

Pyroguard Rapide Plus

El30 Timber Joinery Guide

System description of fire-resistant glazing

PG 420-40-75 according to EN13501-2

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1 Purpose of the document

This document serves as the manufacturing and installation instructions for the PG 420-40-75 glazing system for a fire rating of EI30 and a non-loadbearing walls application. The described designs are based on the accompanying documents (test reports, EXAP report and classification report).

Deviations from these documents are generally not permitted and are the responsibility of the user. Any national regulations not described in this document and dependent on the place of use must be observed by the user. Recourse and liability claim of any kind by third parties against the user arising from the use of these manufacturing and installation instructions and from the component produced on this basis are fully rejected.

System PG 420-40-75 is defined as $\geq 420 \text{ kg/m}^3$ timber density (softwood) of section 40 (h) x 75 (d). All tests herein were carried out with glazed partitions of this type.

2 Normative references

The following documents are cited in the text and form part of the requirements of this document, in whole or in part. For dated references, only the cited edition applies. For undated references, the latest edition, including all amendments, always applies.

- EN 1279-1, Glass in building - Insulating glass units - Part 1: Generalities, system description, rules for substitution, tolerances and visual quality
- EN 1363-1, Fire resistance tests - Part 1: General requirements
- EN 1363-2, Fire resistance tests - Part 2: Alternative and additional procedures
- EN 1364-1, Fire resistance tests for non-loadbearing elements - Part 1: Walls
- EN 1995-1-2, Eurocode 5: Design of timber structures - Part 1-2: General rules - Structural fire design
- EN 13501-1, Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests
- EN 13501-2, Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services
- EN 15725, Extended application reports on the fire performance of construction products and building elements
- EN ISO 12543-1, Glass in building - Laminated glass and laminated safety glass - Part 1: Definitions and description of component parts (ISO 12543-1)
- EN ISO 13943, Fire safety - Vocabulary (ISO 13943)

3 Terms and definitions

For the application of this document, the terms and definitions according to EN 13501-2, EN ISO 13943, EN ISO 12543-1, EN 1279-1 and EN 1364-1 apply.

4 Supporting documents

Table 1: Supporting documents

No.	Document	Document No.	Type of glazing	Glass configuration	Thickness [mm]
1*	Classification report	19-003842-PR02			
2†	EXAP report	19-003842-PR01			
3†	Test report	14-002003-PR01	Glazed partition	Pyroguard EI30 INT	15
4†	Test report	14-002005-PR01	Glazed partition	Pyroguard EI30 INT & EI30 EXT	15 19
5†	Test report	17-000064-PR01	Glazed partition	Pyroguard EI30 INT VI	CD (see section 11)
6†	Test report	17-000064-PR02	Glazed partition	Pyroguard EI30 EXT VI	CD (see section 11)
7†	Test report	17-002103-PR01	Butt-joint glazing	Pyroguard EI30 EXT	19
8†	Test report	17-002463-PR01	Butt-joint glazing	Pyroguard EI30 EXT	19
9†	Test report	18-002103-PR01	Butt-joint glazing	Pyroguard EI30 EXT+ SWS	23
10†	Test report	18-002106-PR01	Glazed partition	Pyroguard EI30 EXT	19
*available from Pyroguard TechLibrary †confidential available under NDA					

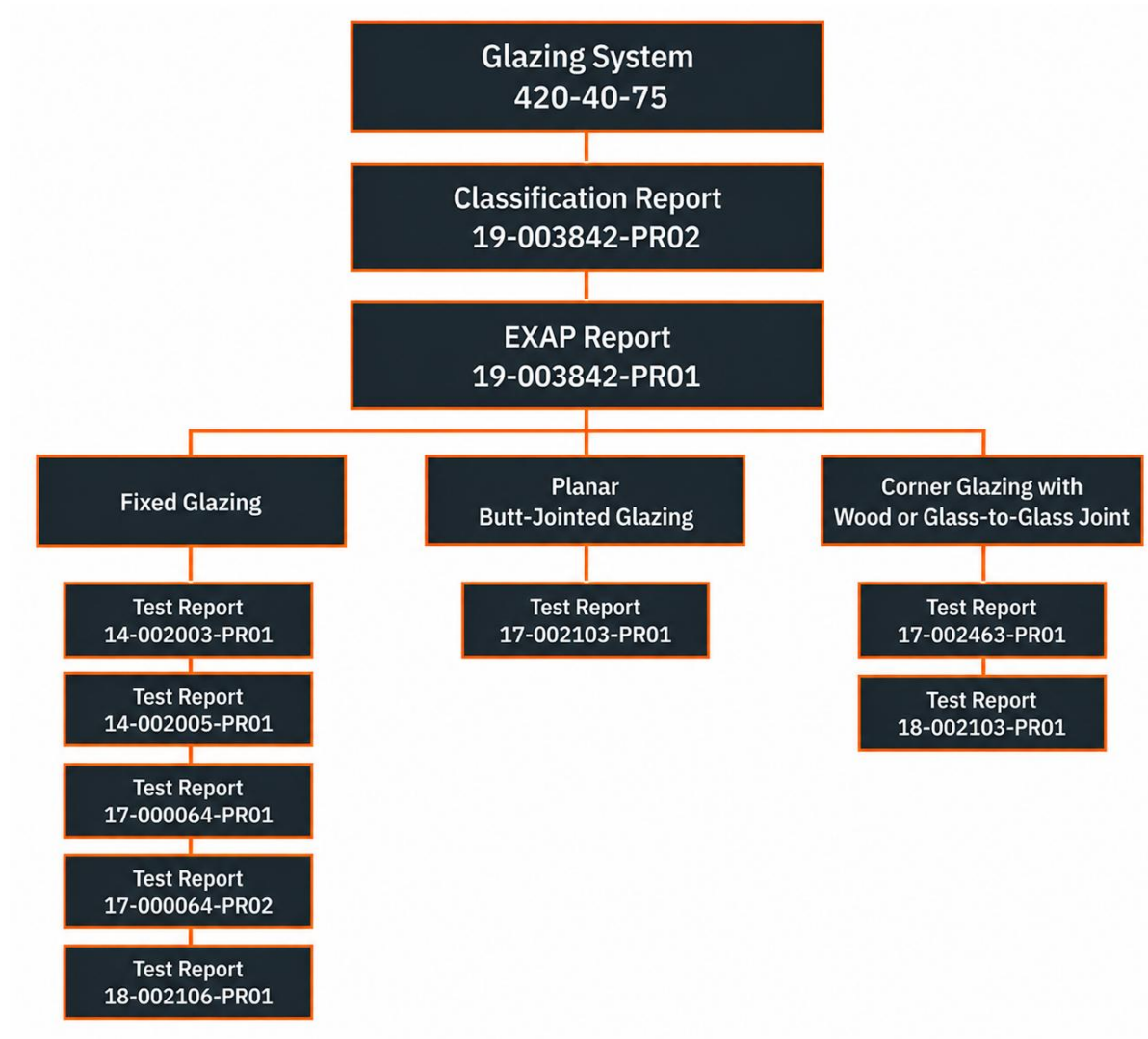


Figure 1: Structure of supporting documents (test reports, EXAP and classification reports)

5 Glazing variants

5.1 Fixed glazing

The maximum permissible construction height is 4950 mm; the width is not limited. The edge distances of the fixing points must not exceed 150 mm; uniform fixing distances of no more than 600 mm must be maintained in the field.

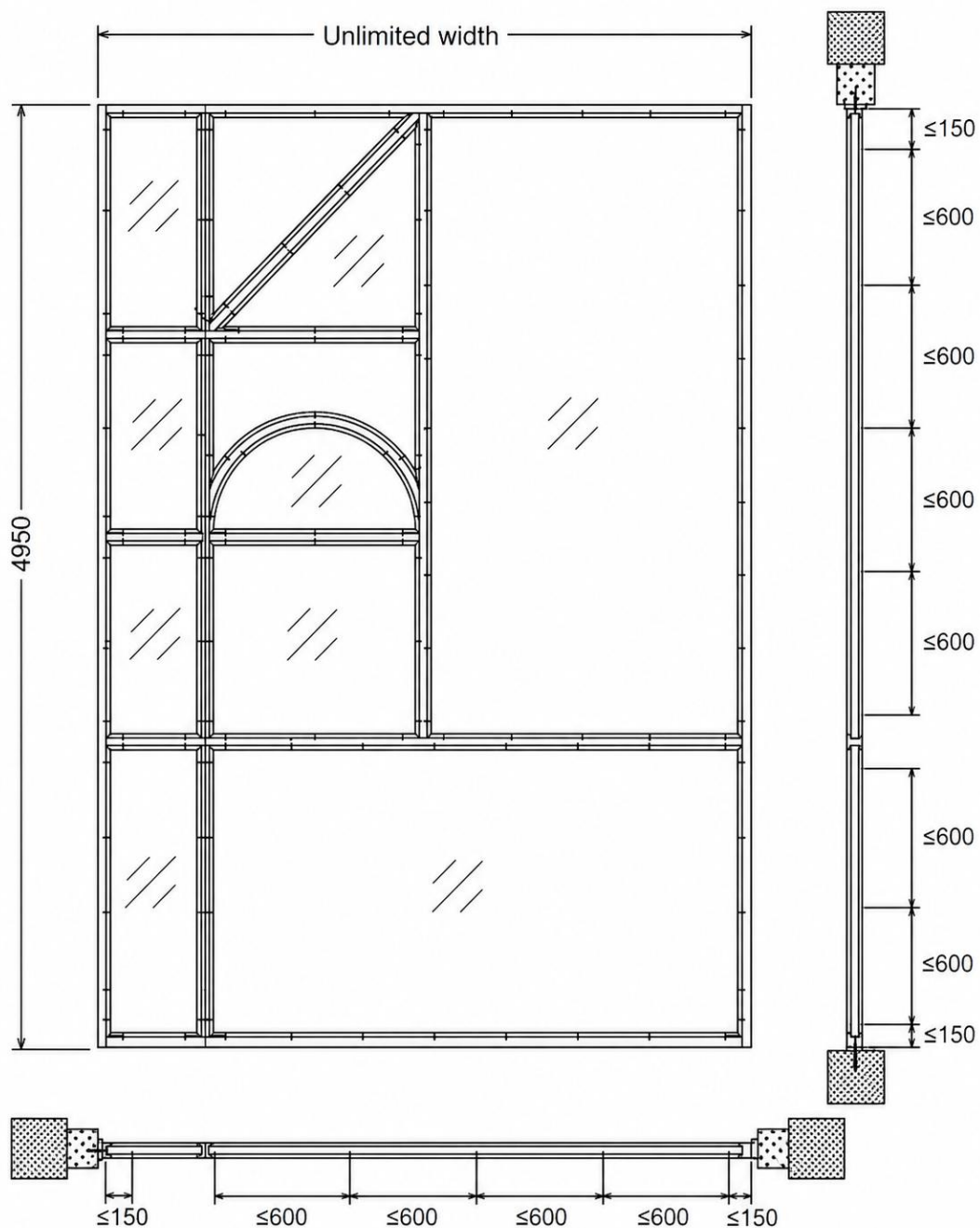


Figure 2: View of fixed glazing

5.1.1 Glass types and approved dimensions

The following glass types in Table 2 are approved for use in glazed partitions in both fire directions in system PG 420-40-75.

Table 2: Glass types and dimensions

Pyroguard Rapide Plus	Thickness [mm]	Width [mm]	Height [mm]	Area [m²]
Pyroguard EI30 INT	15	2860	2860	5.72
Pyroguard EI30 INT O*	16			
Pyroguard EI30 INT	15	1990	3002	5.97
Pyroguard EI30 INT O*	16	2860	3002	5.85
Pyroguard EI30 INT VI	CD	1530	3030	4.64
Pyroguard EI30 INT O VI*		2630	1610	4.23
Pyroguard EI30 INT TVI		2630	3030	4.44
Pyroguard EI30 INT O TVI*				
Pyroguard EI30 EXT VI	CD	1530	3030	4.64
Pyroguard EI30 EXT O VI*		2630	1610	4.23
Pyroguard EI30 EXT TVI		2630	3030	4.44
Pyroguard EI30 EXT O TVI*				
CD = construction dependent (see section 11)				
*= not standard stock				
O = Obscured, satin				
VI= Insulated Glazed Unit (IGU, DGU)				
TVI= Triple Glazed Unit (TGU)				
INT= Internal grade				
EXT= External grade				

5.1.2 Insulating glass units

Insulating glass variants with fire-resistant properties may be used under the following conditions:

Double and triple insulating glass with a total spacer dimension of no more than 28 mm.

Steel, stainless steel, aluminium and silicone matrix systems may be used as spacers.

Float glass (F), toughened safety glass (ESG) and laminated safety glass (VSG, up to 8 interlayers of 0.38 mm each) with an individual pane thickness of up to 6 mm may be used as counterpanes.

5.1.3 Glass shapes

Circular, triangular and four-sided non-rectangular geometries may be produced, provided that their dimensions lie within the extended rectangular pane size specified in the table above.

5.2 Butt-joint glazing

A distinction is made between three different butt-joint glazing variants:

- Butt-joint glazing, straight design (Figure 3)
- Butt-joint glazing with angles and without vertical mullions (Figure 4)
- Butt-joint glazing with angles and vertical mullion (Figure 5)
- Angled mullions without glass-glass joints (Figure 6)

The maximum permissible construction height for all variants is 3090 mm; the width is not limited. The edge distances of the fixing points must not exceed 150 mm; uniform fixing distances of no more than 600 mm must be maintained in the field. The information on the fixing points applies to all variants.

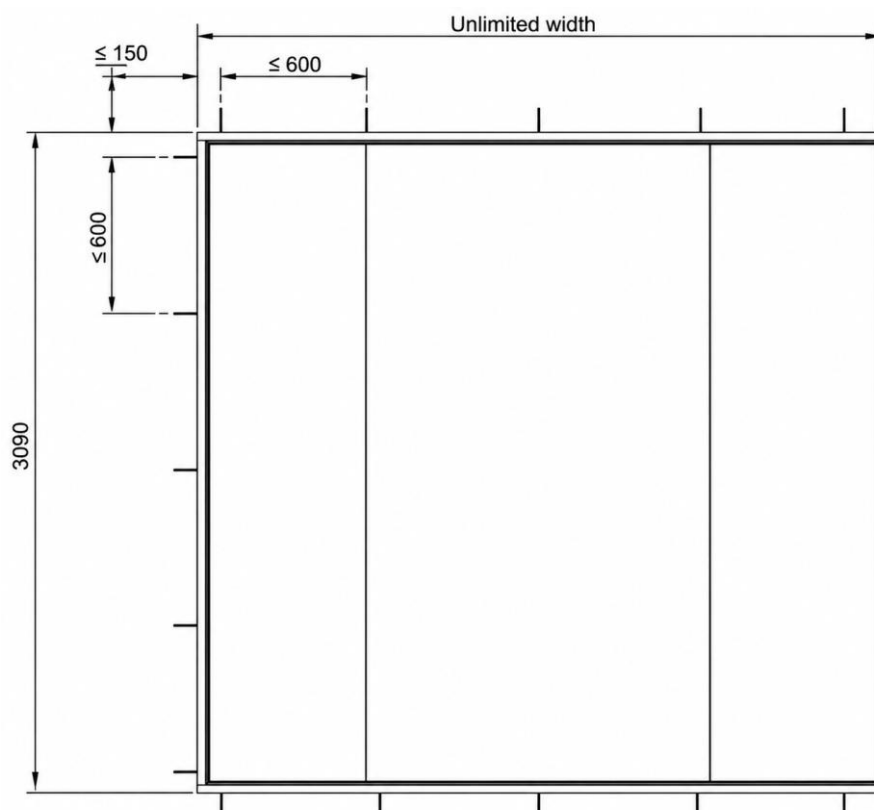


Figure 3: Butt-joint glazing, straight design

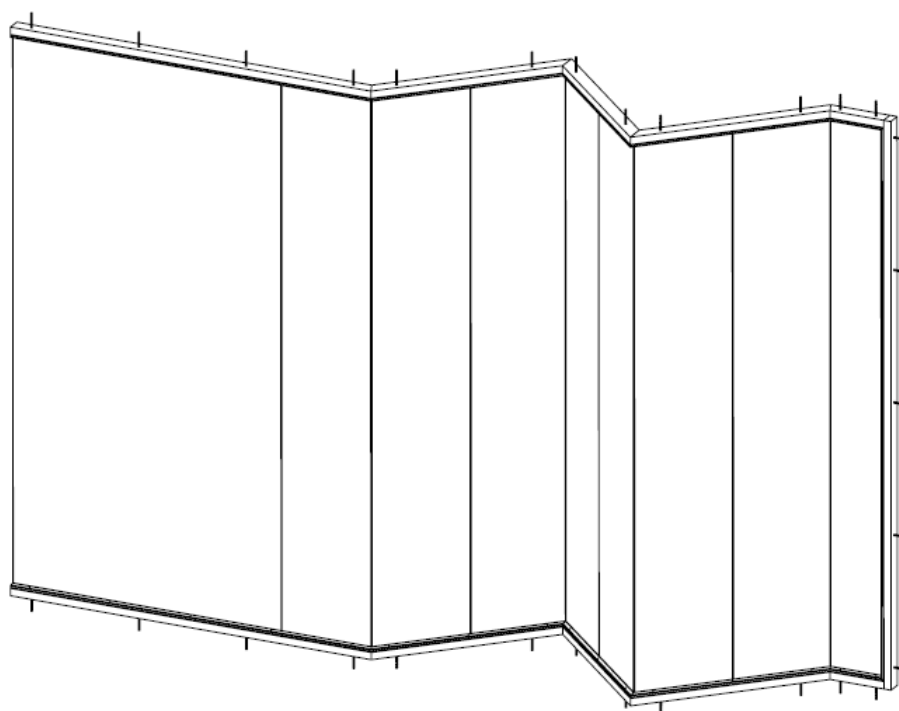


Figure 4: Butt-joint glazing with angles, designed with glass joints

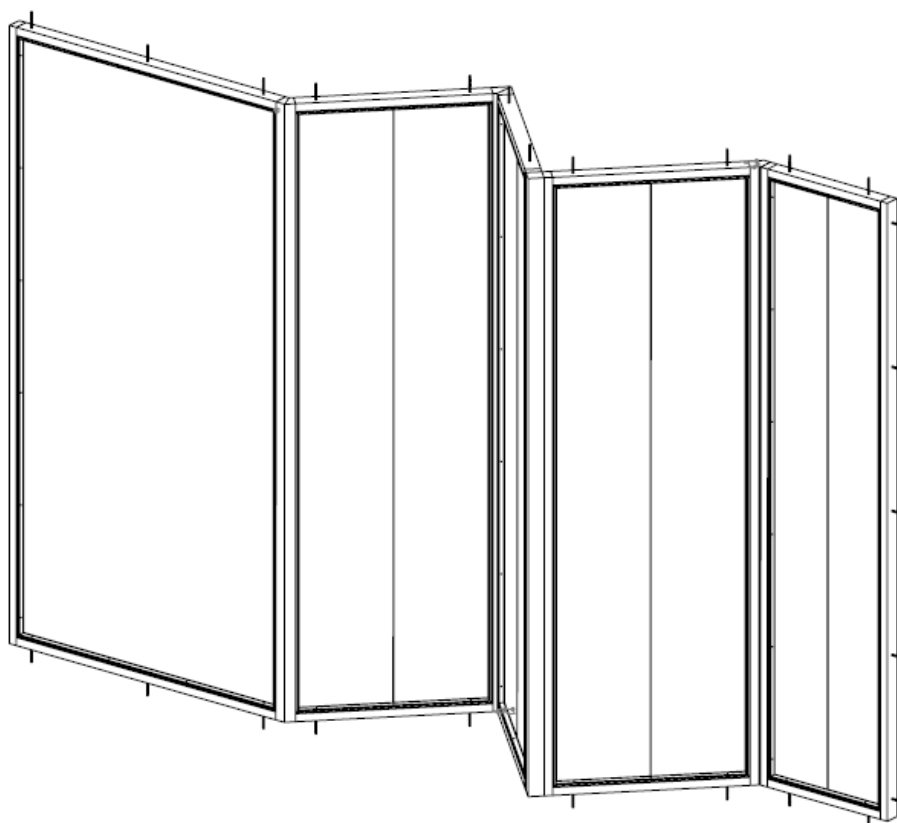


Figure 5: Butt-joint glazing with angles, designed with vertical mullions

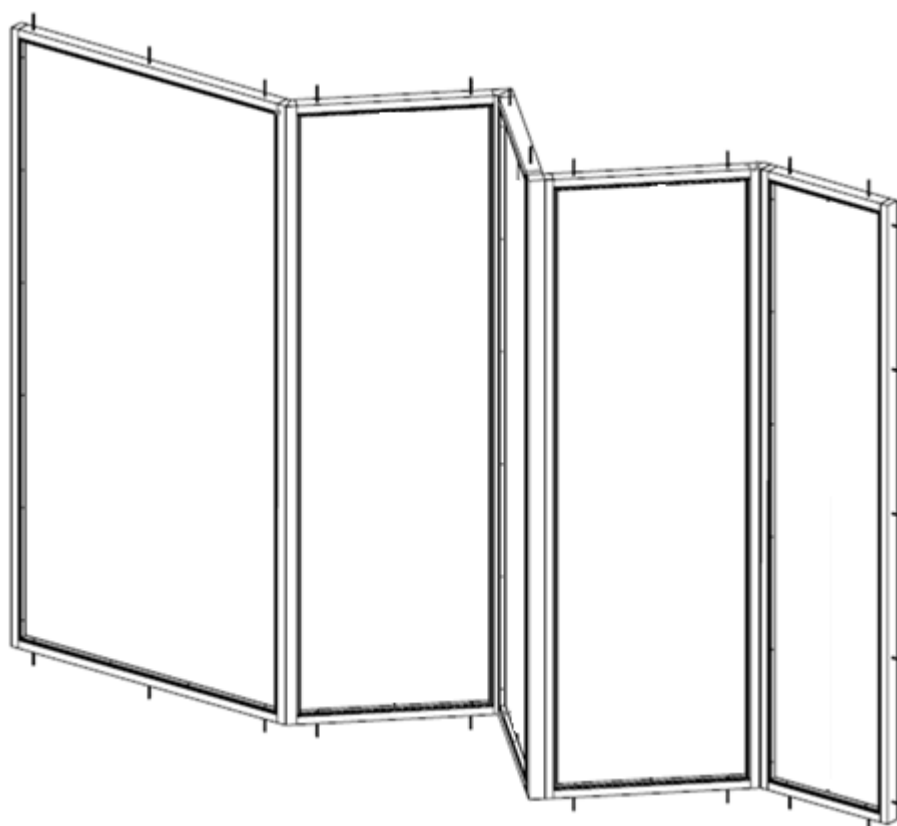


Figure 6 Angled joints with mullions without glass-glass joints

5.2.1 Glass types and dimensions for butt-joint glazing

If butt-joint glazing with glass corner joints (glass joints with angles other than 180°) are installed, glass of type Pyroguard EI30 EXT+ SWS or Pyroguard EI30 EXT+ SWS O must be used. If butt-joint glazing of type with angles and vertical mullion glazing may be selected from any glass in Table 3. Those glazings that are asymmetrical and are approved in both fire directions.

Table 3

Pyroguard Rapide Plus	Width [mm]	Height [mm]	Area [m²]	Application
EI30 INT	≤1500	≤3000	≤4.5	Figure 6
EI30 EXT	≤1500	≤3000	≤4.5	Figure 3; Figure 5; Figure 6;
EI30 EXT O*				
EI30 EXT+ SWS	≤1500	≤3000	≤4.5	Figure 3; Figure 4; Figure 5; Figure 6;
EI30 EXT+ SWS O				
*= not standard stock				

6 Glazing system

6.1 Components of the glazing system

System PG 420-40-75 is defined as $\geq 420 \text{ kg/m}^3$ timber density (softwood) of section $\geq 40 \text{ (h)} \times \geq 75 \text{ (d)}$.

This section of the document describes the system options.

Table 4

- | | |
|----|--|
| 1 | Fixing of the glazing bead with screws or nails $\geq 40 \text{ mm (l)}$ |
| 2 | Pyroguard Rapide Plus EI30-xx |
| 3 | Glazing bead |
| 4 | Glazing bead with increased width |
| 5 | Glass edge cover or bite (see EN 12488) |
| 6 | Height of the glazing bead / glass rebate (see EN 12488) |
| 7 | Width of the glazing bead |
| 8 | Width of the frame profile |
| 9 | Ceramic fibre strip (e.g.: Kerafix 2000 KuhnOdice) |
| 10 | Glazing block (e.g.: Flammi 12 / Promatect H KuhnOdice) |

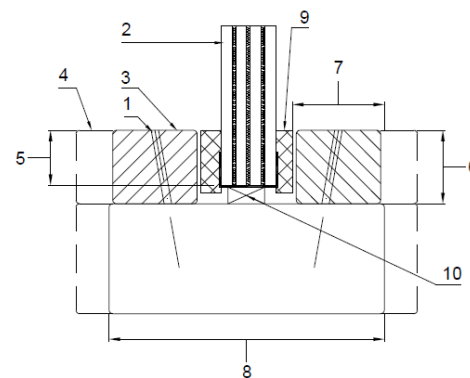


Figure 6: Glazing system

6.2 Profiles

The profiles must be made of timber with an average density of at least 420 kg/m^3 . Solid timber and laminated timber are permitted. The glazing beads must have a minimum cross-section of $15 \text{ (h)} \times 20 \text{ (w)} \text{ mm}$. For glazing with a thickness of more than 40 mm , the profile depth must be increased in proportion to the glass thickness at a ratio of 1:1.

The glazing beads may be screwed or nailed. Nails may be hand tool or machine driven. Screws and nails must be of minimum dimension 40 mm length. The fixing must be centred and installed at an inclination of approximately 10° towards the glass. The edge distance of the fixing is 80 mm ; uniform distances of no more than 450 mm centres are permitted in the field.

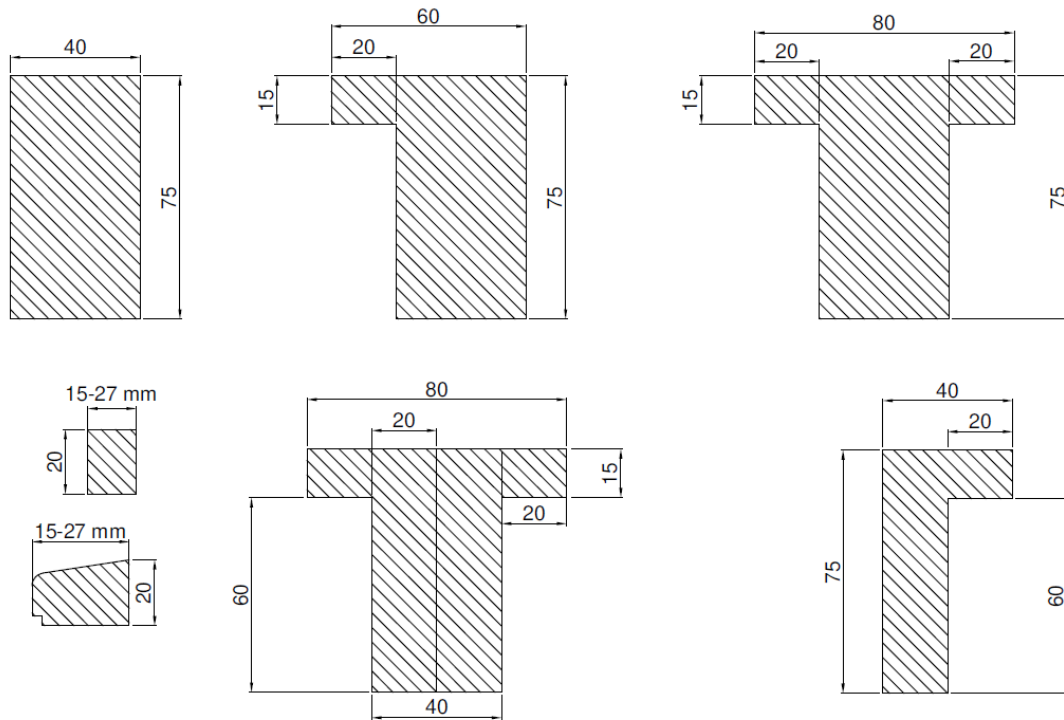


Figure 7: Profile types and dimensions

6.3 Profile joints

Frame joints may be fabricated in the following variants:

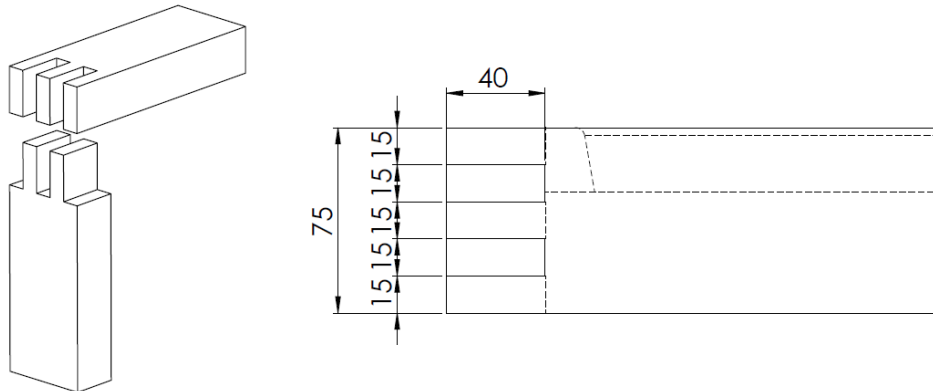


Figure 8: Butt-joint with mortise and tenon, bonded (white wood glue)

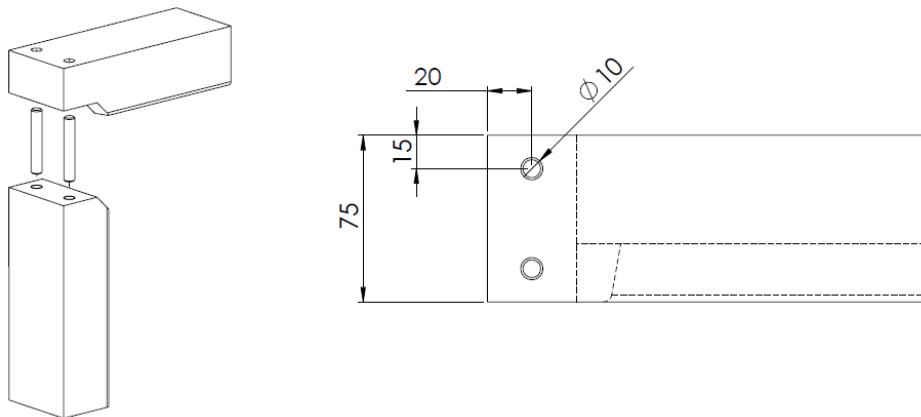


Figure 9: Dowelled with 2 hardwood dowels, diameter 10 x 50 mm, bonded (white wood glue)

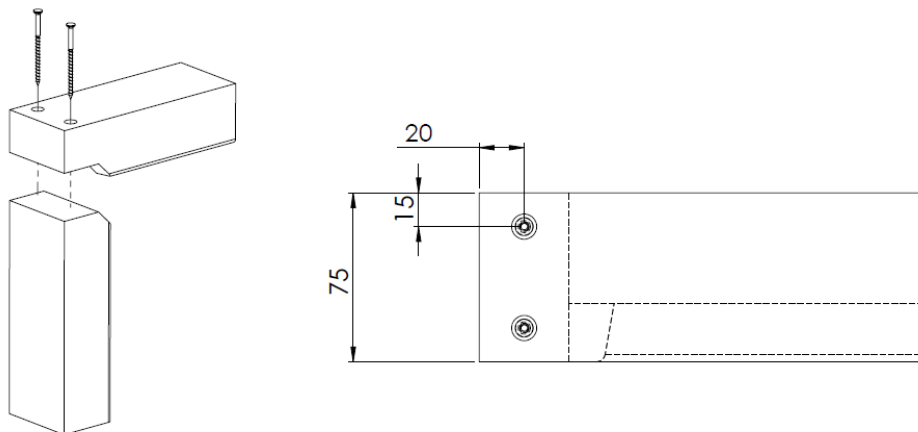


Figure 10: Screwed with 2 countersunk wood screws 4.5 x 60 mm

7 Frame couplings

7.1 Planar couplings

It is also possible to connect frame elements to one another using countersunk wood screws 4.5 x 40 mm at spacings between fixing points of ≤ 350 mm.

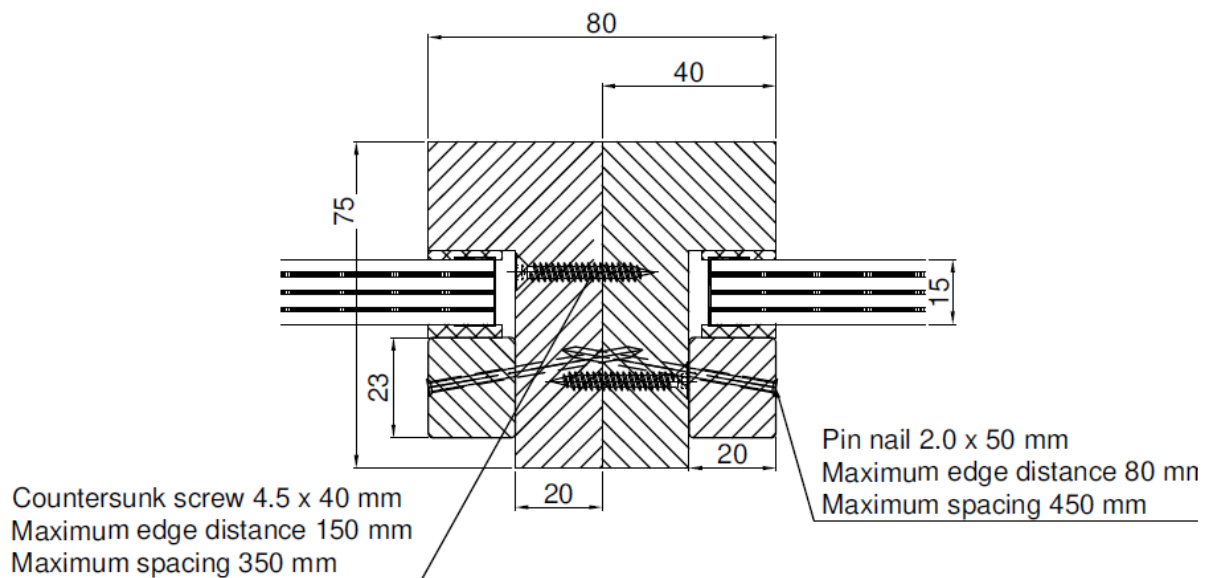


Figure 11: Planar coupling

7.2 Angled couplings

Fire-resistant glazing with corner formation must be executed in accordance with Figure 11 and Figure 12. The corner frames must be designed symmetrically. In the corner area, the mullion profiles must run continuously over the full height of the fire-resistant glazing. The frames are screwed together using countersunk steel screws with a minimum size of 4.5 x 70 mm at 90°. The fixing distances must not exceed 410 mm.

Corner formations of the fire-resistant glazing with angles from 90° to 180° are permitted, provided that the visible width of the frames is not less than 40 mm. The maximum permissible height of the corner construction is 3090 mm, while the width is not limited.

Figure 12: 90° corner with mullion

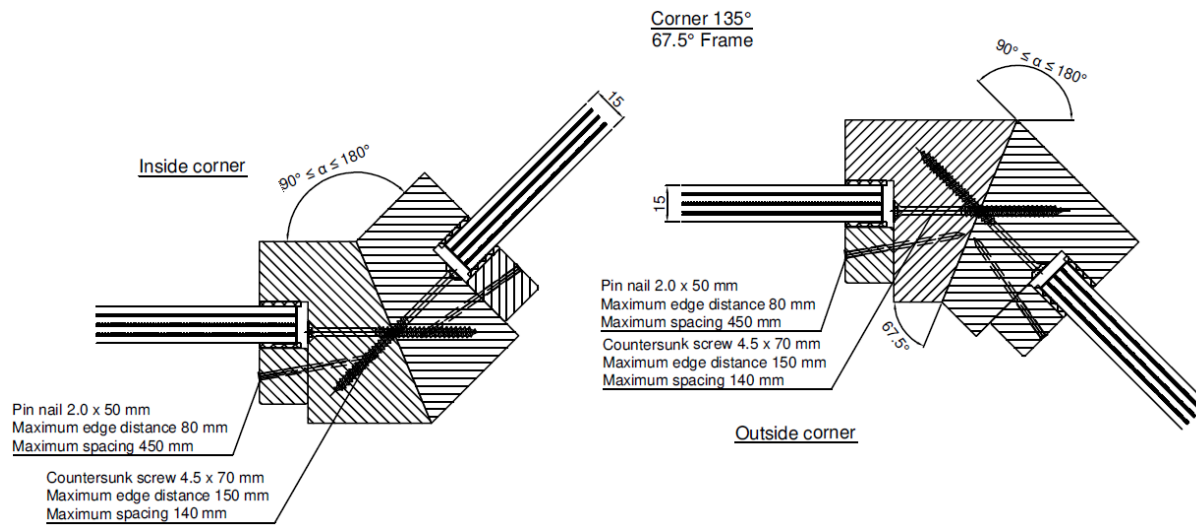


Figure 13: Corners with angles

8 Connections to the supporting structure

8.1 Tested supporting structures

Solid construction with low density blockwork (650 ± 200 kg/m³) and a minimum thickness of 175 mm;

Solid construction with high density blockwork (≥ 850 kg/m³) and a minimum thickness of 175 mm;

Lightweight construction (LBW); partition wall in stud construction with a minimum thickness of 75 mm.

8.2 Connections in reveals

Wall connections in reveals such as masonry or lightweight walls with direct screw fixing.

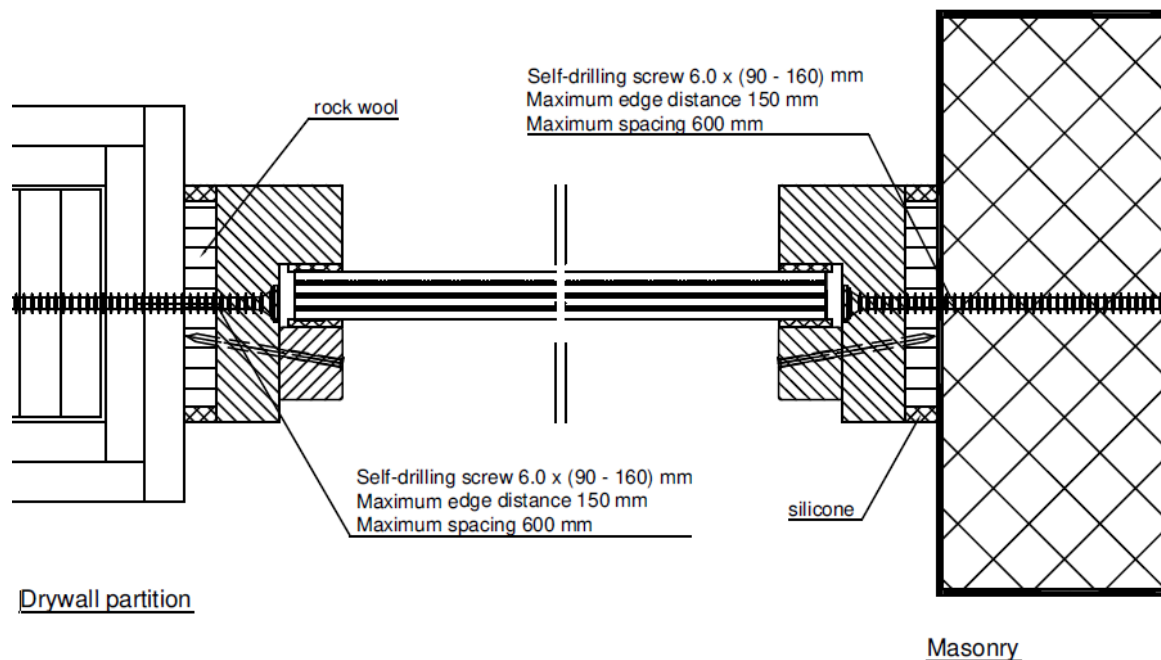
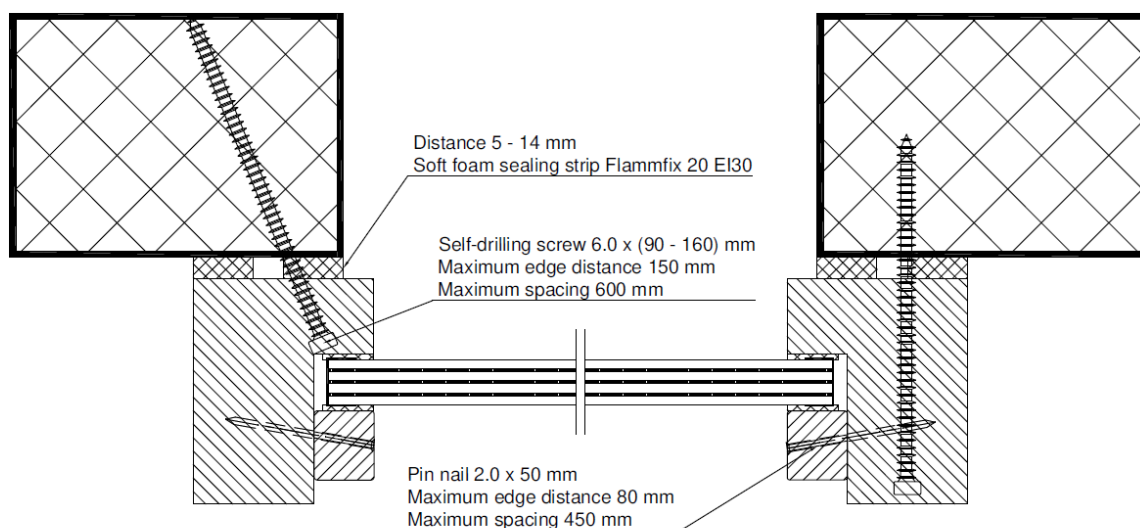


Figure 14: Connection to supporting structure in reveal

8.3 Connections suspended in front of the supporting structure

Wall connections mounted on the surface with concealed or visible installation screws, e.g. to masonry or lightweight walls.



Installation is not visible in the rebate

Visible installation

Figure 15: Surface-mounted connection to supporting structure

9 Glass coupling – butt-joint

9.1 Butt-joint glazing, straight joints

Fire-resistant glazing with butt-joints must be executed in accordance with Figure 15. The timber frame at the side, top and bottom connections must be formed in accordance with the section "Connections to the supporting structure". Pyroguard Rapide Plus 30-19 fire-resistant glass must be used as the glazing. The maximum permissible glass size is 1500 x 3000 mm (width x height). The butt-joint must be executed with a visible joint width of approx. 2 mm and provided with an intumescent strip measuring 9 x 2.0 mm (Palusol). The butt-joint is finished on both sides with a silicone sealant (see Figure 15).

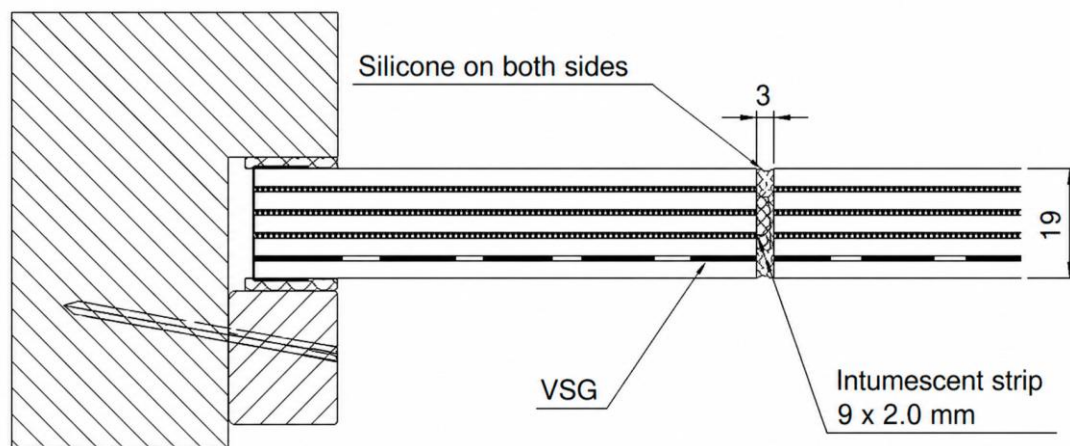


Figure 16: Frame with straight butt-joint glazing

9.2 Butt-joint glazing, corner joints

Fire-resistant glazing with corner butt-joints must be formed in accordance with Figure 16 and Figure 17. The timber frame at the side, top and bottom connections must be formed in accordance with the section "Connections to the supporting structure". Pyroguard Rapide Plus EI30+ SWS fire-resistant glass must be used as the glazing. The maximum permissible glass size is 1500 x 3000 mm (W x H). The butt-joint must be executed with a width of approx. 2.0 mm and provided with an intumescent strip (Palusol KuhnOdice) 20 x 2.0 mm (135°) and 30 x 2.0 mm (90°). The butt-joint is finished on both sides with a silicone sealant (such as Kerafix fire protection silicone from KuhnOdice). Corners with an angle of up to 90° are possible as a butt-joint (see Figure 16 and Figure 17).

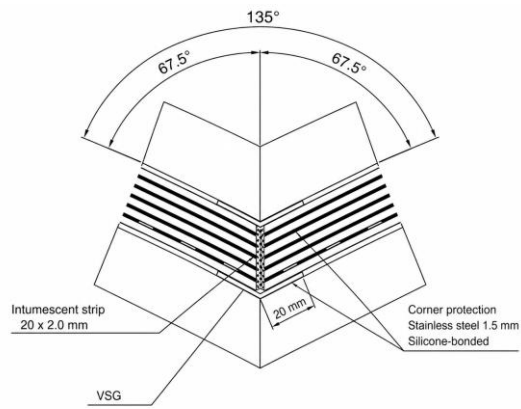


Figure 17: Butt-joint with an angle of 135°

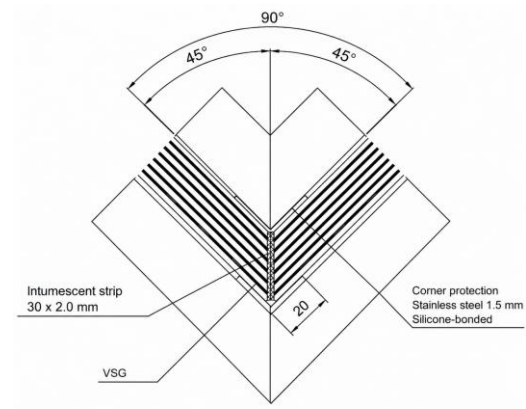


Figure 18: Butt-joint with an angle of 90°

10 Product data sheet

Pyroguard Rapide Plus

- EI30 INT
- EI30 INT VI
- EI30 EXT
- EI30 EXT VI

EN1279-5+A2 INSULATING GLASS UNITS
EN14449 LAMINATED SAFETY GLASS

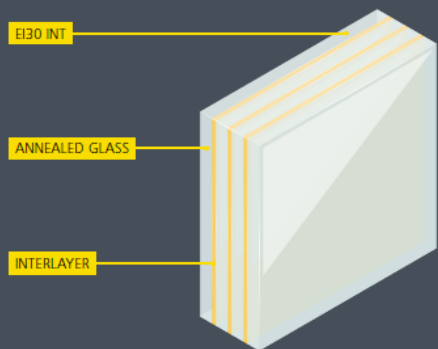


Classification: EI

The highest level of protection from flames, smoke and heat.



Structural wall / butt joint





Fire resistance
EI30



Cuttability
glass



Light weight



Good sound reduction



Impact resistance
1B1



Good light transmission



Great U-value



Temp range
-40°C/+50°C

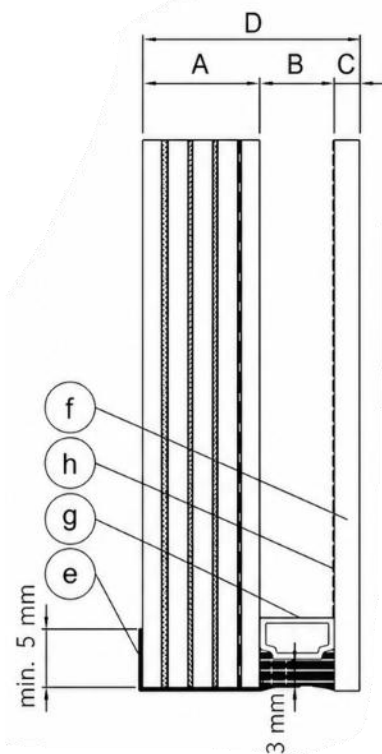


Attack resistance
P1A

CHARACTERISTICS	EI30 INT	EI30 INT VI 16mm SPACER 33.1 LOW E COUNTERPANE	EI30 EXT	EI30 EXT VI 16mm SPACER 4mm LOW E COUNTERPANE
FIRE RESISTANCE (EN 13501-2)	EW60/EI30	EI30	EI30	EI30
GLASS PRODUCTION SIZE MIN - MAX (mm)	100 x 100 2125 x 3100	100 x 100 2125 x 3100	100 x 100 2125 x 3100	100 x 100 2125 x 3100
THICKNESS AND TOLERANCE (mm)	15 (+3/-3)	37 (+3/-3)	19 (-3/+3)	39 (-3/+3)
WEIGHT (kg/m²)	34	50	43	55
Rw (C;Ctr) SOUND REDUCTION (EN 140-3)	38 (-1;-3)	43 (-2;-5)	39 (-1;-3)	-
TV LIGHT TRANSMISSION (EN 410) (%)	85	70	84	70
Ug VALUE (EN 673) W/m²K	5.4	1.0	5.3	1.0
g VALUE (EN 410)	0.7	0.46	0.66	0.48
TEMPERATURE RANGE (°C)	-40/+50	-40/+50	-40/+50	-40/+50
ATTACK RESISTANCE (EN 356)*	P1A	P1A	P1A	P1A
IMPACT RESISTANCE (EN 12600)*	1B1	1B1	1B1	1B1
UV STABILITY (EN ISO 12543-4)	-	✓	✓	✓
CE CERTIFICATE OF CONFORMITY	0757-CPR-695B	1812-CPR-1866	0757-CPR-695B	1812-CPR-1866

*impact and attack resistance of counterpane not reported
 **VI example construction. Data calculated using WINSLT (90% Ar; Guardian 1.0 Low E counterpane)

11 Insulating glass units (VI and TVI)

A Pyroguard EI30-xx Edge tape (e) Made of aluminium foil, plastic-coated, self-adhesive on one side, with 3 mm overlap in the edge seal area B Edge seal / Spacer Spacer (g) ≤ 28 mm C Opposite pane Made of Float glass, ESG (tempered safety glass), TVG (heat-strengthened glass), or VG/VSG (laminated safety glass) with nominal thickness ≥ 3 mm, optional coating (h) on C D Total glass thickness According to table				
Variants Pyroguard EI30-xx VI or TVI				
A ① ②	B ③ ④	C ⑤	D Double-glazed (VI)	D Triple-glazed (TVI)
EI30-xx ≥ 15 mm	≤ 28 mm	Float glass ≥3 mm	≥ 26 mm	≥ 37 mm
		ESG ≥3 mm	≥ 26 mm	≥ 37 mm
		TVG ≥3 mm	≥ 26 mm	≥ 37 mm
		Laminated Float/Float ≥6 mm ⑥	≥ 30 mm	≥ 41 mm
		Laminated ESG/ESG ≥6 mm ⑥	≥ 30 mm	≥ 41 mm
		Laminated TVG/TVG ≥6 mm ⑥	≥ 30 mm	≥ 41 mm

- ① A can also be used as a laminated safety glass in TVI.
 ② EI30-xx can also be used with VG on the exterior side.
 ③ Spacers in steel, aluminum, stainless steel with or without plastic coating, Technoform SP14 and silicone matrix systems.
 As primary sealants polysulfide, as secondary sealants polyurethane, silicone, butyl, hot-melt adhesives.
 ④ Also valid for 2-edge seals in 3-layer ISO (Σ spacer ≤ 28 mm).
 ⑤ Also valid for 3-layer TVI as center pane.
 ⑥ Optional from EVA, PVC, PU or PVB (Σ film in opposite pane & laminated safety glass ≤ 3.04 mm).

F = Float, ESG = Tempered Safety Glass, TVG = Heat-Strengthened Glass,
 VSG = Laminated Safety Glass (VG = Laminated Safety Glass)



Pyroguard UK Ltd

Headquarters - International House
Millfield Lane - Haydock - St. Helens
Merseyside - WA11 9GA - United Kingdom

T: +44 (0) 1942 710 720

E: info@pyroguard.eu

www.pyroguard.eu

Pyroguard France SARL - Parc d'activités communautaire n°1

145 rue des Roseaux - 57455 Seingbouse - France

T: +33 (0)3 87 00 28 15 **F:** +33 (0)3 87 00 28 11 **E:** info.france@pyroguard.eu

Pyroguard Netherlands B.V. - ESP 260 C - 5633

AC Eindhoven - The Netherlands

T: +31 (0) 40 2888 525 **E:** info.nl@pyroguard.eu



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[Pyroguard](https://www.youtube.com/Pyroguard)