.08
Pyroplex 8193 glazing system ⁽⁵⁾	600	600	0.36
Pyroplex 30049 glazing system ⁽⁶⁾	750	750	0.56
Pyroplex 30054 glazing system ⁽⁷⁾	750	750	0.56
Pyroplex 8492 glazing system ⁽⁸⁾	403	626	0.25
Sealmaster Therm-A-Strip 10 mm x 2 mm ⁽⁹⁾	2125	800	0.64
Sealmaster G30 glazing gasket between beads and glass ⁽⁹⁾	2125	610	0.64
Sealmaster G30 glazing gasket in Pyroguard UK Ltd bead system ⁽¹⁰⁾	800	610	0.49
Lorient LP1502, 2 mm thick x 15 mm interdens sheet ⁽¹¹⁾	2794	1051	2.35
Sealmaster Intumescent Foam Glazing Tape, 20x5mm uncompressed ⁽¹²⁾	1800	600	1.08

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PYROGUARD UK LIMITED

Pyroguard EI30 INT or Pyroguard EI30 EXT glass in timber based doorsets for periods of 30 minutes integrity and insulation (continued)

- 1) The glazing beads shall be of Sapele, or equivalent or higher density (610 kg/m^3), sections, 22mm wide by 21mm high, chamfered by approximately 13° and fixed using 1.5 mm diameter, 50mm long steel pins at a maximum of 100mm centres and angled to pass under the face of the glass.
- 2) The glazing beads shall be of minimum density 550 kg/m^3 , sections, 22mm wide by 15 mm high with a 5 mm by 5 mm bolection return, chamfered by approximately 15° and fixed using 1.5 mm diameter, 40mm long steel pins or screws at a maximum of 150mm centres and angled to pass under the face of the glass. A secondary hardwood liner (integral or separate) or a LX4402 intumescent liner shall be used to line apertures cut within flaxboard substrates.
- 3) The glazing beads shall be of minimum density 650 kg/m^3 hardwood or 750 kg/m^3 MDF, sections, 25mm wide by 20 mm high with a 10 mm by 6 mm bolection return, chamfered by approximately 30° and fixed using 40mm long steel screws at a maximum of 150mm centres and angled at 45° . A secondary 38 mm x 6 mm thick hardwood liner (min. density 650 kg/m^3) shall be used to line apertures cut within all substrates.
- 4) The glazing beads shall be of minimum density 550 kg/m^3 , sections, 18.5 mm wide by 15 mm high with a 5 mm by 5 mm bolection return, chamfered by approximately 15° and fixed using 1.5 mm diameter, 45mm long steel screws at a maximum of 200mm centres and angled to pass under the face of the glass. A secondary hardwood liner (integral or separate) or a LX4402 intumescent liner shall be used to line apertures cut within flaxboard substrates.
- 5) The glazing beads shall be of minimum density 630 kg/m^3 , sections, 20mm wide by 14.5 mm high with a 5 mm by 5 mm bolection return, chamfered by approximately 20° and fixed using, 50 mm long steel screws at a maximum of 150mm centres and angled at $30\text{-}45^\circ$. A secondary 6 mm thick hardwood liner (min. density 630 kg/m^3) shall be used to line apertures cut within all substrates.
- 6) The glazing beads shall be of minimum density 630 kg/m^3 , sections, 20mm wide by 14.5 mm high with a 5 mm by 5 mm bolection return, chamfered by approximately 20° and fixed using, 36 mm long steel screws at a maximum of 150mm centres and angled at $30\text{-}45^\circ$. A secondary 6 mm thick hardwood liner (min. density 630 kg/m^3) shall be used to line apertures cut within all substrates.
- 7) The glazing beads shall be of minimum density 630 kg/m^3 , sections, 20mm wide by 14.5 mm high with a 5 mm by 5 mm bolection return, chamfered by approximately 20° and fixed using, 50 mm long steel screws at a maximum of 150mm centres and angled at $30\text{-}45^\circ$. A secondary 6 mm thick hardwood liner (min. density 630 kg/m^3) shall be used to line apertures cut within all substrates.

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Pyroguard EI30 INT or Pyroguard EI30 EXT glass in timber based doorsets for periods of 30 minutes integrity and insulation (continued)

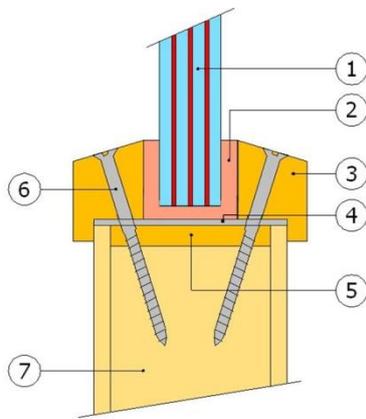
- 8) The glazing beads shall be of minimum density 630 kg/m³, sections, 20 mm wide by 14.5 mm high with a 5 mm by 5 mm bolection return, chamfered by approximately 20° and fixed using, 45 mm long steel screws at a maximum of 150mm centres and angled at 30-45°.
- 9) The glazing beads shall be hardwood of minimum density 500 kg/m³, sections, 25 mm wide by 23 mm high with a 5 mm by 5 mm bolection return, chamfered by approximately 15° and fixed using, 38 mm long steel pins or screws at a maximum of 150mm vertical and 100 mm horizontal centres and angled at 15°. A secondary 6 mm thick hardwood liner (min. density 500 kg/m³) shall be used to line apertures cut within all substrates.
- 10) Asymmetrical beading system as shown in Pyroguard UK Ltd Drawing no. G20011-01 (01/07/04)
- 11) The glazing beads shall be of minimum density 477 kg/m³, sections, 25 mm wide by 33 mm high with a 5 mm by 5 mm bolection return, square and fixed using, 50 mm long by 1.7 mm diameter nails at a maximum of 150mm centres and angled at 45°.
- 12) Sealmaster Foam Glazing Tape at 20x5mm dimension. Hardwood glazing beads, min. density 620kg/m³, 20° chamfer, 20 mm high with a 5x5mm minimum bolection fixed using Ø2mm x 50 mm long steel pins or No. 8 x 50 mm long screws at 150 mm maximum centres and 50mm from corners fixed at 45° to glass.

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Pyroguard EI30 INT or Pyroguard EI30 EXT, glass in timber based doorsets for periods of 60 minutes integrity and 30 minutes insulation

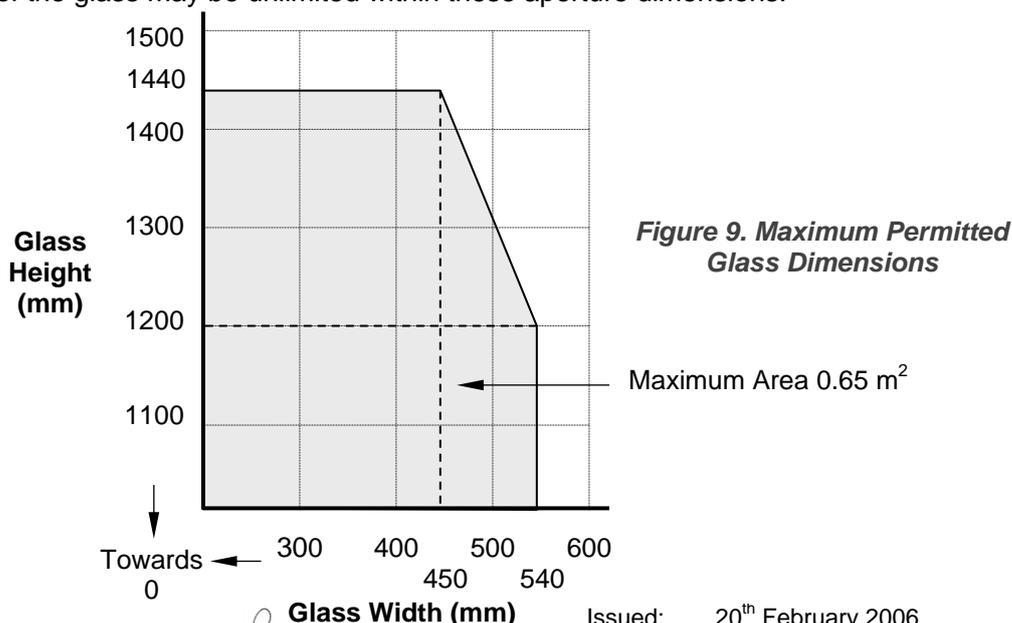
For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested (with test evidence for the inclusion of apertures of the proposed dimensions) or CERTIFIRE approved timber based doorset utilising the following basic specification:



- ① Pyroguard EI30 INT or Pyroguard EI30 EXT glass
- ② Lorient System 36/15 glazing seal
- ③ Hardwood glazing beads 33 mm high by 21 mm wide including 13 mm high by 5 mm wide bolection return. Min. density 650 kg/m³
- ④ Palusol liner (full width)
- ⑤ Hardwood liner 10 mm thick
- ⑥ 8 x 50 mm screws at 45° and minimum 150 mm centres. Maximum distance from corners 50 mm.
- ⑦ Nominally 54 mm thick FD60 door leaf (or thicker if required to accommodate glazing beads)

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass shown in Figure 9 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



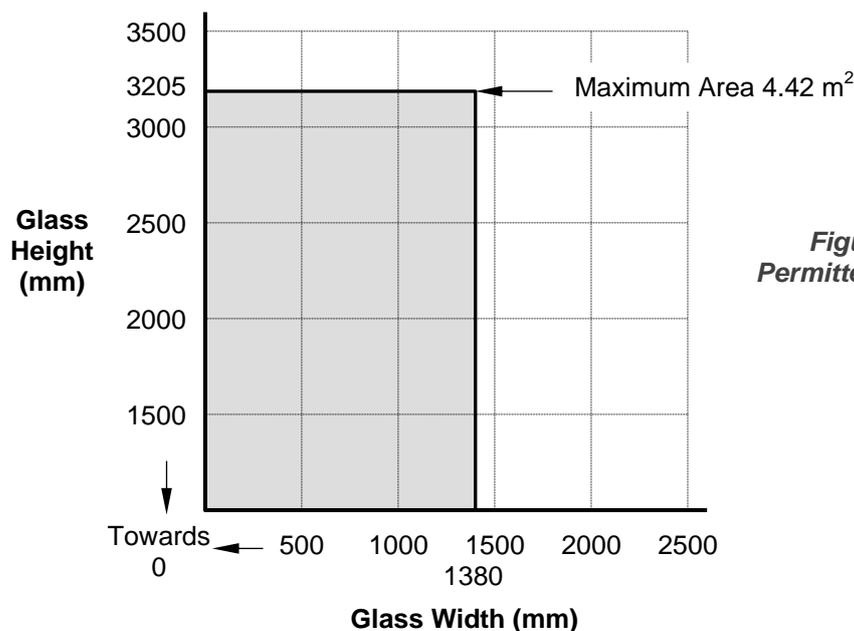
CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI30 INT or Pyroguard EI30 EXT glass in steel based doorsets for periods of 30 minutes integrity and insulation

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 and insulation when tested, or subsequently assessed by one of the laboratories approved by CERTIFIRE as acceptable for this purpose, to BS 476: Part 22: 1987.
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.

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass shown in Figure 10 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI30 INT VI or Pyroguard EI30 EXT VI, Insulated Glazed Units in steel based doorsets for periods of 30 minutes integrity and insulation

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 and insulation when tested, or subsequently assessed by one of the laboratories approved by CERTIFIRE as acceptable for this purpose, to BS 476: Part 22: 1987.
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.

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI30 INT VI or Pyroguard EI30 EXT VI IGU, comprising Pyroguard EI30 INT or Pyroguard EI30 EXT, an 11 mm air gap and 9 mm laminated float glass
- The edge cover to each pane shall be no less than 15 mm minimum

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT VI or Pyroguard EI30 EXT VI IGU shown in Figure 11 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

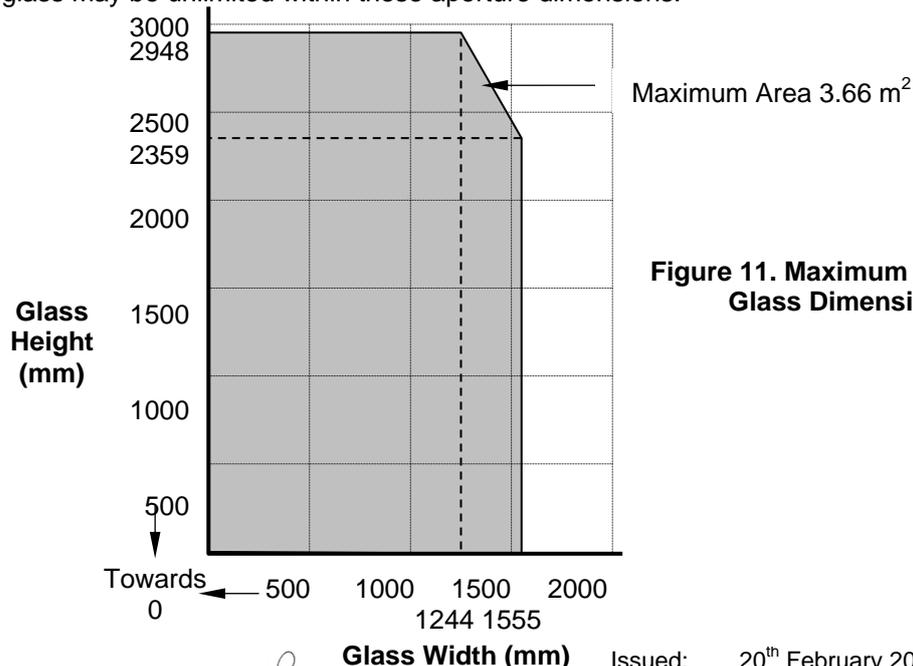


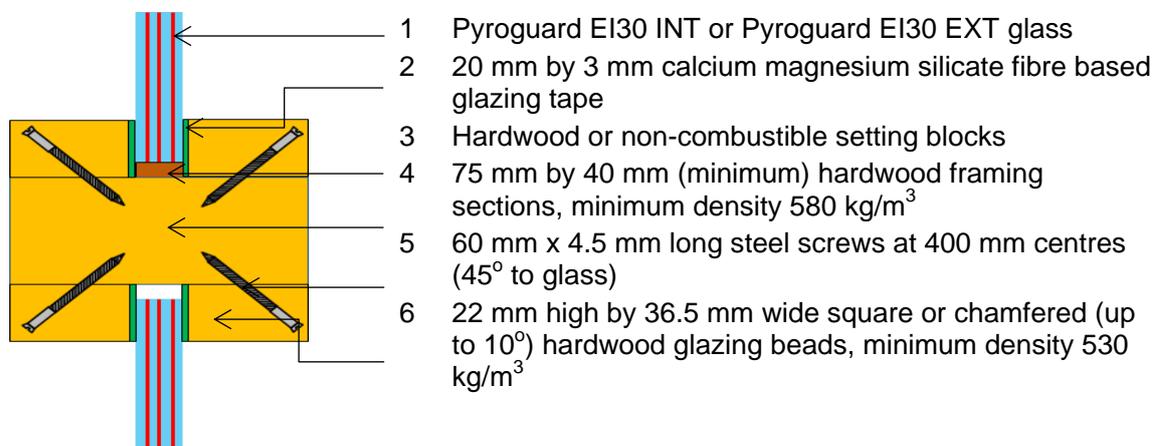
Figure 11. Maximum Permitted Glass Dimensions

CERTIFICATE No CF 437 PYROGUARD UK LIMITED

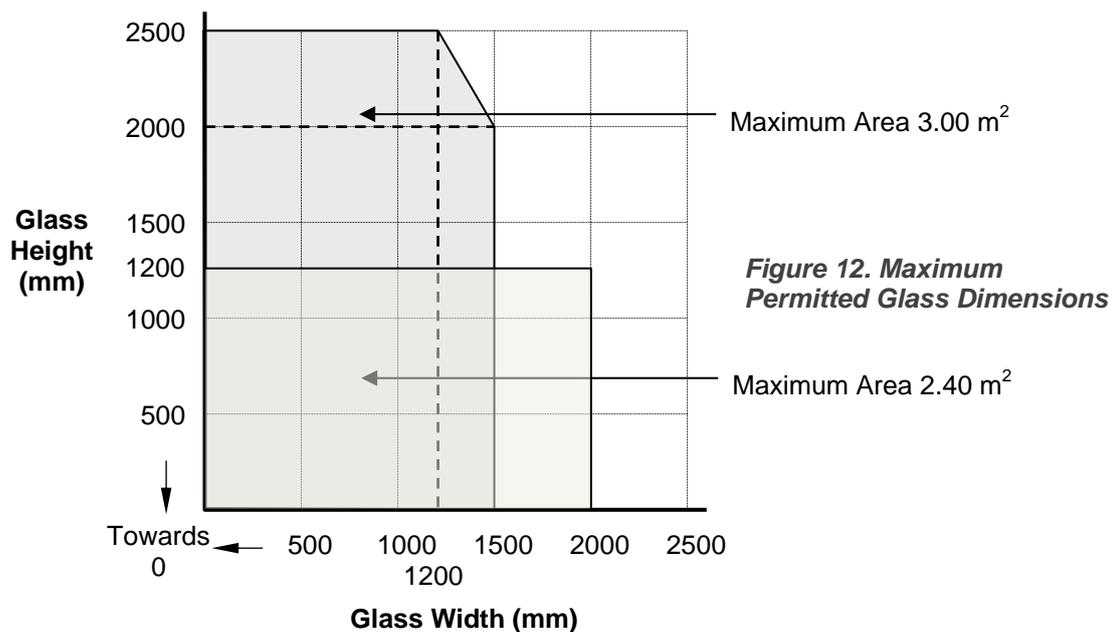
Pyroguard EI30 INT or Pyroguard EI30 EXT glass in hardwood framed screens for periods of 60 minutes integrity and 30 minutes insulation

For this application the following conditions shall apply:

The glass shall be glazed utilising the following basic specification:



This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass, shown in Figure 12 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



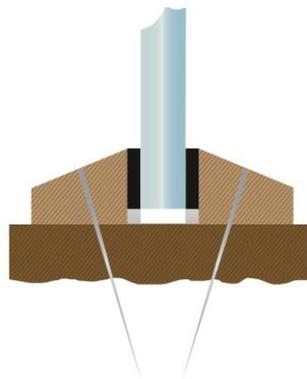
CERTIFICATE No CF 437

PYROGUARD UK LIMITED

Pyroguard EI30 INT or Pyroguard EI30 EXT glass in hardwood framed screens for periods of 60 minutes integrity and 30 minutes insulation

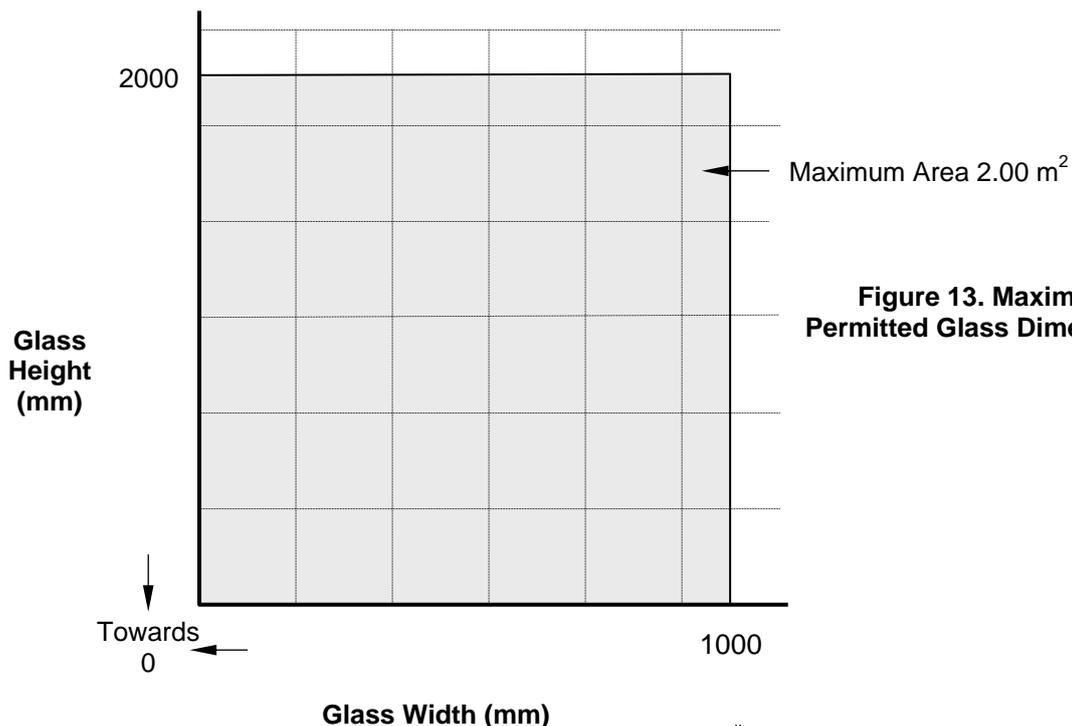
For this application the following conditions shall apply:

- Pyroguard EI30 INT or Pyroguard EI30 EXT
- Sealmaster FIREGLAZE Tape as glazing tape – 25 x 2.5mm
- Fixings at 150 mm centres, (No. 8 x 63 mm, angled at 45° unless otherwise stated)
- Fixing to be 50mm from corners in all cases
- Hardwood framing members – 92 x 45mm (640kg/m³ min.)
- Hardwood Glazing Bead, 22x36mm, square or chamfered (640kg/m³ min.)



System may be used with and without non-combustible setting blocks

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass, shown in Figure 13 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI30 INT VI or Pyroguard EI30 EXT VI, Insulated Glazed Units in steel framed screens for periods of 30 minutes integrity and insulation

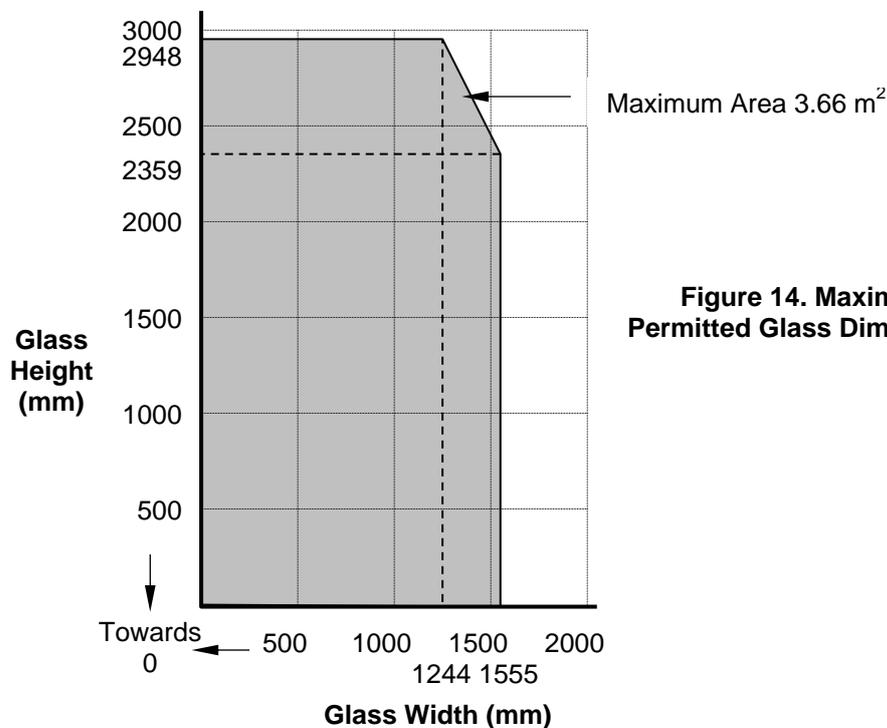
For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI30 INT VI or Pyroguard EI30 EXT VI insulating glass units, comprising Pyroguard EI30 INT or Pyroguard EI30 EXT an 11 mm air gap and 9 mm laminated float glass
- The edge cover to each pane shall be no less than 15 mm minimum

The insulated steel framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT VI or Pyroguard EI30 EXT VI shown in Figure 14 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

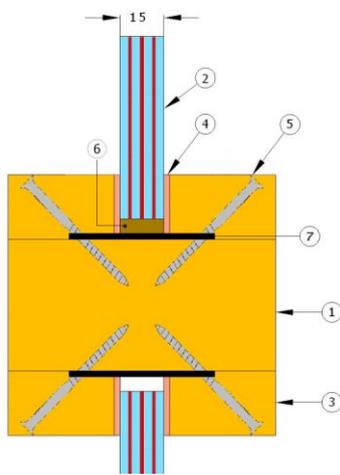


CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI30 INT or Pyroguard EI30 EXT glass in timber framed screens for periods of 60 minutes integrity and 30 minutes insulation

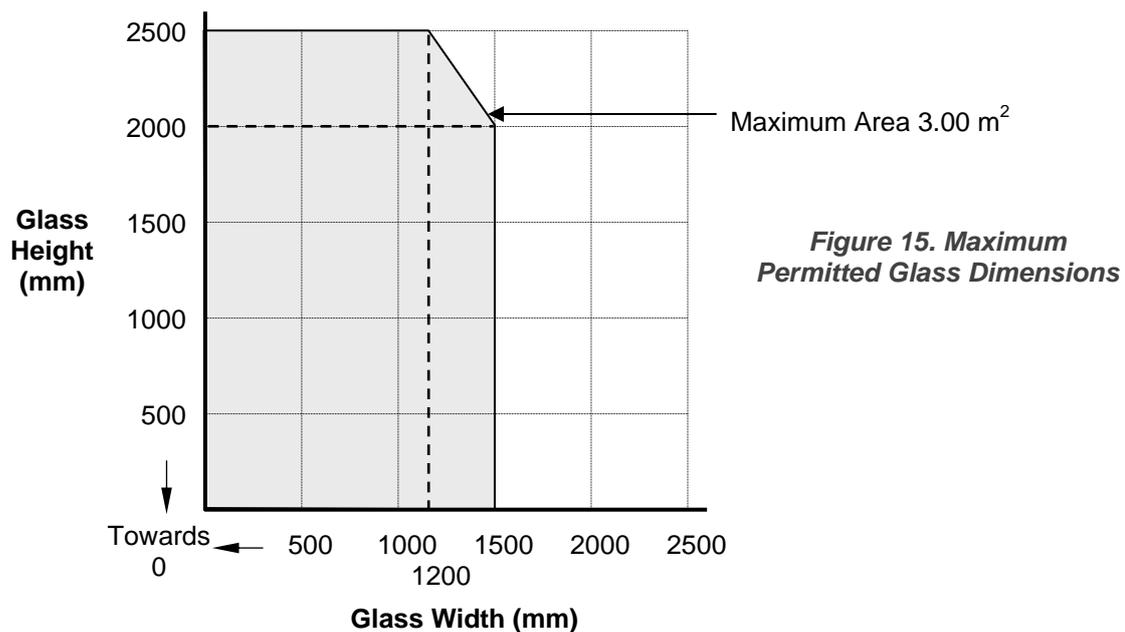
For this application the following conditions shall apply:

The glass shall be glazed utilising the following basic specification:



- ① 92 mm by 45 mm (minimum) hardwood framing sections, minimum density 580 kg/m³
- ② Pyroguard EI30 INT or Pyroguard EI30 EXT glass
- ③ 22 mm high by 36.5 mm wide square or chamfered (up to 10°) hardwood glazing beads, minimum density 580 kg/m³
- ④ 20 mm by 3 mm ceramic fibre based glazing tape (eg. 'K' tape)
- ⑤ 50 mm long steel screws at 200 mm centres (45° to glass)
- ⑥ Hardwood or non-combustible setting blocks
- ⑦ Sealmaster GL60 Liner (50 x 2 mm)

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT glass shown in Figure 15 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

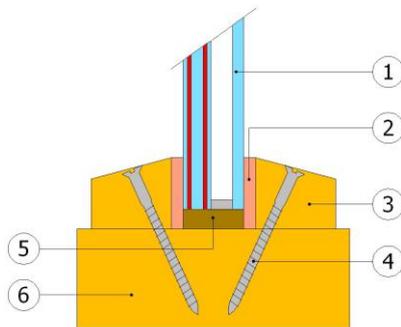


CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI30 INT VI or Pyroguard EI30 EXT VI, Insulated Glazed Units in timber framed screens for periods of 30 minutes integrity and insulation

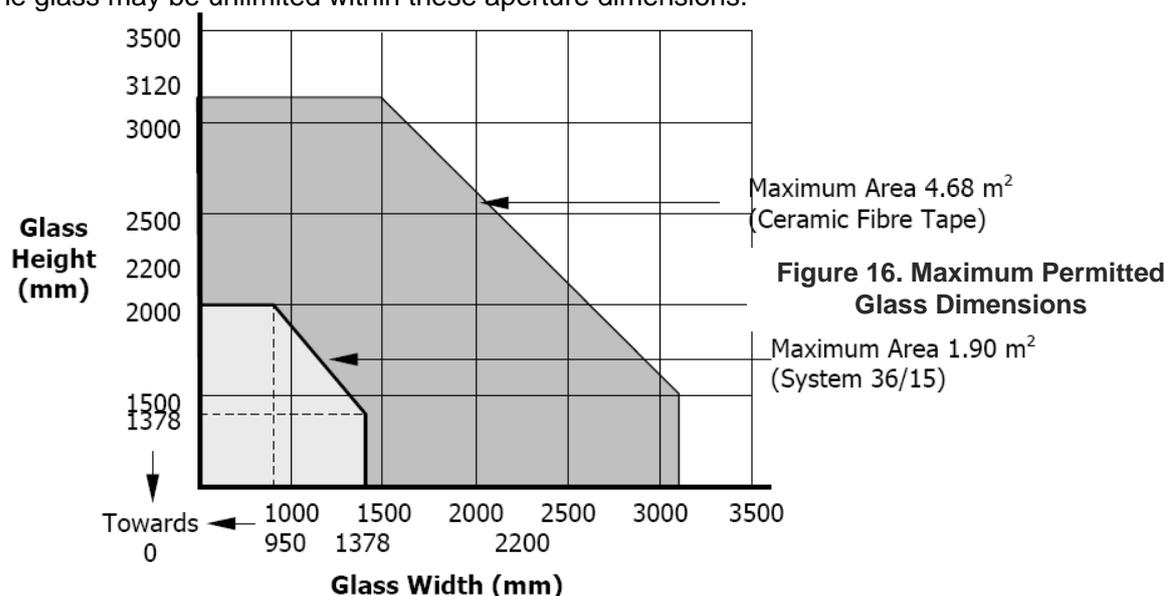
For this application the following conditions shall apply:

The glass shall be glazed utilising the following basic specification:



- ① Pyroguard EI30 INT VI or Pyroguard EI30 EXT VI IGU, comprising Pyroguard EI30 INT or Pyroguard EI30 EXT glass 6–20 mm air gap and 4–16mm non-fire rated counterpane
- ② 20 mm by 6 mm ceramic fibre based glazing tape (eg. 'K' tape) or Lorient System 36/15
- ③ 20 mm high by 23 mm wide square or chamfered (up to 10°) hardwood glazing beads, minimum density 640 kg/m³. (17 mm high for System 36/15)
- ④ 40 mm long steel screws at 400 mm centres (30° to glass)
- ⑤ Non-combustible setting blocks
- ⑥ 83 mm by 40 mm (minimum) hardwood framing sections, minimum density 640 kg/m³ non-combustible setting blocks

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT VI or Pyroguard EI30 EXT VI shown in Figure 16 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI30 INT VI or Pyroguard EI30 EXT VI, Insulated Glazed Units in steel framed screens for periods of 30 minutes integrity and insulation

For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI30 INT VI or Pyroguard EI30 EXT VI IGU, comprising Pyroguard EI30 INT or Pyroguard EI30 EXT, an 8 mm air gap and 7 mm laminated float glass
- The edge cover to each pane shall be no less than 15 mm minimum

The insulated steel framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT VI or Pyroguard EI30 EXT VI shown in Figure 17 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

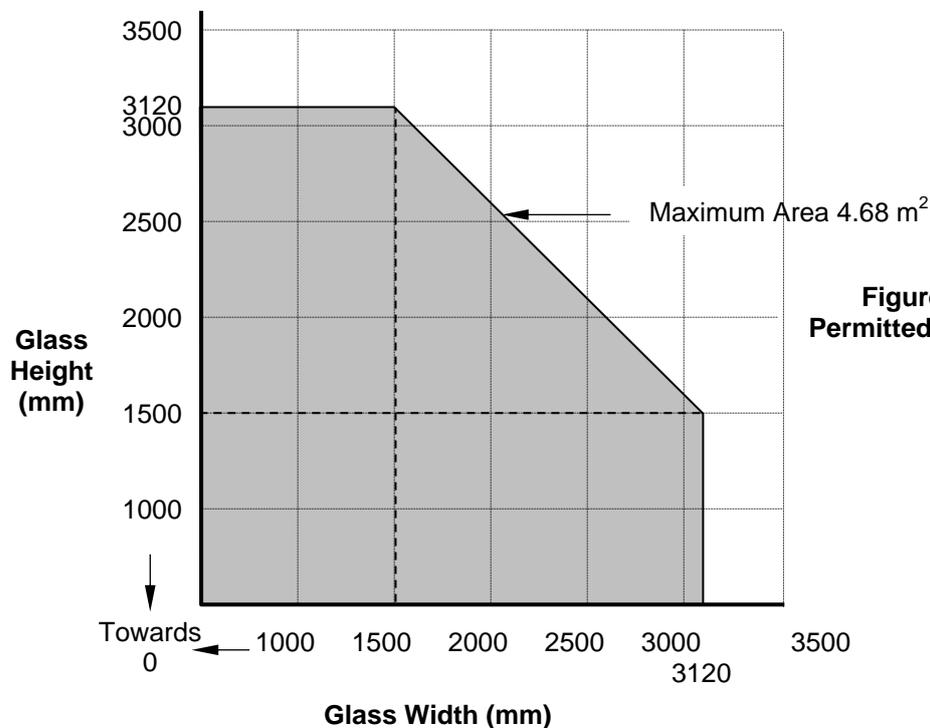


Figure 17. Maximum Permitted Glass Dimensions

CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI30 EXT VI, glass in steel based doorsets for periods of 30 minutes integrity and insulation

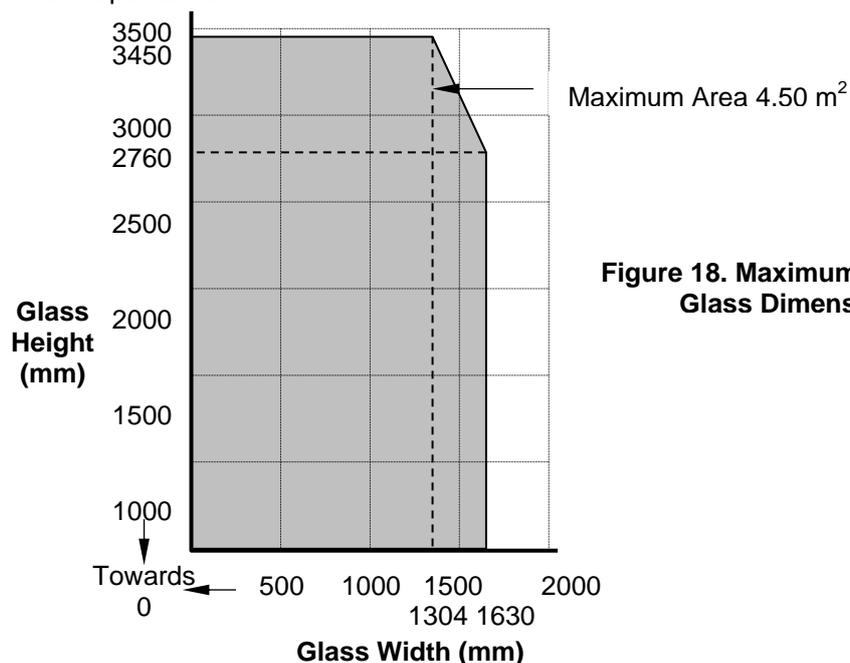
For this application the following conditions shall apply:

1. The doorset, including door frame and associated building hardware, should have achieved at least 30 minutes integrity and insulation when tested, or subsequently assessed by one of the laboratories approved by CERTIFIRE as acceptable for this purpose, to BS 476: Part 22: 1987.
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.

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI30 EXT VI glass, comprising Pyroguard EI30 EXT and 10 mm '55.8' glass
- The edge cover to each pane shall be no less than 15 mm minimum

This Certificate of Approval relates to the sizes of Pyroguard EI30 EXT VI glass shown in Figure 18 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI30 EXT VI, glass in steel framed screens for periods of 30 minutes integrity and insulation

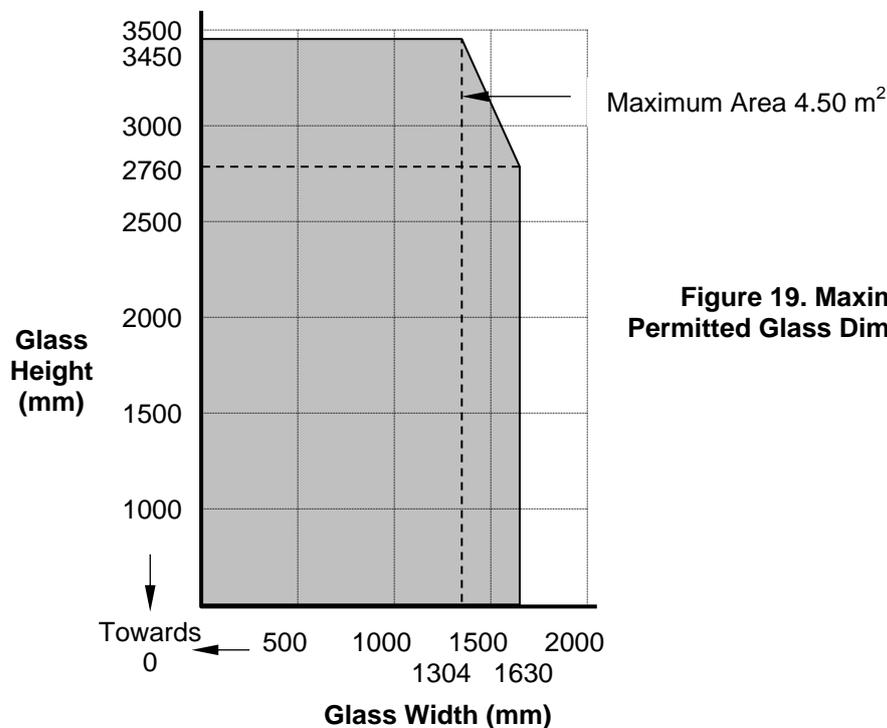
For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI30 EXT VI glass, comprising Pyroguard EI30 EXT and 10 mm '55.8' glass
- The edge cover to each pane shall be no less than 15 mm minimum

The insulated steel framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

This Certificate of Approval relates to the sizes of Pyroguard EI30 EXT VI glass shown in Figure 19 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

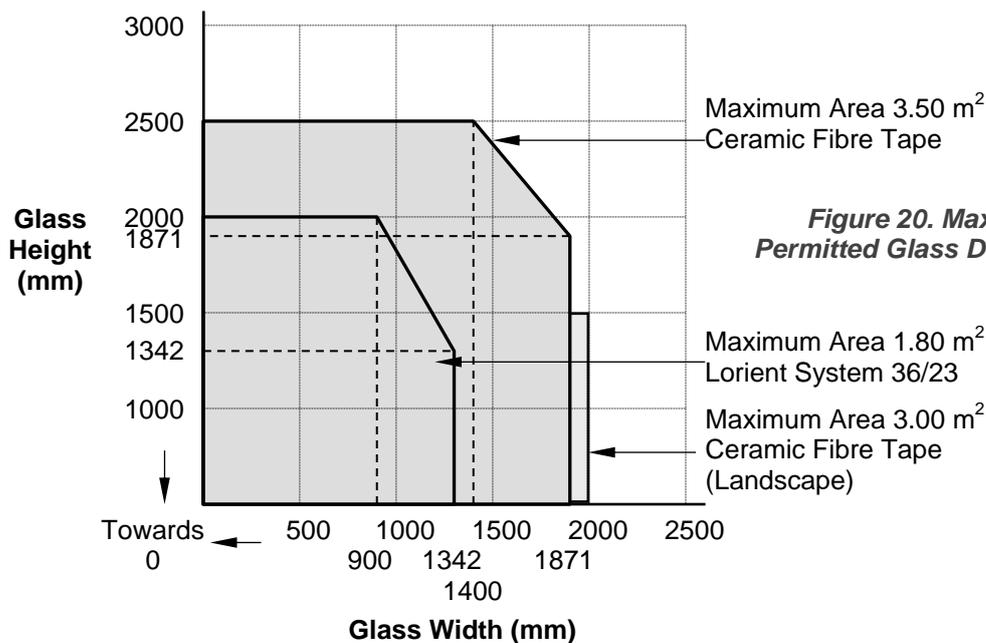
Pyroguard EI60 INT or Pyroguard EI60 EXT glass in timber framed screens for periods of 60 minutes integrity and insulation

For this application the following conditions shall apply:

The glass shall be glazed utilising the following basic specification:



This Certificate of Approval relates to the sizes of Pyroguard EI60 INT or Pyroguard EI60 EXT glass shown in Figure 20 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

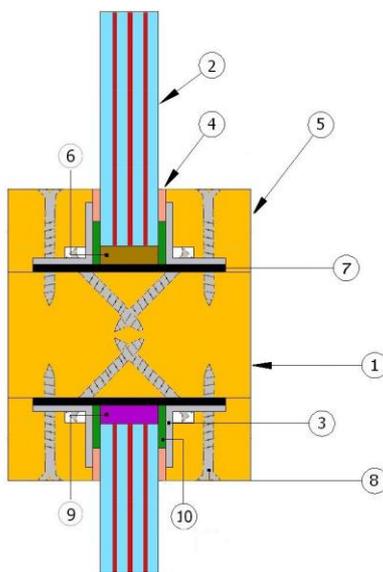


CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT or Pyroguard EI60 EXT glass in timber framed screens for periods of 60 minutes integrity and insulation

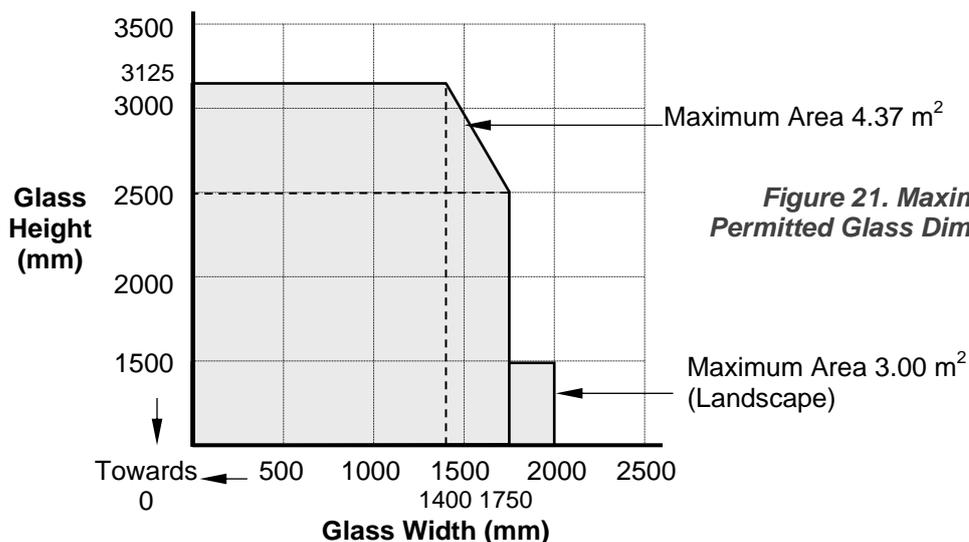
For this application the following conditions shall apply:

The glass shall be glazed utilising the following basic specification:



- ① 100 mm by 50 mm (minimum) hardwood framing sections, minimum density 580 kg/m³
- ② Pyroguard EI60 INT or Pyroguard EI60 EXT
- ③ Mild steel glazing angle 20 x 20 x 2 mm
- ④ 10 mm by 3 mm ceramic fibre based glazing tape (eg. 'K' tape)
- 26 mm high by 26 mm wide square or chamfered (up to 10°) hardwood glazing beads, minimum density 580 kg/m³
- Non-combustible setting blocks
- Sealmaster GL60 Liner 90 x 2 mm
- 50 mm long steel screws at 200 mm centres (45° and parallel to glass)
- Sealmaster intumescent glazing compound
- Unifrax CXL715 adhesive

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT or Pyroguard EI60 EXT glass shown in Figure 21 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

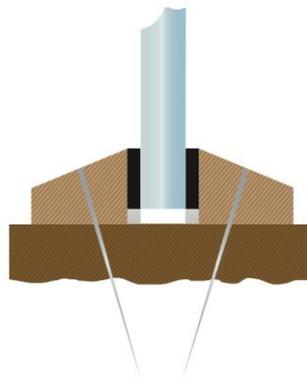



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT or Pyroguard EI60 EXT glass in hardwood framed screens for periods of 60 minutes integrity and 60 minutes insulation

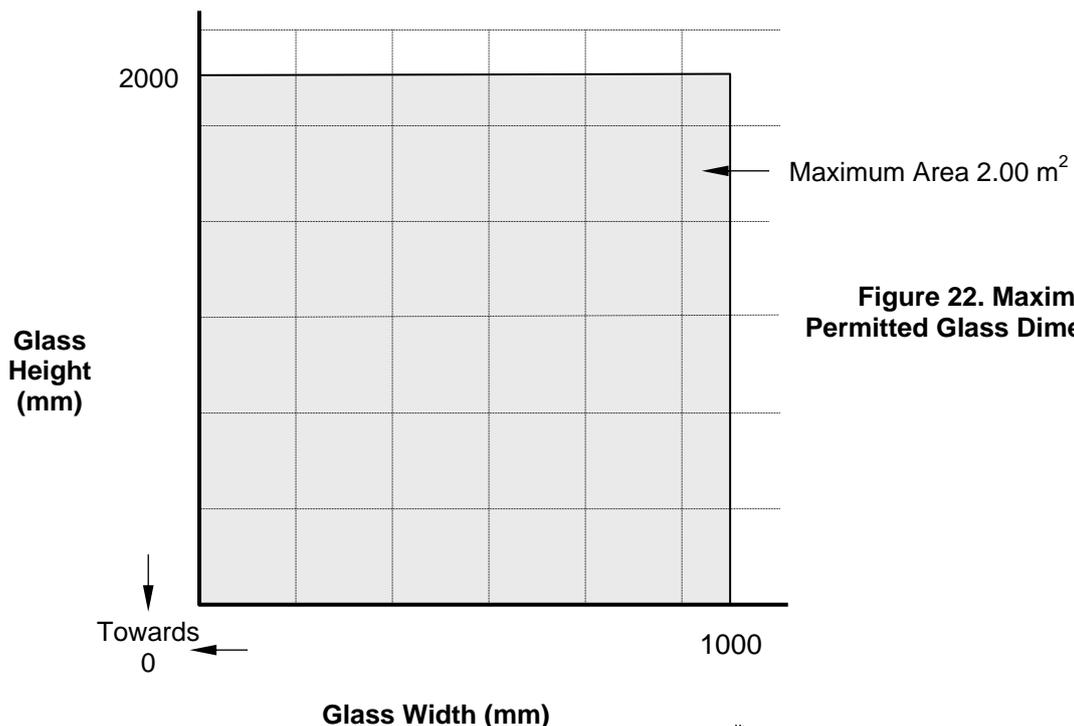
For this application the following conditions shall apply:

- Pyroguard EI60 INT or Pyroguard EI60 EXT
- Sealmaster FIREGLAZE Tape as glazing tape – 25 x 2.5mm
- Fixings at 150 mm centres, (No. 8 x 63 mm, angled at 45° unless otherwise stated)
- Fixing to be 50mm from corners in all cases
- Hardwood framing members – 92 x 45mm (640kg/m³ min.)
- Hardwood Glazing Bead, 20x30mm, square or chamfered (640kg/m³ min.)



System may be used with and without non-combustible setting blocks

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT or Pyroguard EI60 EXT glass, shown in Figure 22 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



CERTIFICATE No CF 437

PYROGUARD UK LIMITED

Pyroguard EI60 INT or Pyroguard EI60 EXT Rectangular and Circular glass panes mounted and fixed in an Oak frame, installed in a plasterboard partition for periods of 60 minutes integrity and 60 minutes insulation

Framework

The frame was made of jointed laminated Oak Timber, density 580 kg/m³.

- The two mullions and two transoms of the frame were assembled together by double tenon and mortise system.
- The circular part was made of 1085 x 1100 mm timber panel, made of jointed laminated Oak Timber with a density of 580 kg/m³.
- The timber panel had a 1000 mm circular-shaped opening.
- The rectangular shaped part and the circular shaped one were assembled together by steel screws 4.5 x 50 mm every 200 mm.
- The whole frame was fixed to the supporting structure by 8 x 109 mm steel screws REF 550.596 (Jansen)
- The gap between the supporting construction and the frame was filled with mineral Rockwool, density of 60 kg/m³.

Glazing

The frame defines two apertures glazed with 23mm thick Pyroguard EI60 INT or Pyroguard EI60 EXT glass.

Dimensions of rectangular pane: 1.410 x 990 mm (w x h)

Dimensions of Circular panes: Ø990 mm

The glasses were held by:

- 60 x 54 mm steel clamps, consisting of a folded steel sheet with two Ø 2.5 x 30 mm oblong hole.. They were placed:
 - Horizontally at 185 mm from the angles, and then located every 340 mm for the rectangular part.
 - Vertically at 280 mm from the angles and then located every 460 mm for the rectangular part.
 - Every 45⁰ or every 785.25 mm arc length for the circular part.
- A simple bead system constructed from the same timber with the same density of the frame, with a section of 23 x 20 mm. The beads were bevelled with an angle of 30⁰, and were fixed on the frame by steel screws Ø 4.5 x 35 mm every 200 mm for the rectangular glass, and every 30⁰ for the circular glass, on each side of the glass, The beads were provided with a 20 x 3 ceramic tape reference Kerafix 2000.

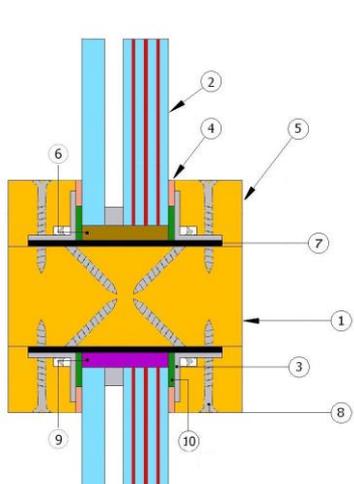
The rectangular glass was supported in its lower part by two Flammi 12 setting blocks, dimensions 80 x 23 x 5 mm, placed at 10mm from the bottom corners.

The circular glass was supported in its lower part by two Flammi 12 setting blocks, dimensions 80 x 23 x 5 mm placed at 30⁰- 40⁰ off the lead.

CERTIFICATE No CF 437 PYROGUARD UK LIMITED

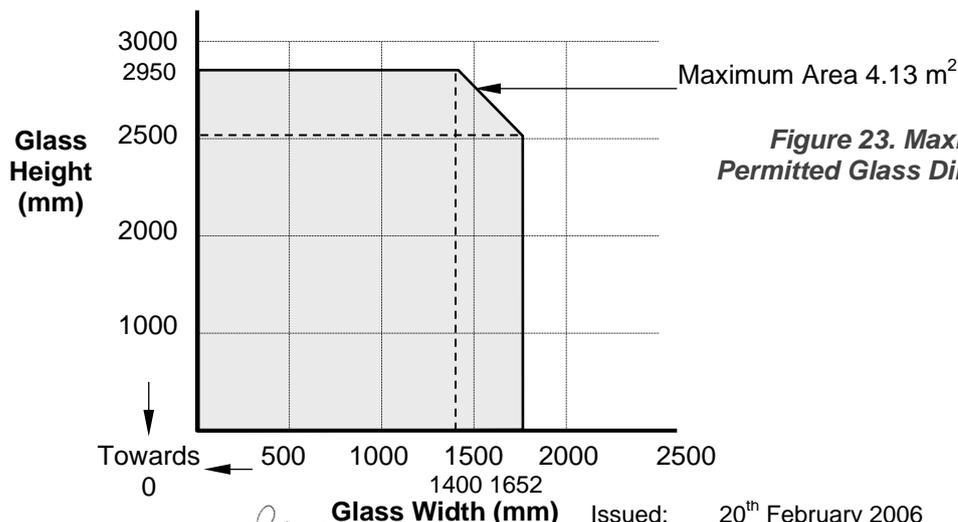
Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI IGUs in timber framed screens for periods of 60 minutes integrity and insulation

For this application the glass shall be glazed utilising the following basic specification:



- ① 100 mm by 50 mm (minimum) hardwood framing sections, minimum density 580 kg/m³
- ② Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI, comprising Pyroguard EI60 INT or Pyroguard EI60 EXT, with a 13 mm steel spacer and 8.8 mm clear laminated/annealed or float glass
- ③ Mild steel glazing angle 20 x 20 x 2 mm
- ④ 8 mm by 3 mm ceramic fibre based glazing tape (eg. 'K' tape) with Unifrax CXL715 adhesive around the perimeter of the glass on both faces
- ⑤ 26 mm high by 26 mm wide square or chamfered (up to 10°) hardwood glazing beads, minimum density 580 kg/m³
- ⑥ Non-combustible setting blocks
- ⑦ Sealmaster GL60 Liner 44 wide by 1.8 mm thick
- ⑧ 50 mm long by 4.2 mm diameter steel screws at 500 mm centres (45° and parallel to glass)
- ⑨ Sealmaster Fireglaze intumescent glazing compound
- ⑩ 8 mm by 3 mm ceramic fibre based glazing tape (eg. 'K' tape) with Unifrax CXL715 adhesive around the perimeter of the glass on both faces

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI IGUs shown in Figure 23 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions. 1400 x 2500, 1652 x 2950, 4.13 m²

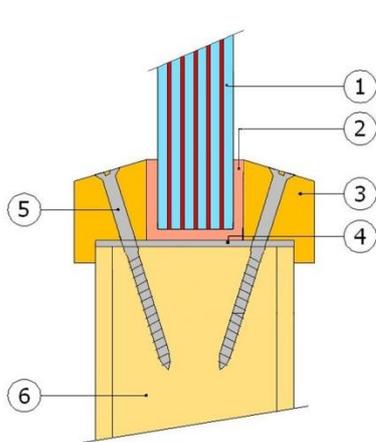



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT or Pyroguard EI60 EXT, glass in timber based doorsets for periods of 60 minutes integrity and insulation

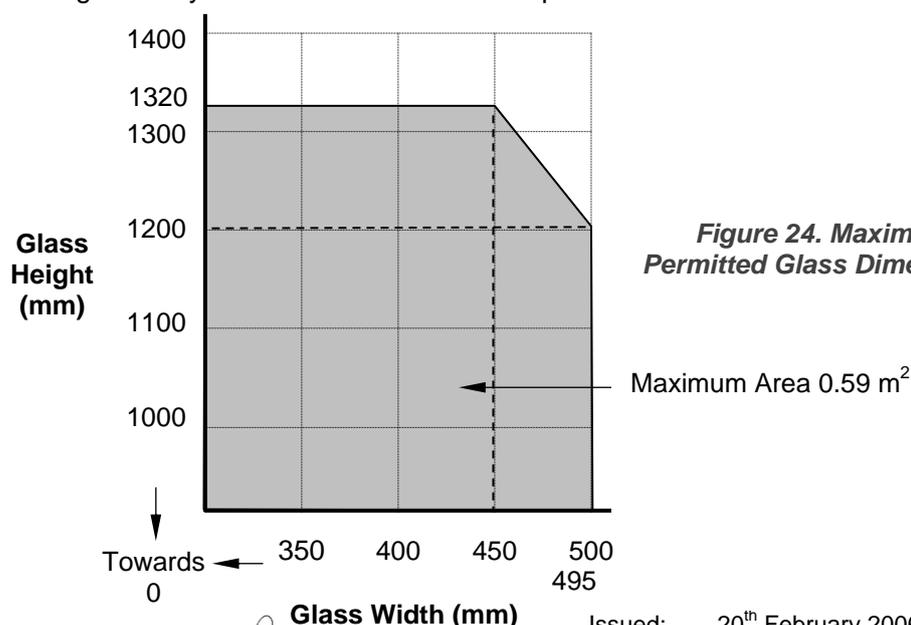
For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested doorsets, as specified below (with test evidence for the inclusion of apertures of the proposed dimensions) utilising the following basic specification:



- ① Pyroguard EI60 INT or Pyroguard EI60 EXT glass
- ② Lorient System 36/23 glazing seal
- ③ Hardwood glazing beads 25 mm high by 17 mm wide including 5 mm high by 5 mm wide bolection return. Min. density 650 kg/m³
- ④ 2 mm thick mono ammonium phosphate liner (M.A.P.), full width
- ⑤ 8 x 45 mm screws at 45° and minimum 200 mm centres. Maximum distance from corners 50 mm.
- ⑥ Minimum 54 mm thick FD60 door leaf incorporating a flaxboard core and 10 mm thick Anti-Flam Chipboard faces. (or thicker if required to accommodate glazing beads)

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT or Pyroguard EI60 EXT glass shown in Figure 24 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



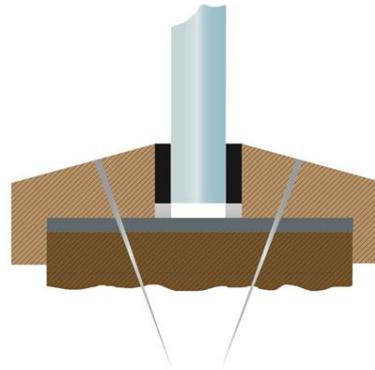
CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT or Pyroguard EI60 EXT, glass in timber based doorsets for periods of 60 minutes integrity and insulation

For this application the following conditions shall apply:

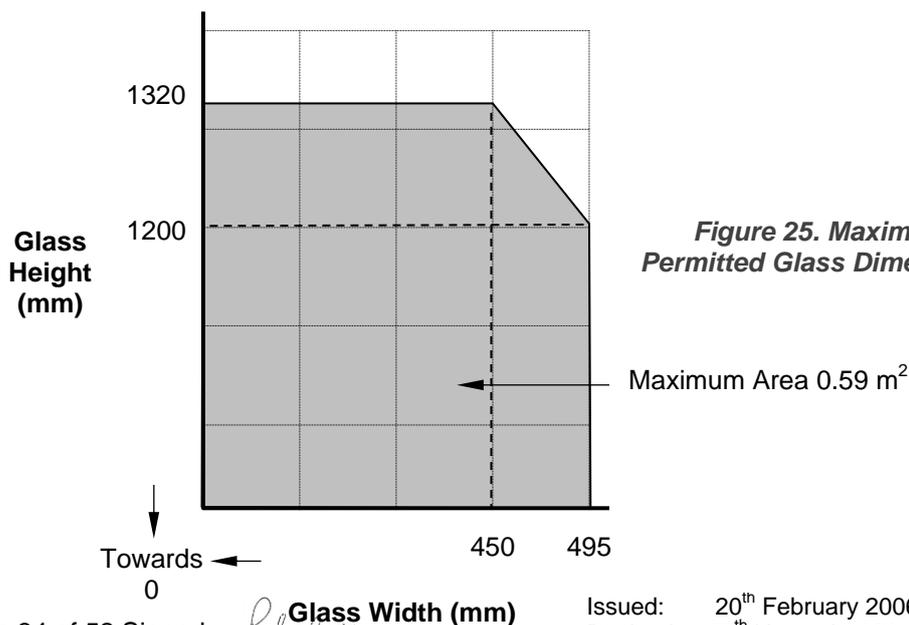
The glass shall be glazed within a previously fire tested doorsets, as specified below (with test evidence for the inclusion of apertures of the proposed dimensions) utilising the following basic specification:

- Pyroguard EI60 INT or Pyroguard EI60 EXT
- Sealmaster FIREGLAZE Tape as glazing tape – 25 mm x 2.5 mm thick
- Sealmaster FIREGLAZE Tape as aperture liner – 54 mm x 2.5 mm thick
- No. 8 x 63 mm long screws at 150 mm maximum centres and 50mm from corners (fixed at 45° to glass).
- Bead dimensions – 30 mm high by 26 mm wide (dimension includes a 5 mm x 5 mm bolection)
- Glazing Bead from hardwood with a minimum density 640kg/m³, 20° chamfer
- Nominally 54 mm thick timber based FD60 door leaf*



System may be used with and without non-combustible setting blocks.

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT or Pyroguard EI60 EXT glass shown in Figure 25 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

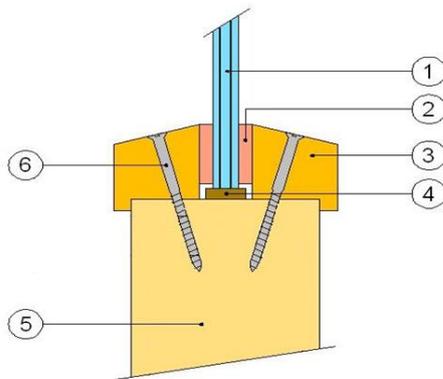


CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT glass in solid timber joinery doorsets for periods of 60 minutes integrity and insulation

For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested doorsets, as specified below (with test evidence for the inclusion of apertures of the proposed dimensions) utilising the following basic specification:



- 1 Pyroguard EI60 INT
- 2 Interdens 15 mm by 2 mm
- 3 Hardwood glazing beads 25 mm high by 30 mm wide including bolection return. Min. density 640 kg/m³
- 4 Hardwood packer, 5 mm thick by 23 mm wide by 40 mm long
- 5 8 x 50 mm screws at 45° and minimum 150 mm centres. Maximum distance from corners 50 mm.
- 6 Minimum 54 mm thick FD60 joinery type door leaf comprising hardwood stiles and rails of minimum density 640kg/m³ and minimum width of 80 mm.
Note: The doorset, including door frame, and associated building hardware, should have achieved at least 60 minutes integrity when tested, or subsequently assessed as acceptable for this purpose, to BS 476: Part 22: 1987. The proposed doorset should also have included a glazed aperture or apertures of the intended size, shape, area and number. 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 Pyroguard EI60 INT glass shown in the table below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

Maximum Height	Maximum Width	Maximum Area
2250 mm high	950 mm wide	2.14 m ²

CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT or Pyroguard EI60 EXT Glass in steel framed screens for periods of 60 minutes integrity and insulation

For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI60 INT or Pyroguard EI60 EXT glass
- 20 mm by 6 mm ceramic fibre based glazing tape (eg. 'K' tape)
- The edge cover to each pane shall be no less than 15 mm minimum

The insulated steel framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT or Pyroguard EI60 EXT glass shown in Figure 26 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

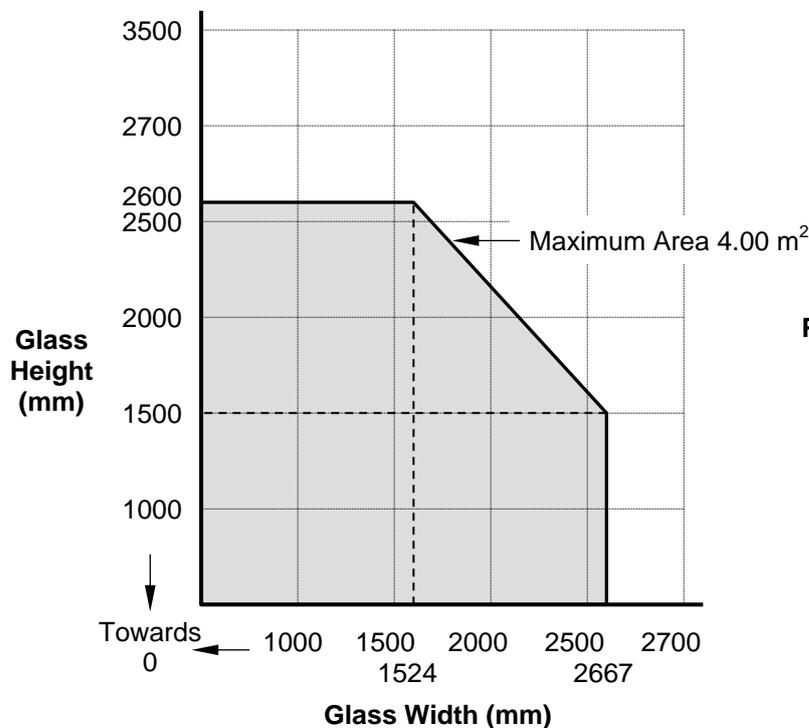


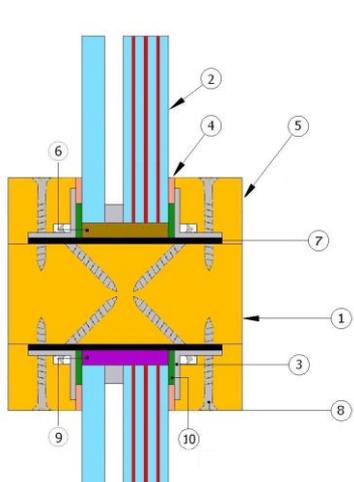
Figure 26. Maximum Permitted Glass Dimensions

CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI in timber framed screens for periods of 60 minutes integrity and insulation

For this application the following conditions shall apply:

The glass shall be glazed utilising the following basic specification:



- ① 100 mm by 50 mm (minimum) hardwood framing sections, minimum density 580 kg/m³
- ② Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI, comprising Pyroguard EI60 INT or Pyroguard EI60 EXT a steel spacer and 8.8 mm clear laminated/annealed or float glass
- ③ Mild steel glazing angle 20 x 20 x 2 mm
- ④ 10 mm by 3 mm ceramic fibre based glazing tape (eg. 'K' tape)
- ⑤ 26 mm high by 26 mm wide square or chamfered (up to 10°) hardwood glazing beads, minimum density 580 kg/m³
- ⑥ Non-combustible setting blocks
- ⑦ Sealmaster GL60 Liner 90 x 2 mm
- ⑧ 50 mm long steel screws at 200 mm centres (45° and parallel to glass)
- ⑨ Sealmaster intumescent glazing compound
- ⑩ Unifrax CXL715 adhesive

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI IGU shown in Figure 27 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

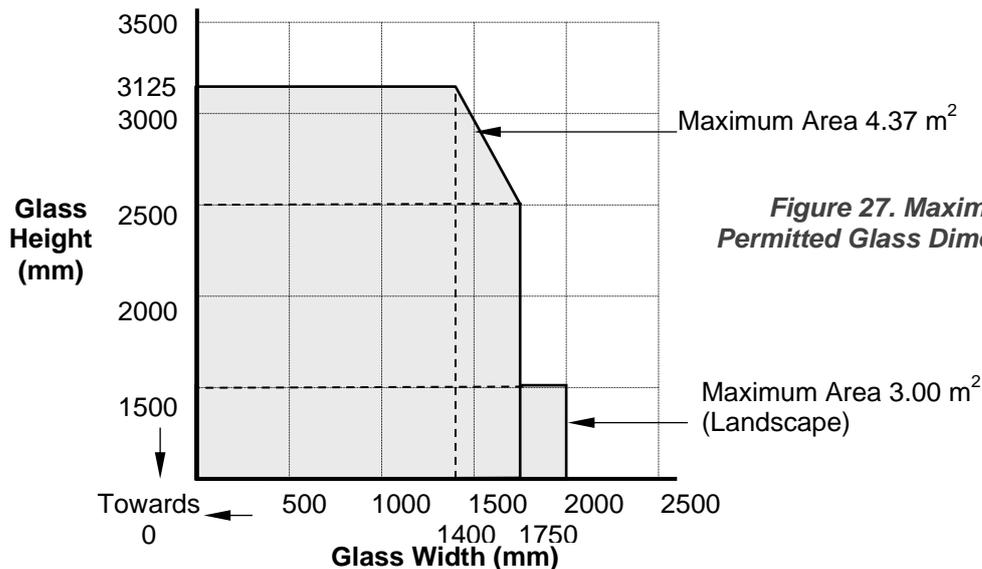


Figure 27. Maximum Permitted Glass Dimensions

CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI in steel framed screens for periods of 60 minutes integrity and insulation

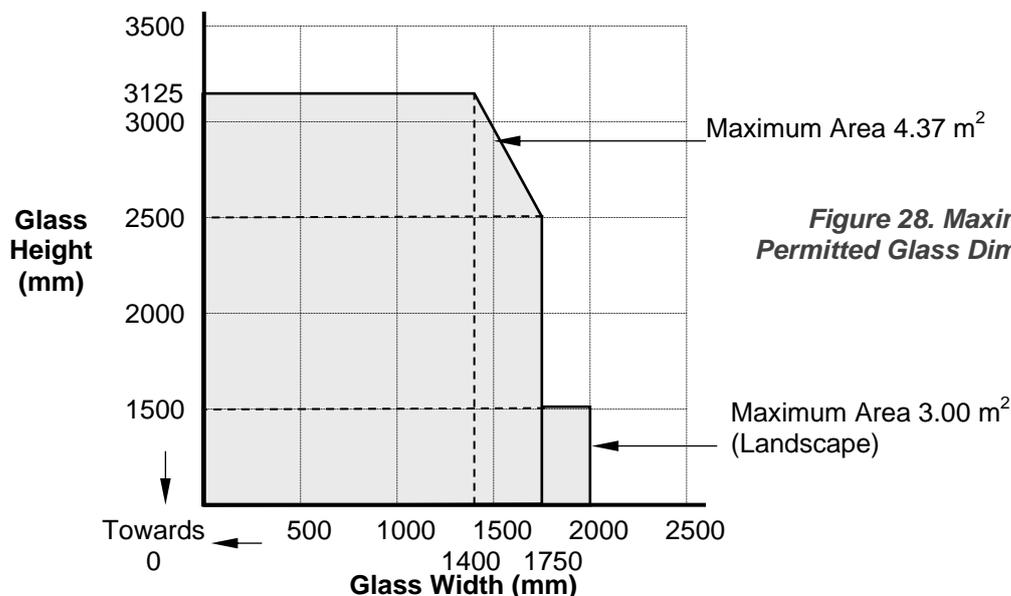
For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI IGU, comprising Pyroguard EI60 INT or Pyroguard EI60 EXT an 12 mm air gap and 8.8 mm laminated/annealed or float glass
- The edge cover to each pane shall be no less than 15 mm minimum

The insulated steel framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI IGU shown in Figure 28 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI in steel framed screens for periods of 60 minutes integrity and insulation

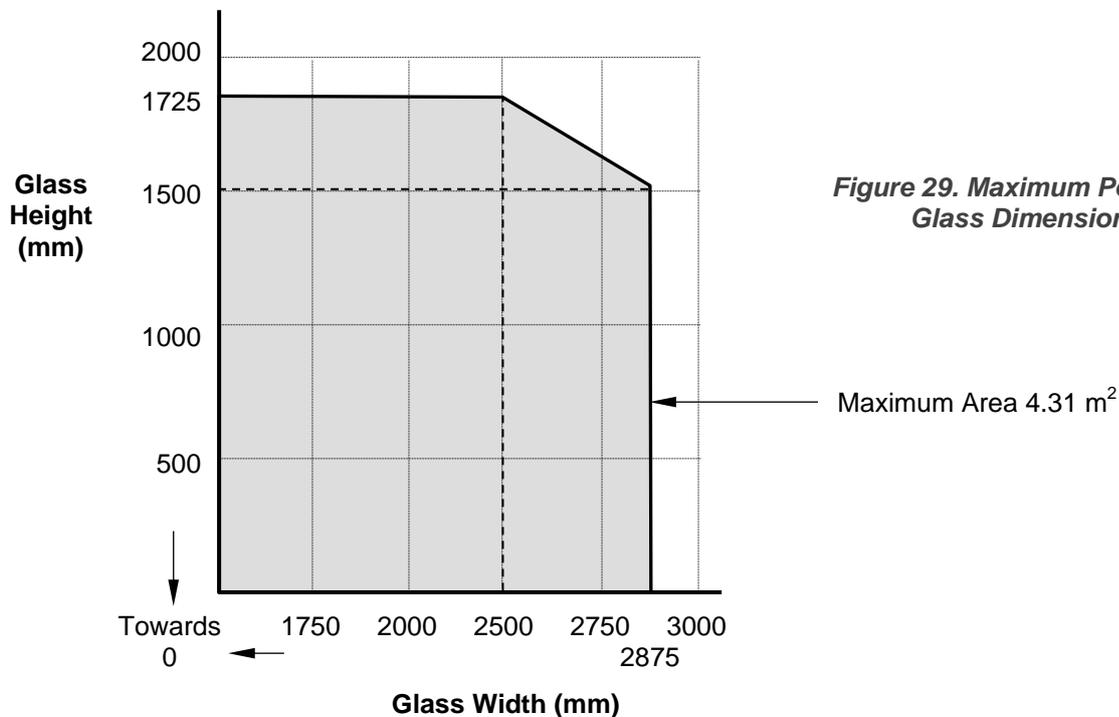
For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI IGU's, comprising Pyroguard Insulation, a 10 mm or greater air gap and 6 mm thick non-fire rated glass (toughened, float, laminated, coated, tinted).
- The edge cover to each pane shall be no less than 15 mm minimum

The insulated steel framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI shown in Figure 29 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT or Pyroguard EI60 EXT glass in insulated steel framed doorsets for periods of 60 minutes integrity and 60 minutes insulation

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 and insulation when tested, or subsequently assessed by one of the laboratories approved by CERTIFIRE as acceptable for this purpose, to BS 476: Part 22: 1987.
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. Glass to be glazed using 20 mm by 5 mm Kerafix 2000 tape.
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.

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT or Pyroguard EI60 EXT glass shown in Figure 30 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

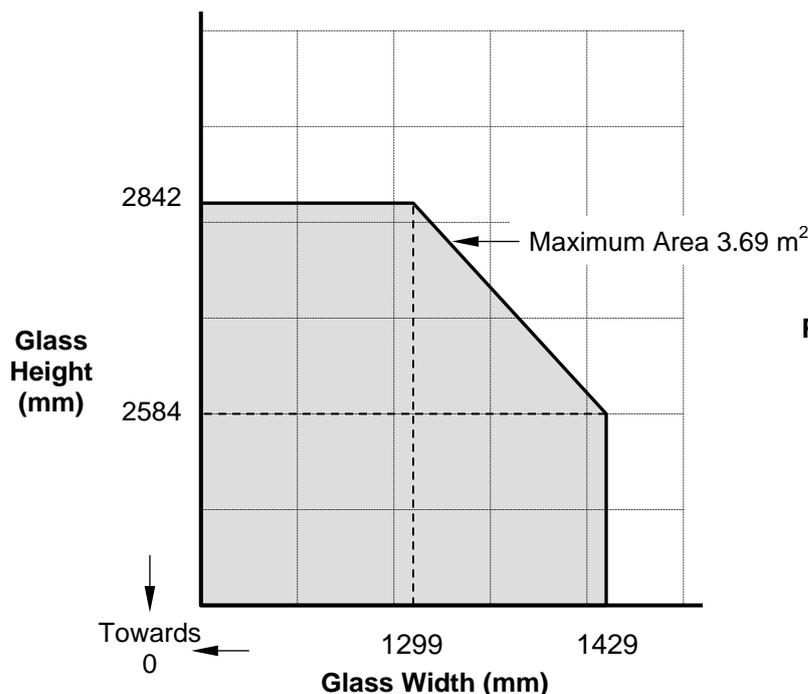


Figure 30, Maximum Permitted Glass Dimensions

CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 VI glass in steel framed screens for periods of 60 minutes integrity and 60 minutes insulation

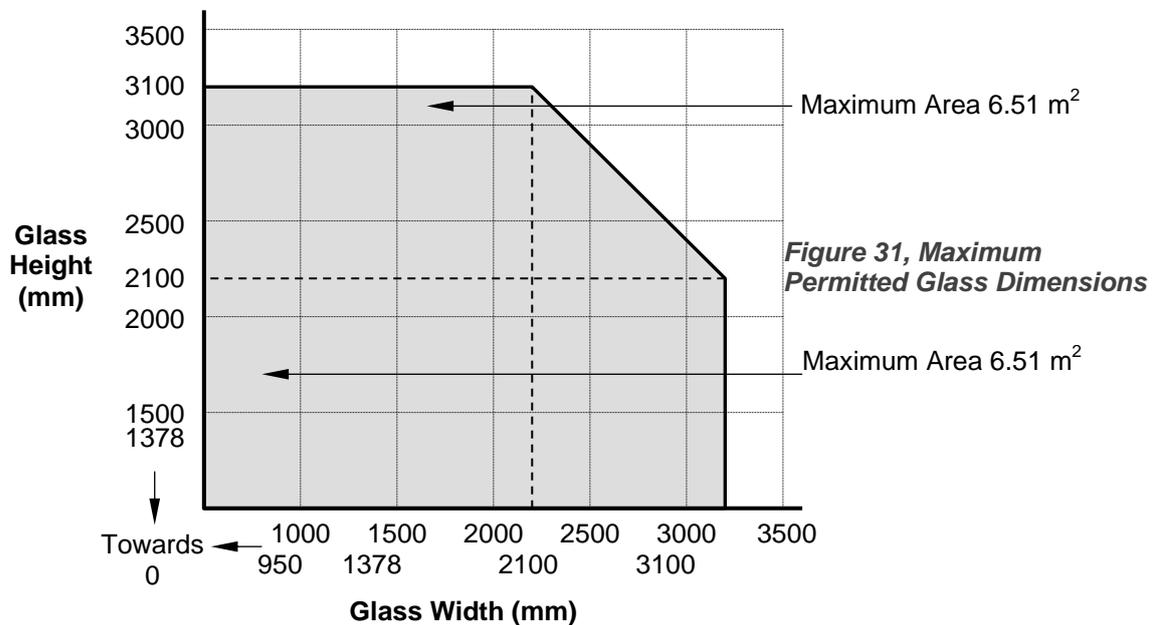
For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system:

- 20 mm by 6 mm calcium magnesium silicate fibre based glazing tape
- The edge cover to each pane shall be no less than 15 mm minimum

The insulated steel framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

This Certificate of Approval relates to the sizes of Pyroguard EI60 VI shown in Figure 31 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI laminated glass units in single pane horizontal steel framed screens for periods of 60 minutes integrity and 30 or 60 minutes insulation

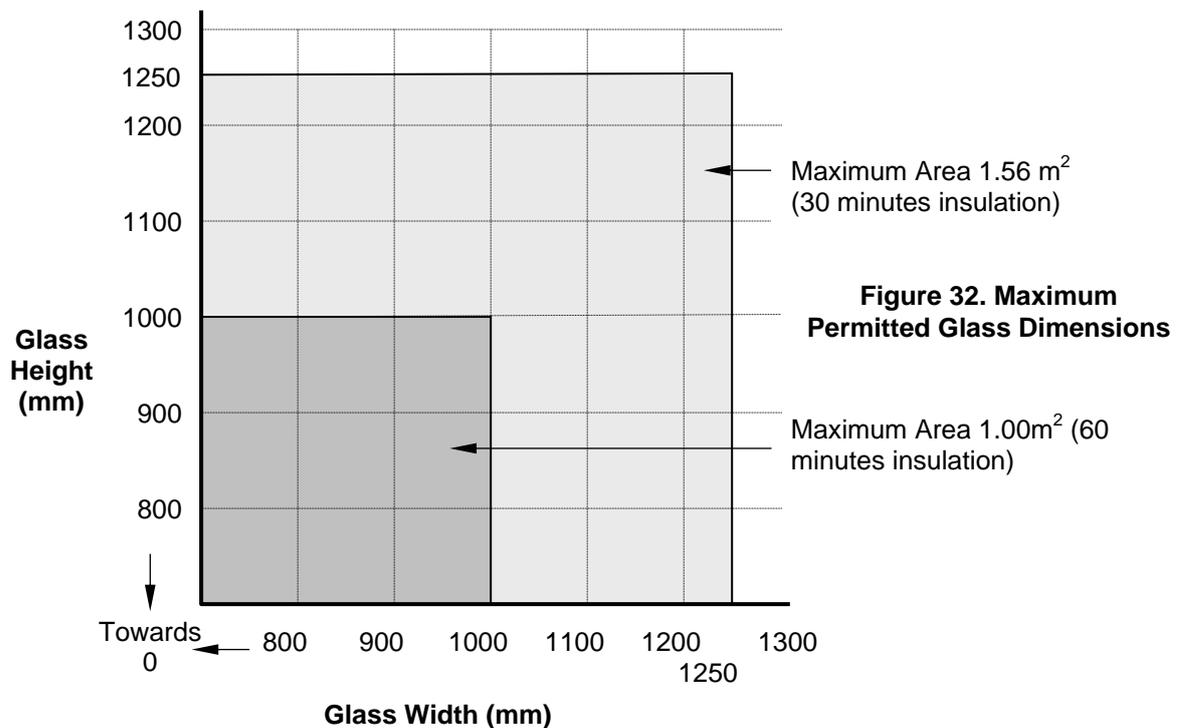
For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI60 INT or Pyroguard EI60 EXT laminated to 8 mm toughened glass with a 2mm cold pour resin, to form a glazed 33 mm thick glazed unit with the tempered/toughened glass on the upper/unexposed face
- 30 mm by 6 mm (2 x 15 by 6) ceramic fibre based glazing tape (eg. 'K' tape)
- The edge cover to each pane shall be no less than 30 mm minimum

The insulated steel framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI laminated glazed units shown in Figure 32 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions. Approval is limited to single pane systems.



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI laminated glass units in single pane horizontal steel framed screens for periods of 90 minutes integrity only

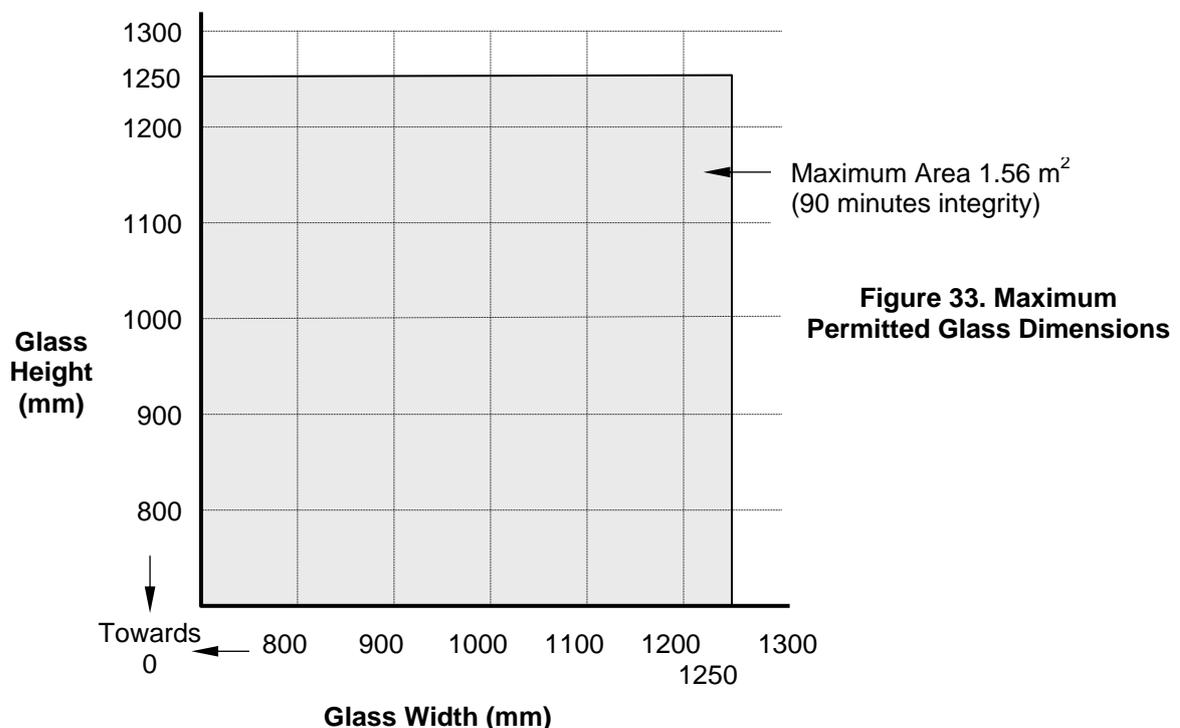
For this application the following conditions shall apply:

The glass shall be glazed within a previously fire tested or CERTIFIRE approved insulated steel framing system utilising the following basic specification:

- Pyroguard EI60 INT or Pyroguard EI60 EXT laminated to 8 mm toughened glass with a 2mm cold pour resin, to form a glazed 33 mm thick glazed unit with the tempered/toughened glass on the upper/unexposed face
- 30 mm by 6 mm (2 x 15 by 6) ceramic fibre based glazing tape (eg. 'K' tape)
- The edge cover to each pane shall be no less than 30 mm minimum

The insulated steel framing system shall have test evidence or be CERTIFIRE approved for the inclusion of apertures of the proposed dimensions.

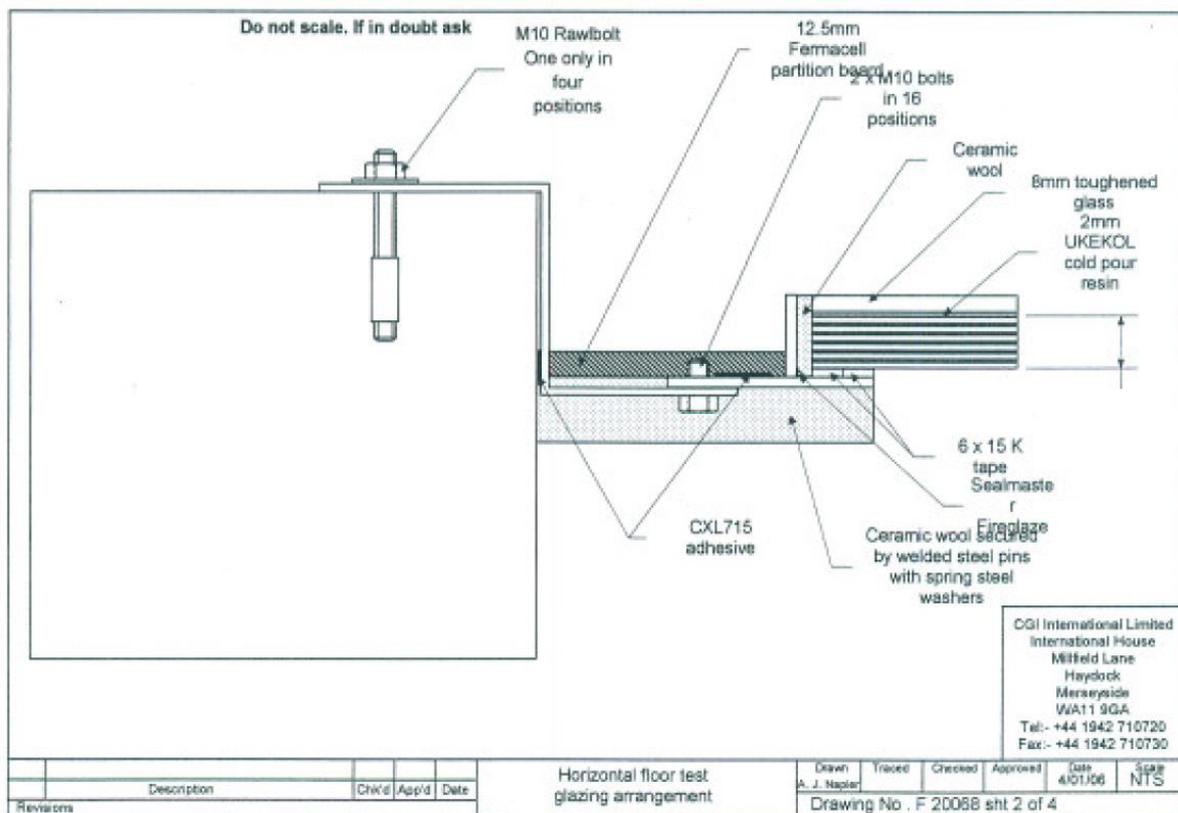
This Certificate of Approval relates to the sizes of Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI laminated glazed units shown in Figure 33 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions. Approval is limited to single pane systems.



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI laminated glass units in single pane horizontal steel framed screens

The following diagram provides details for the glazing system for the horizontal glazing system for the scope provided in the previous pages:



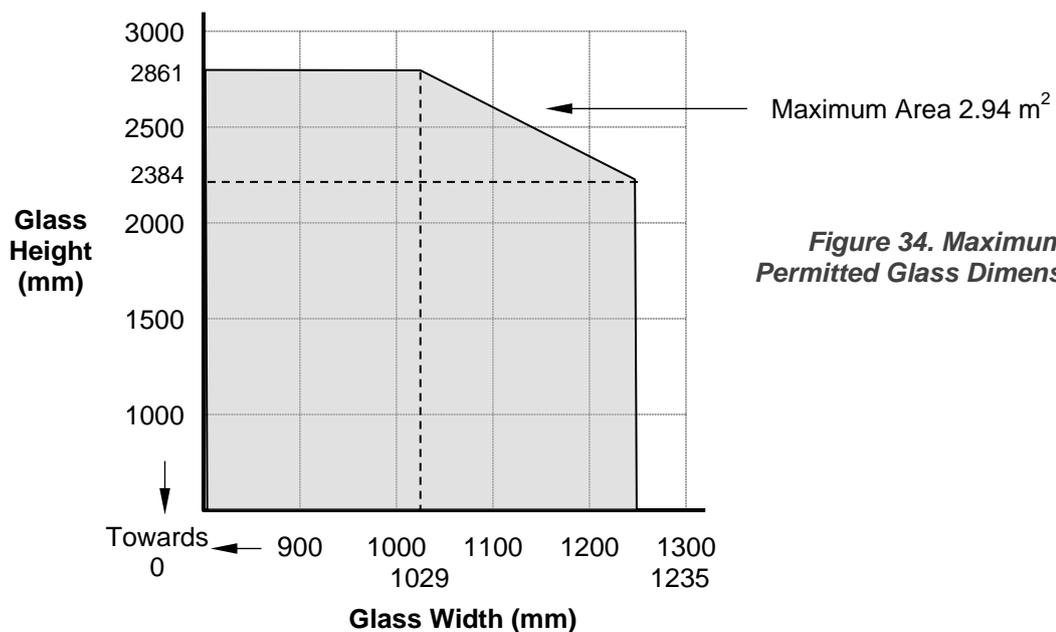

CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT or Pyroguard EI60 EXT glass in steel based doorsets for periods of 60 minutes integrity and 30 minutes insulation

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 and 30 minutes insulation when tested, or subsequently assessed by one of the laboratories approved by CERTIFIRE as acceptable for this purpose, to BS 476: Part 22: 1987.
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.

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT or Pyroguard EI60 EXT glass shown in Figure 34 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



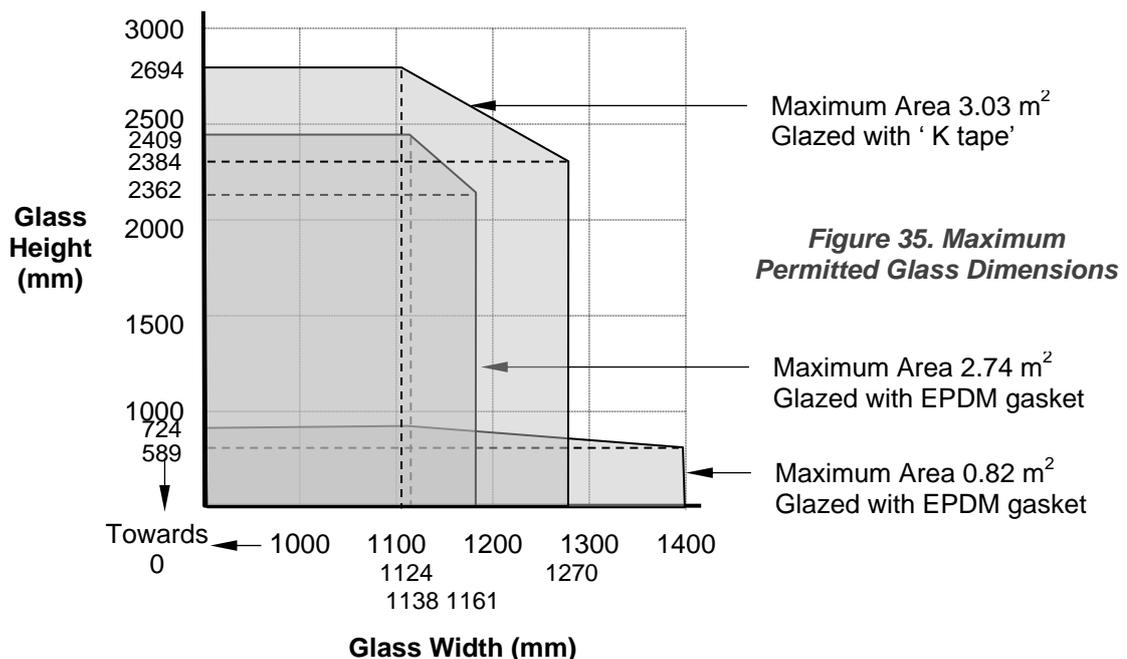
CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT or Pyroguard EI60 EXT glass in steel based doorsets for periods of 60 minutes integrity and insulation – either inward or outward opening

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 and insulation when tested, or subsequently assessed by one of the laboratories approved by CERTIFIRE as acceptable for this purpose, to BS 476: Part 22: 1987.
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.

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT or Pyroguard EI60 EXT glass shown in Figure 35 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions



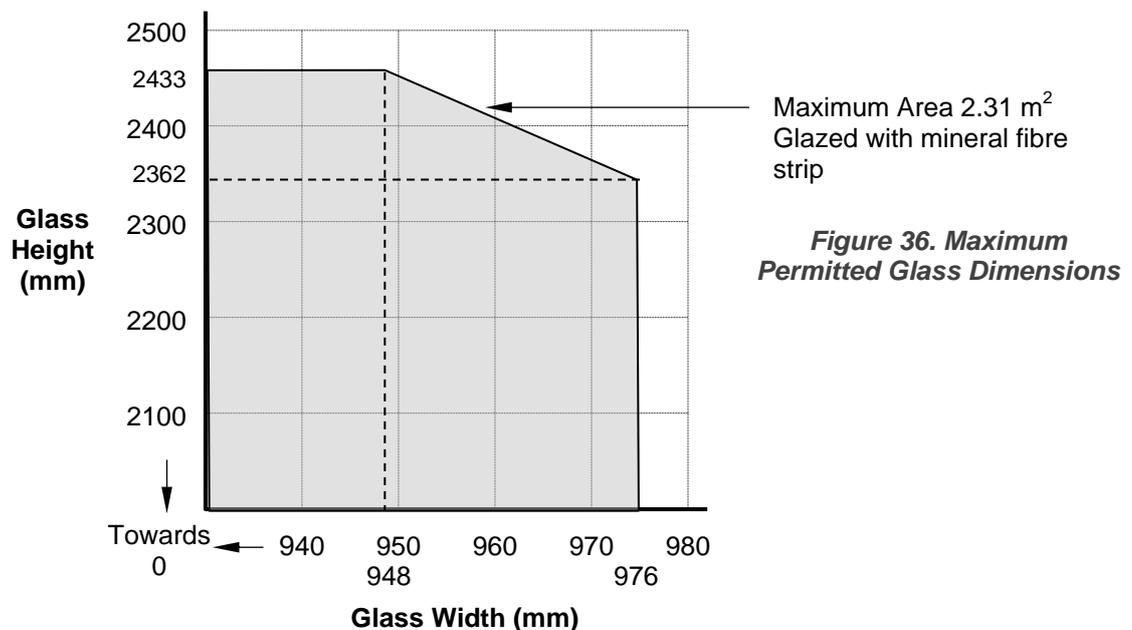
CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT or Pyroguard EI60 EXT glass in steel based doorsets for periods of 60 minutes integrity and insulation

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 and insulation when tested, or subsequently assessed by one of the laboratories approved by CERTIFIRE as acceptable for this purpose, to BS 476: Part 22: 1987.
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.

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT or Pyroguard EI60 EXT glass shown in Figure 36 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



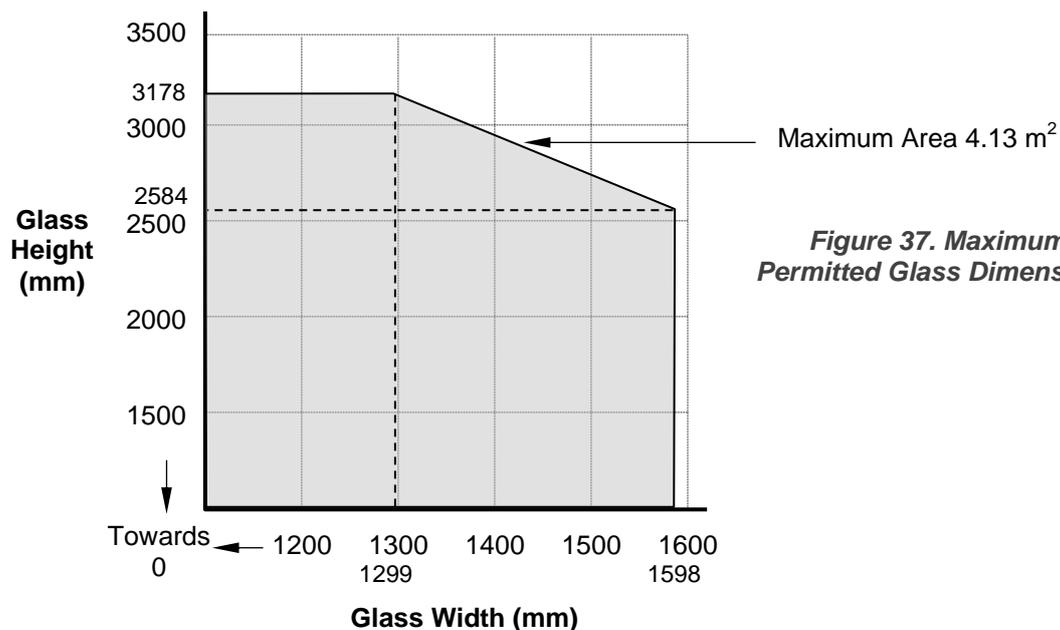
CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 EXT VI in steel based doorsets for periods of 60 minutes integrity and insulation

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 and insulation when tested, or subsequently assessed by one of the laboratories approved by CERTIFIRE as acceptable for this purpose, to BS 476: Part 22: 1987.
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.

This Certificate of Approval relates to the sizes of Pyroguard EI60 EXT VI shown in Figure 37 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



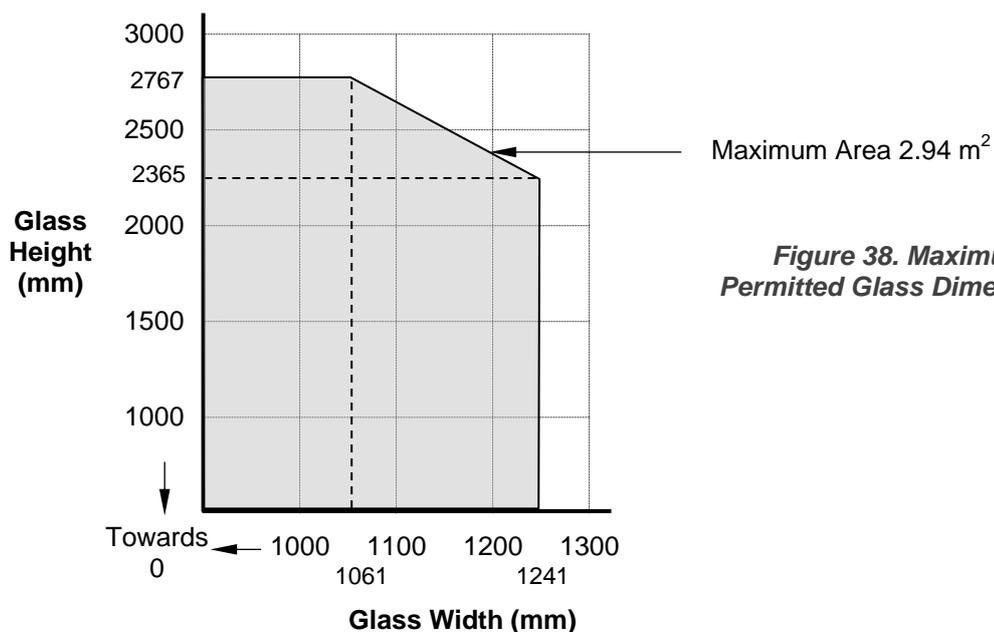
CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI IGUs, in steel based doorsets for periods of 60 minutes integrity and insulation

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 and insulation when tested, or subsequently assessed by one of the laboratories approved by CERTIFIRE as acceptable for this purpose, to BS 476: Part 22: 1987.
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.

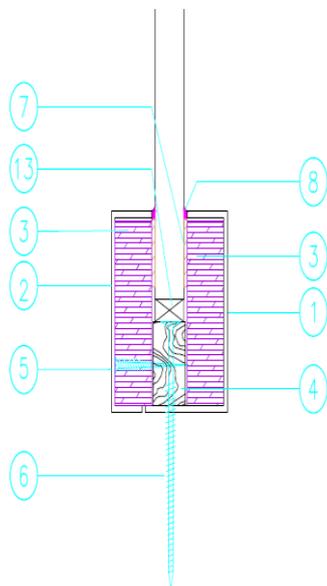
This Certificate of Approval relates to the sizes of Pyroguard EI60 INT VI or Pyroguard EI60 EXT VI IGUs shown in Figure 38 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

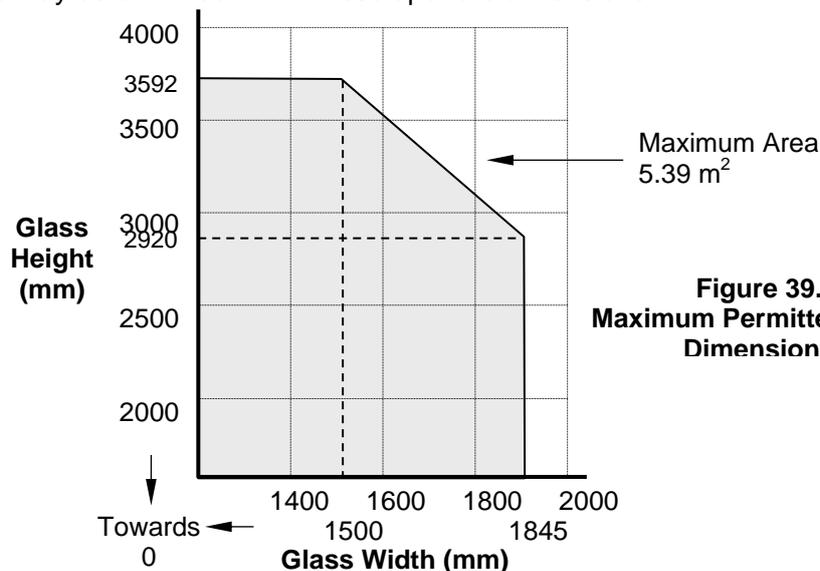
Pyroguard EI30 INT or Pyroguard EI30 EXT, glass in butt jointed steel framed screens for periods of 30 minutes integrity and insulation

The perimeter of the system is to comprise a previously fire tested or CERTIFIRE approved steel frame assembly containing the above Pyroguard Insulation glass, glazed utilising the following basic specification:



- ① 60 mm wide by 43 mm deep by 2 mm thick, steel screen framing
- ② 60 mm wide by 21 mm deep by 2 mm thick, steel screen framing
- ③ 55 mm wide by 19 mm deep calcium silicate board
- ④ 25 mm wide by 17 mm deep central fixing core, density 640 kg/m³
- ⑤ 32 mm long self drilling screws at 300 mm centres
- ⑥ 80 mm long steel wood screws at 300 mm centres
- ⑦ 20 mm wide by 3 mm thick ceramic fibre based glazing tape (eg. 'K' tape) between glass and insulation on both sides, 15 mm x 2 mm Interdens strip between edges of glazing
- ⑧ 2 mm to 3 mm wide silicon sealant on both faces
- ⑬ 23 mm wide by 5 mm high by 50 mm long hardwood fitted at the bottom edge of the glass

This Certificate of Approval relates to the sizes of Pyroguard EI30 INT or Pyroguard EI30 EXT, glass shown in Figure 39 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

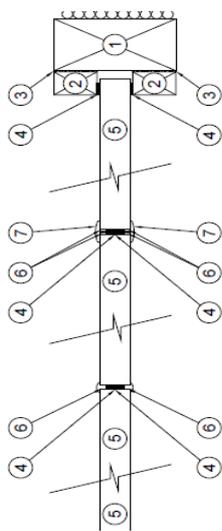


**Figure 39.
Maximum Permitted Glass
Dimensions**

CERTIFICATE No CF 437 PYROGUARD UK LIMITED

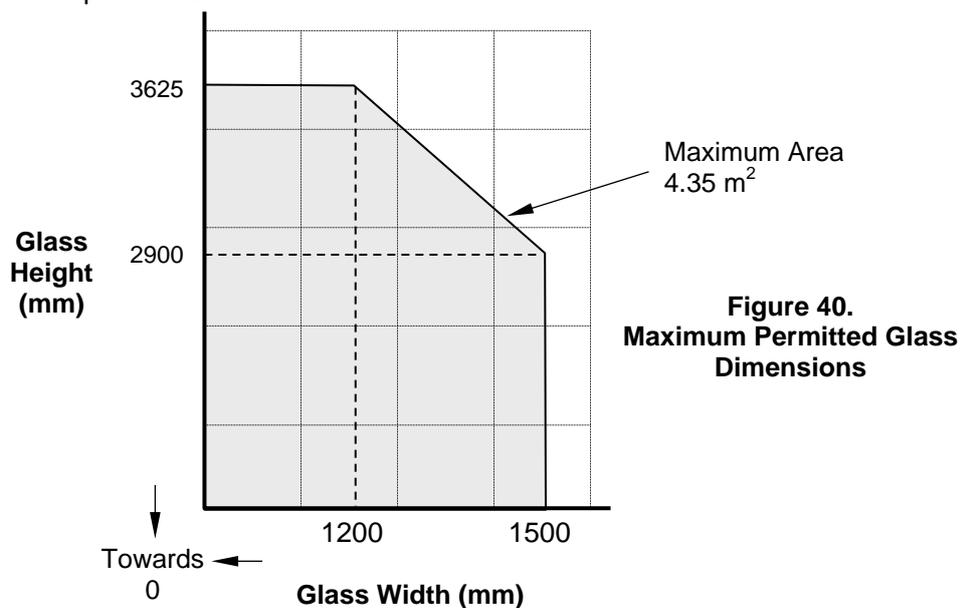
Pyroguard EI60 INT, glass in butt jointed timber framed screens for periods of 30 minutes integrity and insulation

The perimeter of the system is to comprise a timber frame assembly containing the above Pyroguard Insulation glass, glazed utilising the following basic specification:



- 1 92 mm by 45 mm hardwood perimeter frame (590 kg/m³ minimum density)
- 2 32 mm high by 20 mm high hardwood beads (590 kg/m³ minimum density)
- 3 CXL 715 high temperature adhesive
- 4 Interdens 15mm by 2 mm
- 5 Pyroguard EI60 INT glass
- 6 Roto Gluske GmbH Kerafix fire retardant silicone sealant
- 7 Optional – 'T'- section profile decorative capping, 18.5 mm wide by 14.5 mm deep, butt fitted 'toe to toe' and fixed in place using the Kerafix sealant

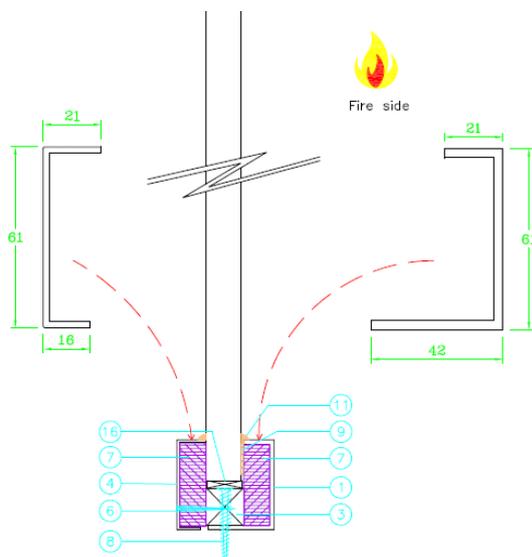
Certificate of Approval relates to the sizes of Pyroguard EI60 INT, glass shown in Figure 40 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.



CERTIFICATE No CF 437 PYROGUARD UK LIMITED

Pyroguard EI60 INT or Pyroguard EI60 EXT, glass in butt jointed steel framed screens for periods of 60 minutes integrity and insulation

The perimeter of the system is to comprise a previously fire tested or CERTIFIRE approved steel frame assembly containing the above Pyroguard Insulation glass, glazed utilising the following basic specification:



- 1 Exposed steel screen framing at head and base edges – see diagram
- 3 25 mm wide by 25 mm deep central fixing core
- 4 Unexposed face frame beading at head and base edges– see diagram
- 6 40 mm long steel wood screws at 300 mm centres, density 640 kg/m³
- 7 54 mm high by 18 mm thick calcium silicate board fitted on both faces, density 875 kg/m³
- 8 80 mm long steel masonry fixings fitted at 450 mm centres on top and bottom edges and at 300 mm from head and base on the left edge
- 9 15 mm wide by 3 mm thick ceramic fibre based glazing tape (eg. 'K' tape) at top and bottom, 20 mm x 2 mm Interdens strip between glass and insulation
- 11 Ø 5 fillet of Kerafix fire resistant silicon
- 16 23 mm wide by 5 mm high by 50 mm long hardwood fitted at the bottom edge of the glass

This Certificate of Approval relates to the sizes of Pyroguard EI60 INT or Pyroguard EI60 EXT glass shown in Figure 41 below, when used in conjunction with the above system. The aspect ratio of the glass may be unlimited within these aperture dimensions.

