

# FIRE RESISTANCE CLASSIFICATION REPORT No. 22982C

## OWNER OF THE CLASSIFICATION REPORT

AGC GLASS EUROPE nv  
Avenue Jean Monnet 4  
1348 Louvain-la-Neuve  
Belgium

## INTRODUCTION

This classification report defines the classification assigned to two non-loadbearing glazed walls (type: Pyrobel-T EW120-16 TPS and Pyrobel-T EI30-18 TPS, in steel tube insulated frames) – mounted in a standard aerated concrete wall, in accordance with the procedures given in EN 13501-2:2023: Fire classification of products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services.

This classification report consists of 15 pages and 7 annexes and may only be used or reproduced in its entirety.

## 1 Details of classified product

### 1.1 General

The elements, type: Pyrobel-T EW120-16 TPS and Pyrobel-T EI30-18 TPS, in steel tube insulated frames, are defined as non-loadbearing glazed walls with fire resistance characteristics.

### 1.2 Description

The elements, Pyrobel-T EW120-16 TPS and Pyrobel-T EI30-18 TPS, in steel tube insulated frames, are fully described below, in support of this classification. The drawings of the test element as it was tested, are enclosed in the annexes 1 till 5 of this classification report.

#### 1.2.1 Composition of the test specimens as tested

The test specimens are two asymmetrical non-loadbearing glazed walls in insulated metal frames.

Outer dimensions of each test specimen:

- height: 3690 mm;
- width: 1390 mm;
- thickness: 140 mm.

##### 1.2.1.1 Supporting structure

Standard supporting construction as described in the European standard EN 1363-1 erected as described in §7.2.2.

[1] Low-density rigid wall	
Material	aerated concrete
Thickness	200 mm
Outer dimensions	4000 mm (w) x 4000 mm (h)
Inner dimensions Glazed wall A	1430 mm (w) x 3730 mm (h)
Inner dimensions Glazed wall B	1430 mm (w) x 3730 mm (h)
Density	550 kg/m <sup>3</sup> (NV)

### 1.2.1.2 Glazing system

[2] Glass pane A				
Manufacturer	AGC			
Reference	Pyrobel-T EW120-16 TPS			
Composition	T6/4/T6			
TPS	Thermo-plastic spacer			
Orientation	symmetrical			
Thickness	(16.0 ± 1.0) mm (NV)			
Dimensions	Width (mm)	Height (mm)	Weight (kg)	Reference
	1300	3600	168.48	0L002-20-186
Fixing	clasped between the frame [13] and the glazing beads [11]			
[3] Glazing setting block A				
Material	hardwood			
Thickness	5 mm			
Dimensions	80 mm x 16 mm			
Density	655 kg/m <sup>3</sup> (NV)			
Quantity	2 underneath the glass pane			
[4] Glazing strip A				
Manufacturer	Odice			
Reference	Superwool X607			
Material	ceramic paper tape			
Section dimensions	20 mm x 5 mm			
Density	230 kg/m <sup>3</sup> (NV)			
Position	<ul style="list-style-type: none"> <li>- between the glass pane [2] and the glazing beads [11] on the unexposed side; and</li> <li>- between the glass pane and the cooling strips [14] of the frame on the exposed side</li> </ul>			
Fixing	self-adhesive			
[5] Intumescent strip A				
Manufacturer	Jung			
Reference	Flamiseal G-18x2			
Material	graphite-based intumescent			
Section dimensions	16 mm x 2 mm			
Position	around the glass pane [2]			
Fixing	self-adhesive			

[6] Glass pane B				
Manufacturer	AGC			
Reference	Pyrobel-T EI30-18 TPS			
Composition	T6/6/T6			
TPS	Thermo-plastic spacer			
Orientation	symmetrical			
Thickness	(18.0 ± 1.0) mm (NV)			
Dimensions	Width (mm)	Height (mm)	Weight (kg)	Reference
	1300	3600	182.53	0L002-18-098
Fixing	clasped between the frame [13] and the glazing beads [11]			
[7] Glazing setting block B				
Material	hardwood			
Thickness	5 mm			
Dimensions	80 mm x 18 mm			
Density	655 kg/m <sup>3</sup> (NV)			
Quantity	2 underneath the glass pane			
[8] Glazing strip B				
Manufacturer	Odice			
Reference	Superwool X607			
Material	ceramic paper tape			
Section dimensions	20 mm x 3 mm			
Density	230 kg/m <sup>3</sup> (NV)			
Position	<ul style="list-style-type: none"> <li>- between the glass pane [6] and the glazing beads [11] on the unexposed side; and</li> <li>- between the glass pane and the cooling strips [14] of the frame on the exposed side</li> </ul>			
Fixing	self-adhesive			
[9] Intumescent strip B				
Manufacturer	Jung			
Reference	Flamiseal G-18x2			
Material	graphite-based intumescent product			
Section dimensions	18 mm x 2 mm			
Position	around the glass pane [6]			
Fixing	self-adhesive			

[10] Glazing bead	
Manufacturer	Promat
Reference	Promatect-H
Material	calcium silicate
Section dimensions	54 mm x 20 mm
Density	870 kg/m <sup>3</sup> (NV)
Position	at the inside of the steel tube frames, at the unexposed side
Fixing	with screws (reference: Würth, material: steel diameter: 3.5 mm, length: 35 mm), c/c distance: 200 mm
[11] Sealant	
Manufacturer	Dow
Reference	Firestop 700
Material	neutral silicone
Position	on top of the glazing strips [5] and [9] at the exposed and unexposed side

### 1.2.1.3 Metal framing system

[12] Metal frame	
Reference	steel tubes 80x40x3
Material	steel
Steel thickness	3 mm
Outer dimensions profile	80 mm (d) x 40 mm (w)
Outer dimensions frame	1390 mm (w) x 3690 m (h) x 80 mm (t)
Inter-fixing of the framing parts	welded together
Fixing to the supporting structure	with anchor bolt (reference: Hilti 100 HT, material: steel, diameter: 10 mm, length: 112 mm), c/c distance: 847-848 mm (vertical), 545 mm (horizontal).
[13] Cooling strip	
Manufacturer	Promat
Reference	Promatect-H
Material	calcium silicate
Section dimensions	60 mm x 15 mm
Density	870 kg/m <sup>3</sup> (NV)
Position	2 layers, on the exposed and on the unexposed side

Fixing 1 <sup>st</sup> layer to the steel tube frame	with screws (reference: Würth, material: steel diameter: 3.5 mm, length: 35 mm), c/c distance: 450 mm
Fixing 2 <sup>nd</sup> layer through the 1 <sup>st</sup> layer to the steel tube frame	with screws (reference: Würth, material: steel diameter: 3.5 mm, length: 55 mm), c/c distance: 200 mm
<b>[14] Gasket</b>	
Manufacturer	Odice
Reference	Superwool X607
Material	ceramic paper tape
Section dimensions	15 mm x 3 mm
Density	230 kg/m <sup>3</sup> (NV)
Position	1 layer, in the end joints between the cooling strips [14]
Fixing	self-adhesive
<b>[15] Frame setting block</b>	
Manufacturer	Promat
Reference	Promatect-H
Material	calcium silicate
Dimensions	150 mm x 65 mm x 15 mm
Density	870 kg/m <sup>3</sup> (NV)
Position	3 positions, evenly spread underneath the frame

#### 1.2.1.4 Insulation

<b>[16] Insulation</b>	
Manufacturer	Promat
Reference	Promaglaf HTK 1100
Material	based on alkaline earth silicate wools
Initial thickness	15 mm
Initial density	96 kg/m <sup>3</sup>
Position	between the frames [13] with the cooling strips [14], and the supporting structure

## 2 Test reports/EXAP reports and test results in support of the classification

### 2.1 Test reports/EXAP reports

Name of the laboratory	Report ref. no.	Name of the owner	Date of the test	Method
WFRGENT nv	22982A	AGC GLASS EUROPE nv	06/03/2024	EN 1364-1:2015
WFRGENT nv	22982B	AGC GLASS EUROPE nv	-	EN 15254-4:2018

#### Exposure conditions during the fire resistance test:

Temperature/time curve: standard as in EN 1363-1:2020.

Direction of exposure: The test specimens are asymmetrical constructions. The non-loadbearing glazed walls are exposed to the fire with the glazing beads at the unexposed side.

No extra load supplementary to the own weight of the non-loadbearing glazed walls was applied during the test.

All edges are fixed.

## 2.2 Test results

### Glass pane A: Pyrobel-T EW120-16 TPS

Parameters	Results
<b>Thermal insulation – I</b>	
$\Delta T_m = 140^\circ\text{C}$	30 minuten
$\Delta T_M = 180^\circ\text{C}$	27 minutes
<b>Integrity – E</b>	
Spontaneous and sustained flaming	132 minutes, no failure <sup>(1)</sup>
Failure with gap gauge $\varnothing$ 6 mm	132 minutes, no failure <sup>(1)</sup>
Failure with gap gauge $\varnothing$ 25 mm	132 minutes, no failure <sup>(1)</sup>
Ignition of cotton pad	132 minutes, no failure <sup>(2)</sup>
<b>Radiation – W</b>	
Radiation intensity = 15 kW/m <sup>2</sup>	132 minutes, no failure <sup>(1)</sup>

<sup>(1)</sup> The test was discontinued after 132 minutes at the test sponsor's request.

<sup>(2)</sup> No failure until the moment of failure of the thermal insulation (I).

### Glass pane B: Pyrobel-T EI30-18 TPS

Parameters	Results
<b>Thermal insulation – I</b>	
$\Delta T_m = 140^\circ\text{C}$	42 minuten
$\Delta T_M = 180^\circ\text{C}$	43 minutes
<b>Integrity – E</b>	
Spontaneous and sustained flaming	132 minutes, no failure <sup>(1)</sup>
Failure with gap gauge $\varnothing$ 6 mm	132 minutes, no failure <sup>(1)</sup>
Failure with gap gauge $\varnothing$ 25 mm	132 minutes, no failure <sup>(1)</sup>
Ignition of cotton pad	132 minutes, no failure <sup>(2)</sup>
<b>Radiation – W</b>	
Radiation intensity = 15 kW/m <sup>2</sup>	132 minutes, no failure <sup>(1)</sup>

<sup>(1)</sup> The test was discontinued after 132 minutes at the test sponsor's request.

<sup>(2)</sup> No failure until the moment of failure of the thermal insulation (I).



### 3 Classification and field of application

#### 3.1 Reference of classification

This classification has been carried out in accordance with clause 7 of EN 13501-2:2023.

#### 3.2 Classification

The elements, type: Pyrobel-T EW120-16 TPS and Pyrobel-T EI30-18 TPS, in steel tube insulated frames, are classified according to the following combinations of performance parameters and classes as appropriate. No other classifications are permitted.

The classifications are valid for the direction as stated in clause 2.1: The side of the non-loadbearing glazed walls exposed with the glazing beads away from the fire.

##### Glass pane A: Pyrobel-T EW120-16 TPS

**EI 20, EI 15**

**EW 120, EW 90, EW 60, EW 45, EW 30, EW 20, EW 15**

**E 120, E 90, E 60, E 45, E 30, E 20, E 15**

##### Glass pane B: Pyrobel-T EI30-18 TPS

**EI 30, EI 20, EI 15**

**EW 120, EW 90, EW 60, EW 45, EW 30, EW 20, EW 15**

**E 120, E 90, E 60, E 45, E 30, E 20, E 15**

### 3.3 Field of direct application

This classification is valid for the following end use applications according to EN 1364-1:2015.

The results of the fire test are directly applicable to similar constructions where one or more of the changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability:

#### 3.3.1 Glazed element

##### 3.3.1.5 Installation angle

A change in the angle of installation up to  $\pm 10^\circ$  from the vertical plane is allowed, provided the height of the glazed element does not exceed 3690 mm.

##### 3.3.1.6 Height of the glazed element with overrun

#### Glass pane A: Pyrobel-T EW120-16 TPS

For the classification times:

- EI 20, EI 15
- EW 120, EW 90, EW 60, EW 45, EW 30, EW 20, EW 15
- E 120, E 90, E 60, E 45, E 30, E 20, E 15

#### Glass pane B: Pyrobel-T EI30-18 TPS

For the classification times:

- EI 30, EI 20, EI 15;
- EW 120, EW 90, EW 60, EW 45, EW 30, EW 20, EW 15;
- E 120, E 90, E 60, E 45, E 30, E 20, E 15.

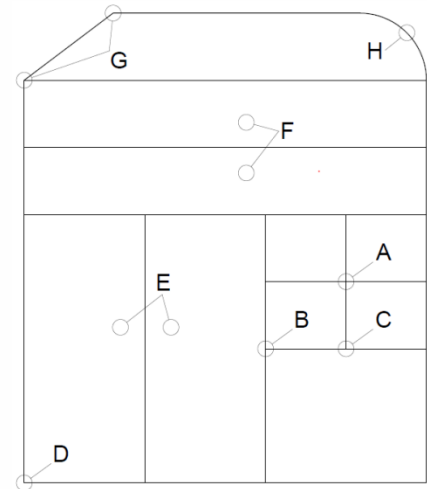
An increase in height up to a maximum of 4428 mm is allowed, provided the allowances for thermal expansion of the construction are increased pro-rata.

### 3.3.1.7 Width of the glazed element

No extension of width except for those allowed by the overrun rules is allowed. Only the tested connection joint is allowed.

Tested connection joint:

- Type D: corner junction.



### 3.3.2 Glazing system

#### 3.3.2.1 Linear dimensions

An unlimited decrease in height and/or width of the panes is allowed.

#### 3.3.2.2 Dimensions and area of individual rectangular glass panes with overrun

Glass pane A: Pyrobel-T EW120-16 TPS

For the classification times:

- EI 20, EI 15
- EW 120, EW 90, EW 60, EW 45, EW 30, EW 20, EW 15
- E 120, E 90, E 60, E 45, E 30, E 20, E 15

Glass pane B: Pyrobel-T EI30-18 TPS

For the classification times:

- EI 30, EI 20, EI 15;
- EW 120, EW 90, EW 60, EW 45, EW 30, EW 20, EW 15;
- E 120, E 90, E 60, E 45, E 30, E 20, E 15.

The following table shows the calculated extended size/area:

Tested sizes/areas			Extended sizes/areas		
Width (mm)	Height (mm)	Area (m <sup>2</sup> )	Width (mm)	Height (mm)	Area (m <sup>2</sup> )
1300	3600	4.68	1560	4320	5.66

In order to accommodate the increase in glass dimensions, it is permitted to increase the distance between mullions and/or transoms.

The results are given in the following annexes:

Glass pane A: Pyrobel-T EW120-16 TPS

Annex 6: the maximum allowed dimensions of rectangular shaped glass panes are represented by the outer lines.

Glass pane B: Pyrobel-T EI30-18 TPS

Annex 7: the maximum allowed dimensions of rectangular shaped glass panes are represented by the outer lines.

### 3.3.2.3 Glazing beads

The tested bead width may be increased ( $\geq 54$  mm). The bead depth may not be changed ( $= 20$  mm). (according to EN 15254-4:2018, figure 5)

### 3.3.2.4 Framing system

The distance between mullions and/or transoms may be decreased from that tested.

The distance between fixing centres may be decreased from that tested ( $\leq 847$ - $848$  mm (vertical),  $\leq 545$  mm (horizontal)).

The cross-sectional dimensions of the frame profiles may be increased from the dimensions tested ( $\geq 80$  mm (d) x  $\geq 40$  mm (w)).

### 3.3.2.5 Supporting constructions

The classification is valid for the following standard supporting constructions in accordance with EN 1363-1 with at least the same fire resistance and overall thickness as the test specimen:

- Low density rigid standard supporting construction;
- High density rigid standard supporting construction;

### **3.4 Field of extended application**

#### **3.4.1 Replacement of glass within the same glass product range**

It is allowed to exchange the glass pane Pyrobel-T with the glass pane TPS DGU variant from the same product range.

Limitation: The Pyrobel-T EW120-16 TPS DGU and Pyrobel-T EI30-18 TPS DGU variants can only be used with the fire side at the side of the fire resistant segment.

#### **3.4.2 Glass shapes**

Circular, triangular or 4 sided non-rectangular shapes may be cut from within the extended rectangular pane size defined by the field of direct application.

All other non-rectangular shapes may only be cut from the tested rectangular pane size and shall not be extended further.

#### **3.4.3 Exchange of gaskets/glazing strips/setting blocks**

Exchange of a glazing material, e.g., gaskets, is only allowed if it is demonstrated in a reference test and/or pre-existing test data that the exchange does not have a detrimental effect on the fire performance within a comparable glazing system of the same glass product range.

#### **3.4.4 Changing or adding surface coverings**

Decorative surface coverings of the glazing beads may be added.

### 3.4.5 Metal frames: Frame materials / sections / thickness of chamber walls

Frame section may be changed provided that it is demonstrated that:

- The inertia of the profiles is not reduced in the cold state.
- The frame section width is not reduced.
- The wall thickness and number of chambers in the frame are not reduced.

Limitation: Without additional test evidence it is not allowed to exchange the tested material for another material.

### 3.4.6 Changes or adding frame surface coverings

Decorative surface coverings of the framing members may be added.

Limitation: Decorative surface coverings of the framing members may be added where one does not exist, provided it is demonstrated that the covering material achieves at least Class A2 when classified according to EN 13501-1.

If the surface covering is not Class A2 then the rules laid down in the EN 15269-2, EN 15269-3 and EN 15269-5 apply.

#### 4 Limitations

This classification report does not represent type approval nor certification of the products.

SIGNED

APPROVED

Signed for and on behalf of Warringtonfire Gent

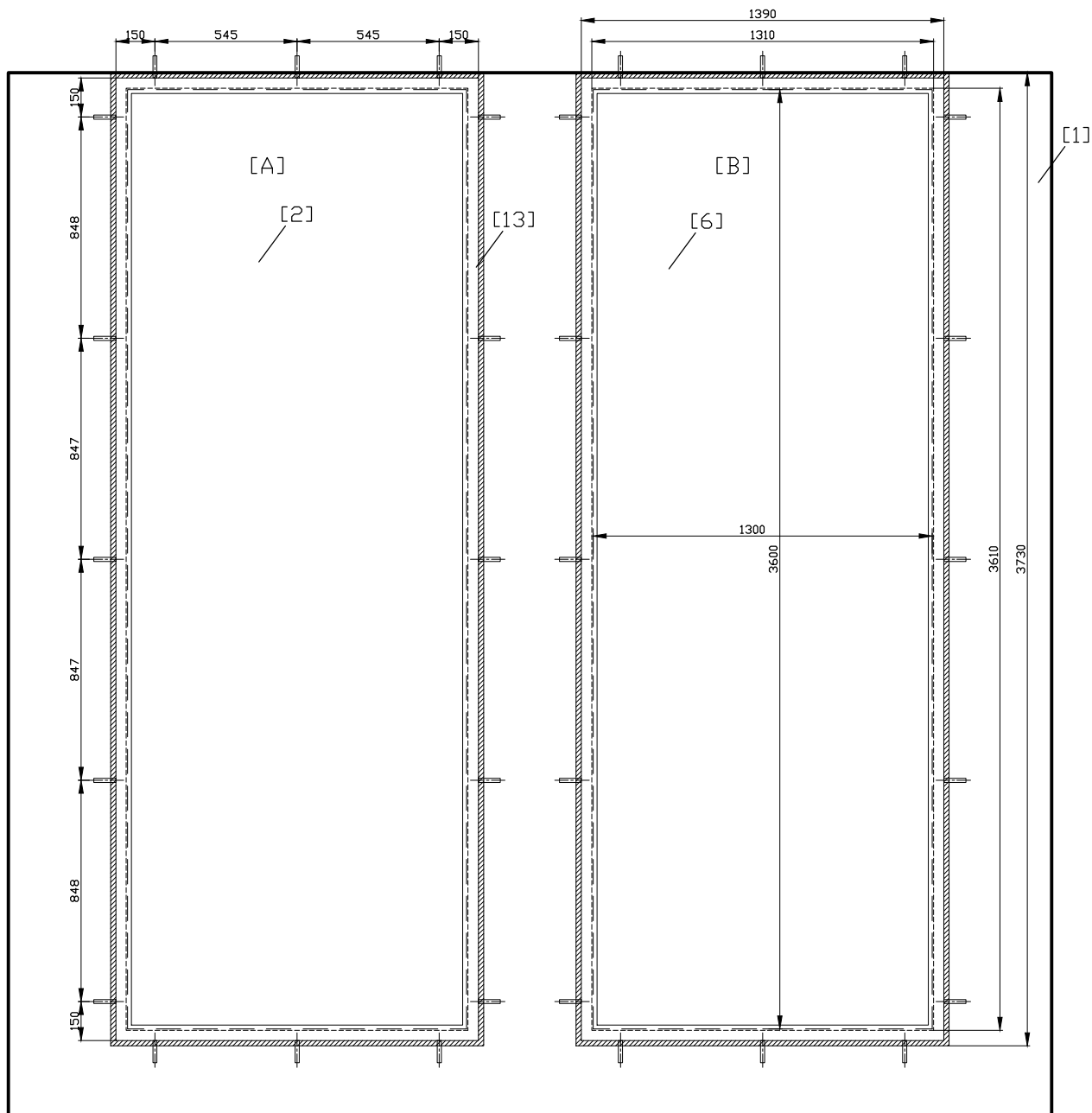
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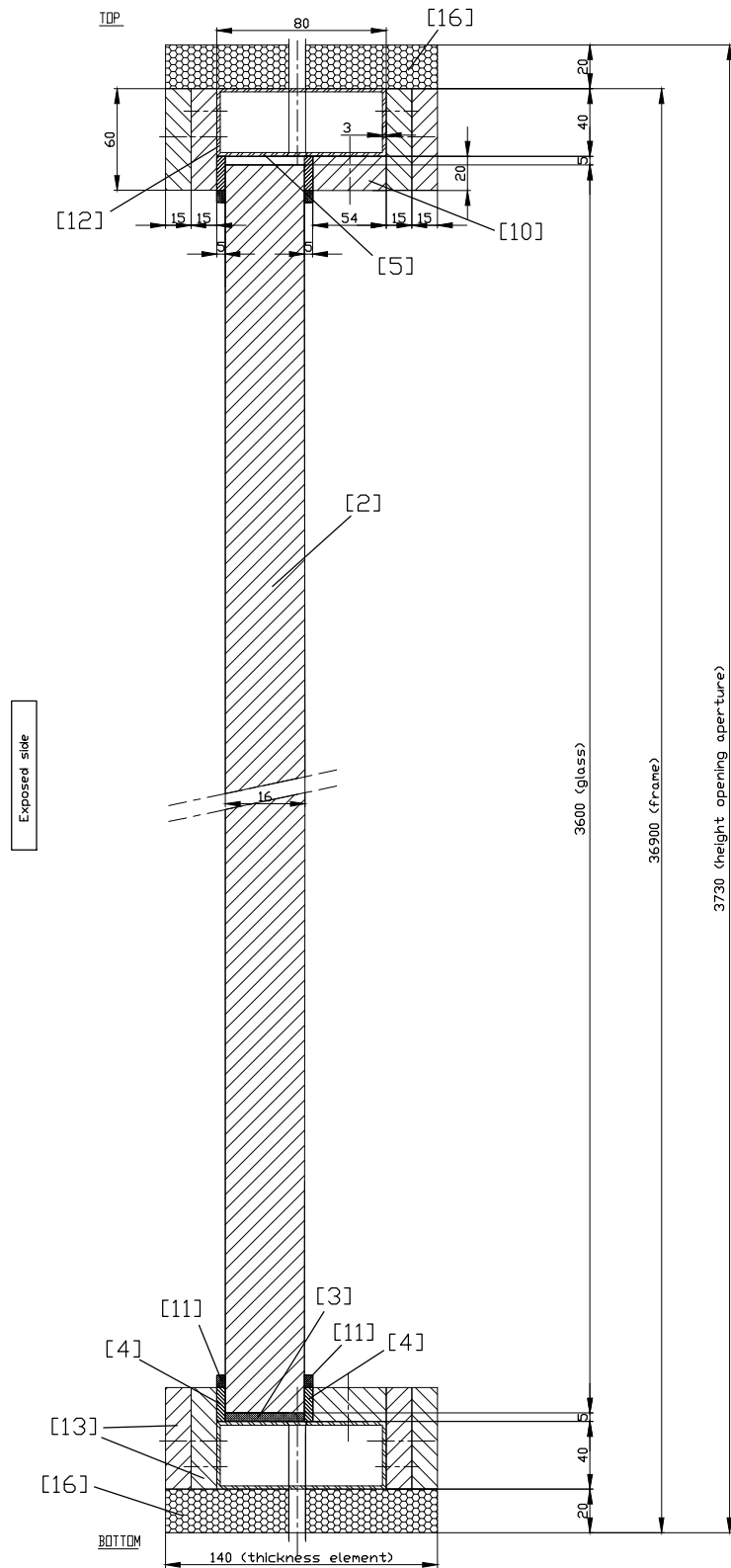
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Front view (unexposed side) - dimensions

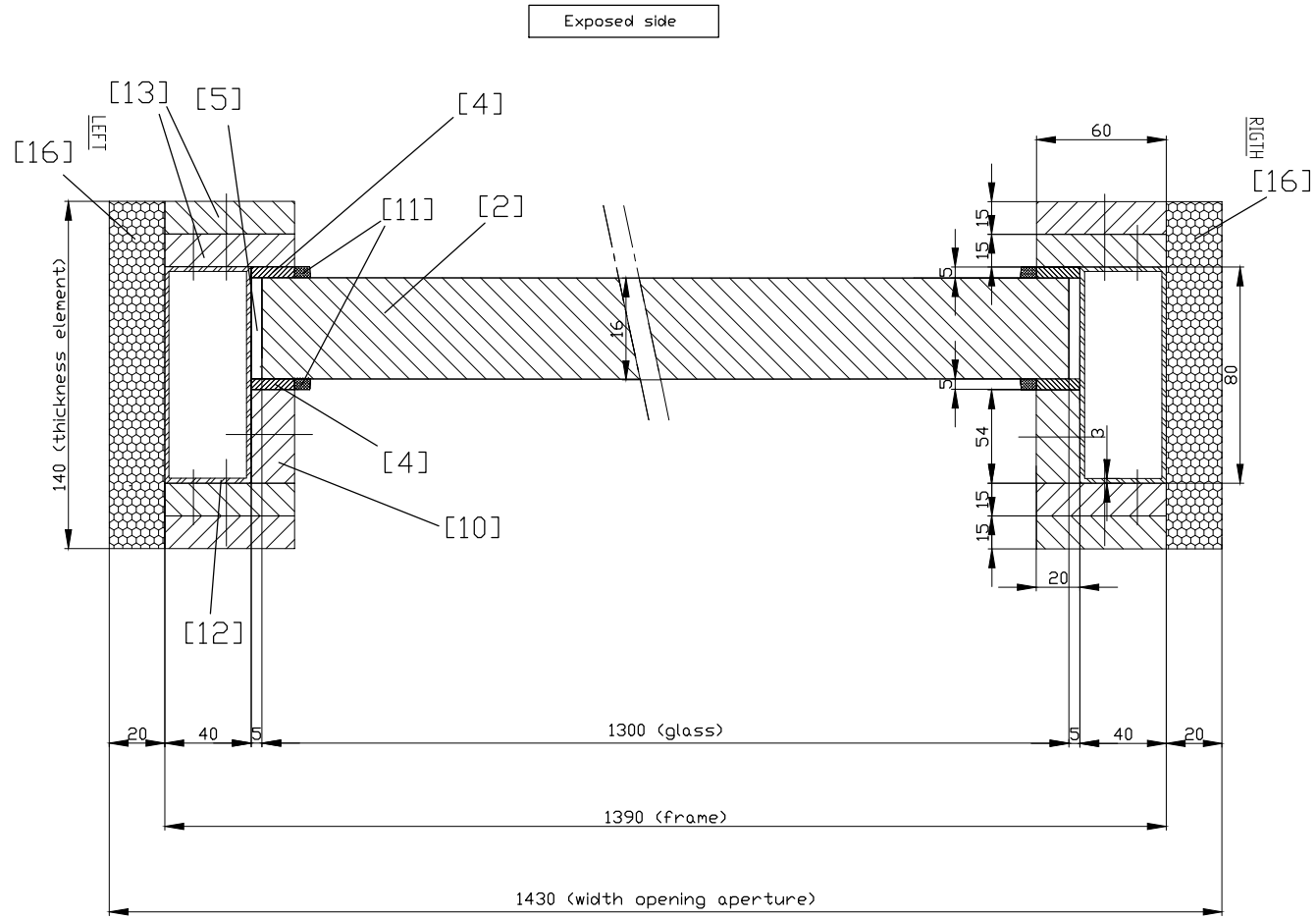




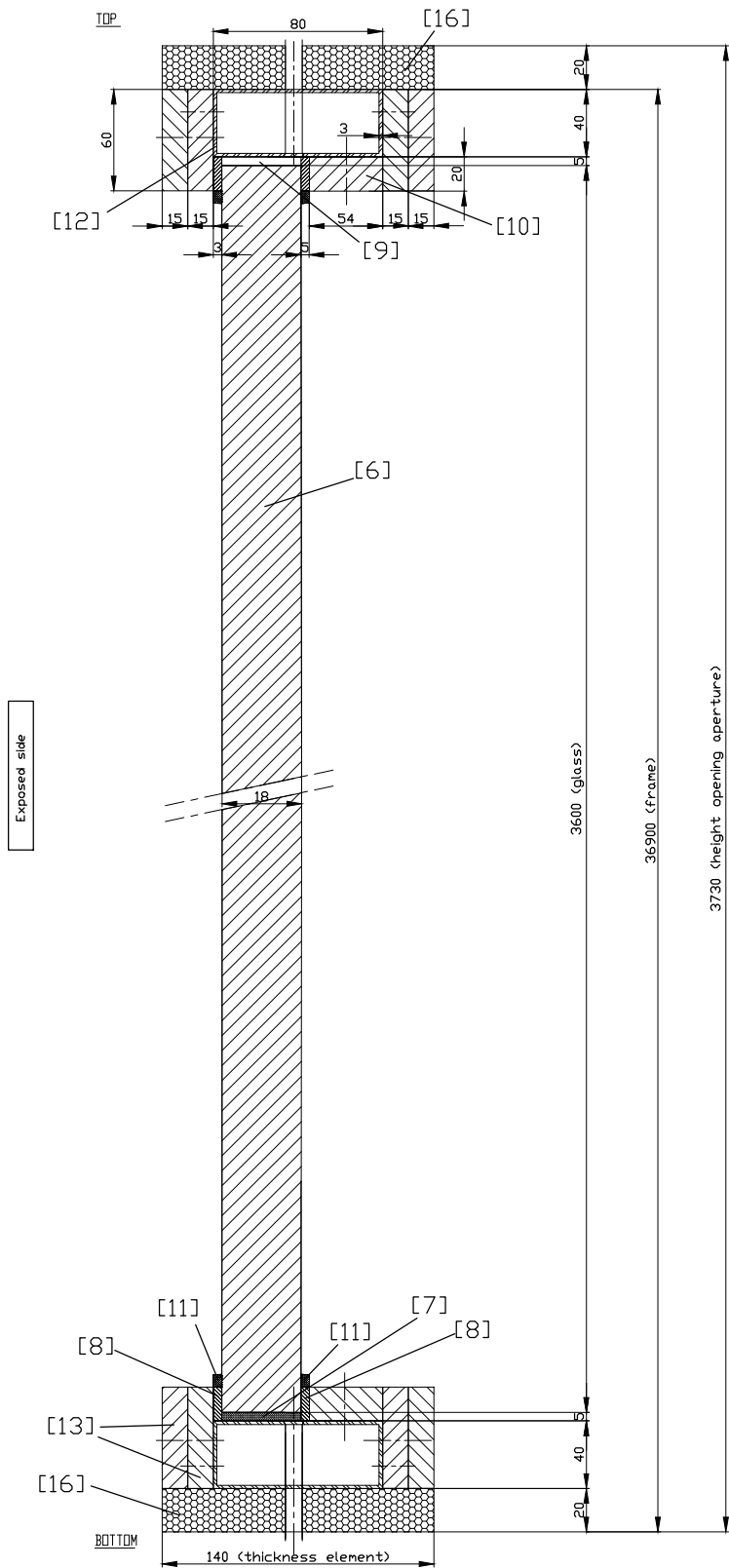
Section A-A - dimensions



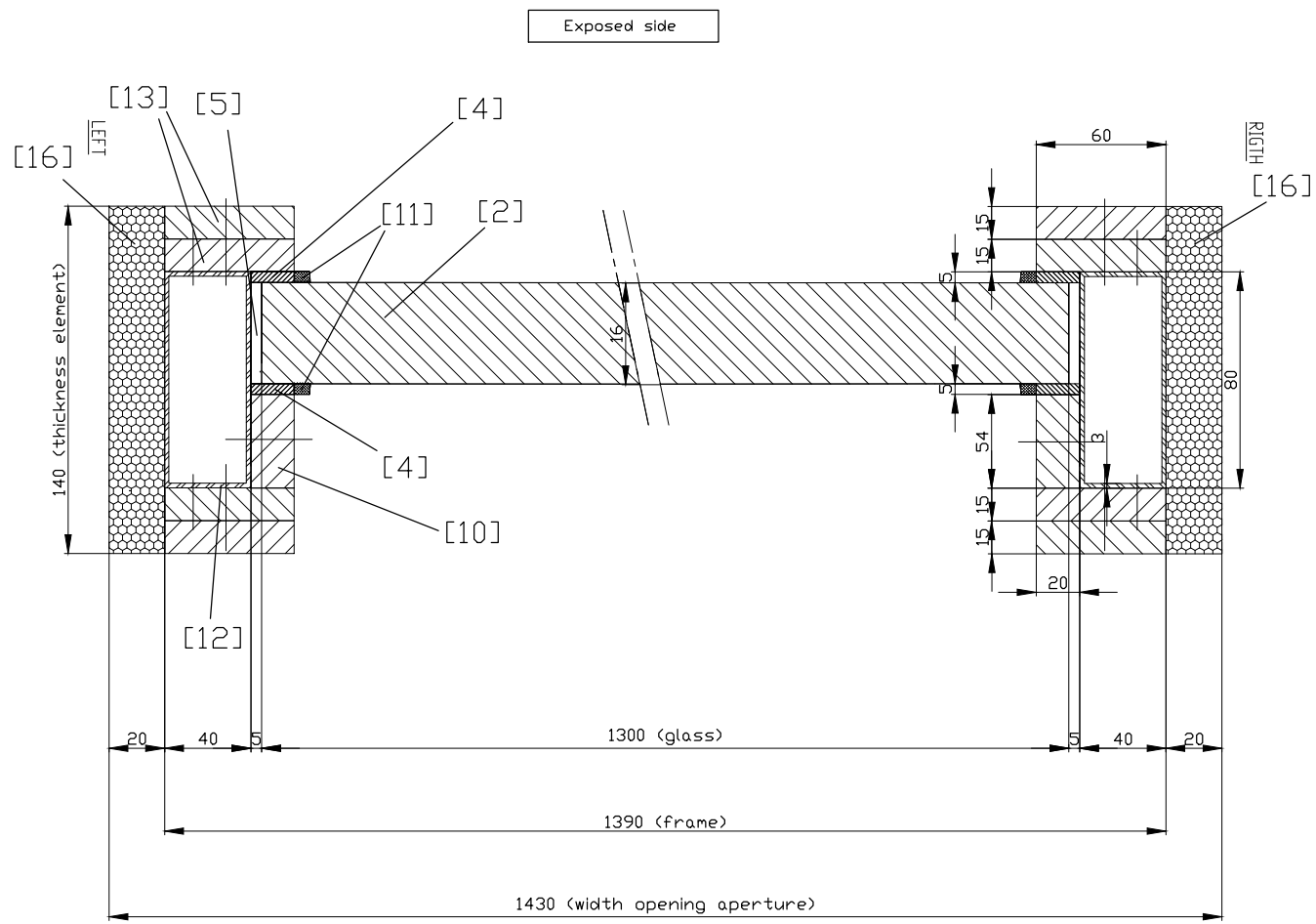
Section B-B - dimensions



Section C-C - dimensions



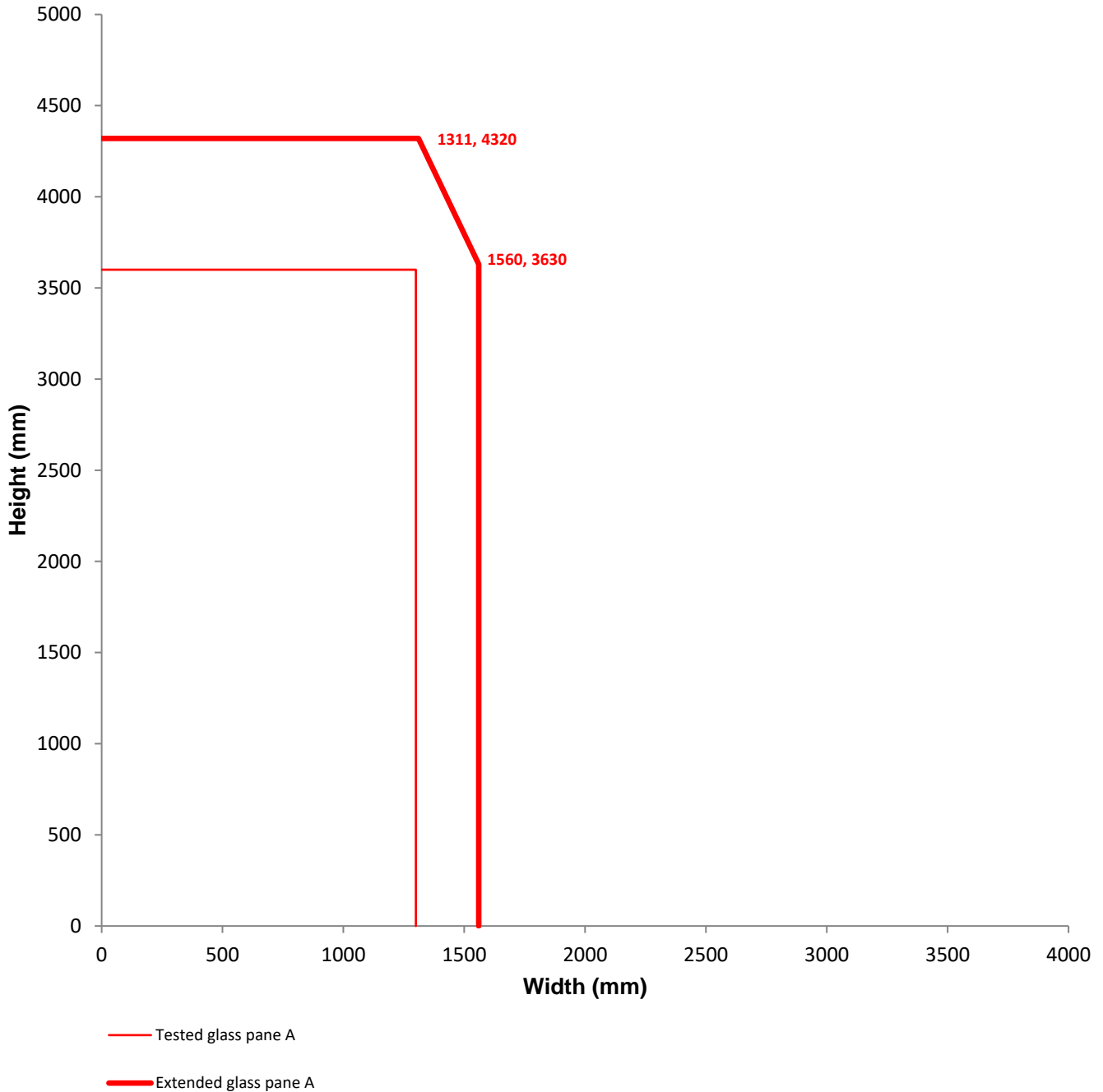
Section D-D - dimensions



**Individual rectangular glass panes: aspect ratio and increase in area**

The extended dimensions are only valid for the following classification times:

- EI 20, EI 15;
- EW 120, EW 90, EW 60, EW 45, EW 30, EW 20, EW 15;
- E 120, E 90, E 60, E 45, E 30, E 20, E 15.



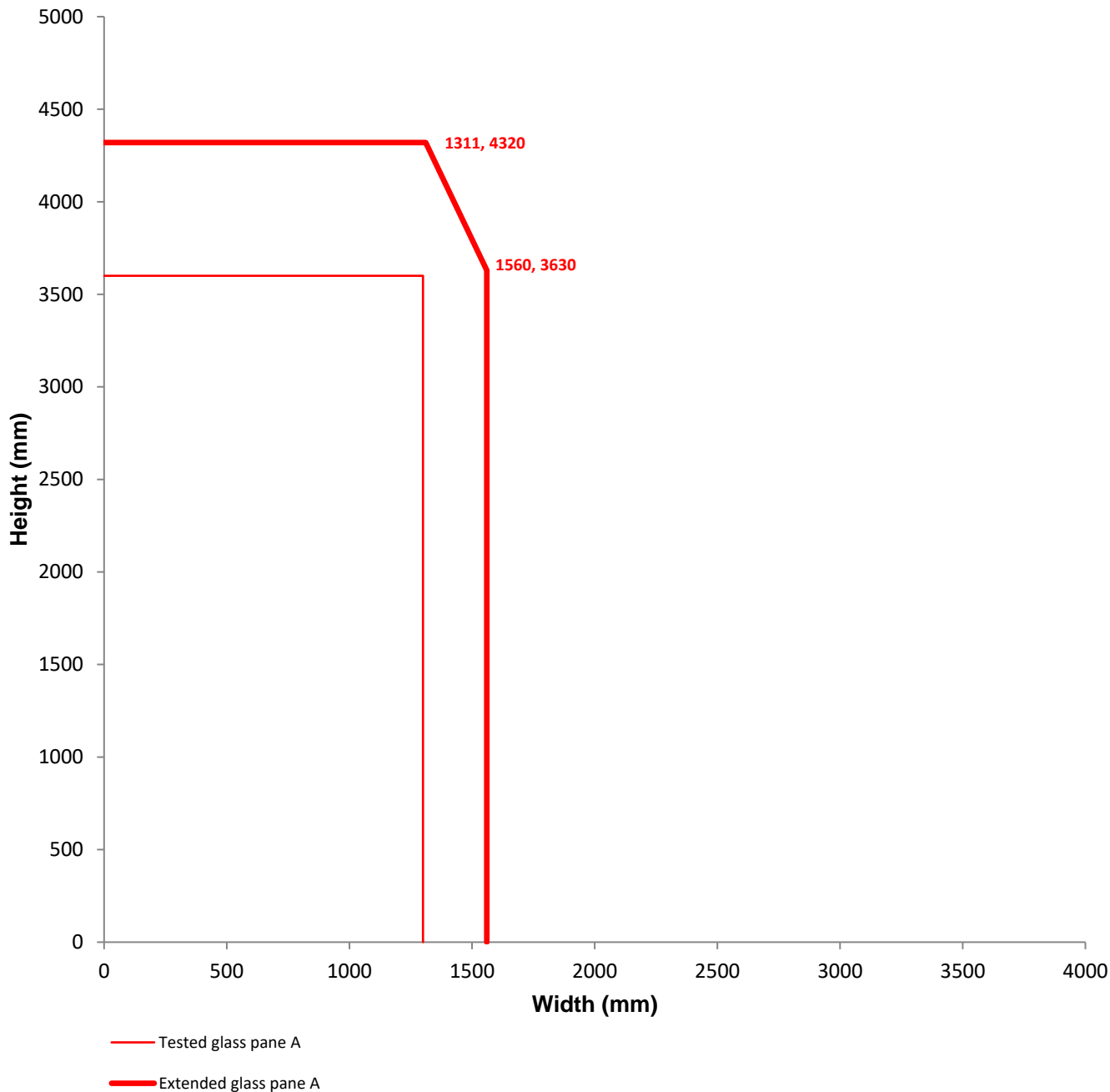
**Note:**

The maximum dimensions of rectangular glass panes are represented by the outer lines.

**Individual rectangular glass panes: aspect ratio and increase in area**

The extended dimensions are only valid for the following classification times:

- EI 30, EI 20, EI 15;
- 120, EW 90, EW 60, EW 45, EW 30, EW 20, EW 15;
- E 120, E 90, E 60, E 45, E 30, E 20, E 15.



**Note:**

The maximum dimensions of rectangular glass panes are represented by the outer lines.