

FIRE RESISTANCE CLASSIFICATION REPORT No. 19014D

Owner of the classification report

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Introduction

This classification report defines the classification assigned to a non-loadbearing glazed wall (type: Aliplast FR90), in accordance with the procedures given in EN 13501-2:2016: Fire classification of products and building elements – Part 2: Classification using data from fire resistance tests, excluding ventilation services.

This classification report consists of 30 pages and 4 annexes and may only be used or reproduced in its entirety.

1 Details of classified product

1.1 General

The element, Aliplast FR90, is defined as a non-loadbearing glazed wall.

1.2 Description

The element, Aliplast FR90, is partly described below, in support of this classification. The full description can be found in the test reports. The drawings of the element, are enclosed in the annexes 1 till 2 of this classification report.

1.2.1 Composition of the element

1.2.1.1 Framing system

The product, glazed or panelled partition of ALIPLAST FR 90 EI 60 system is made as a mullion-transom structure.

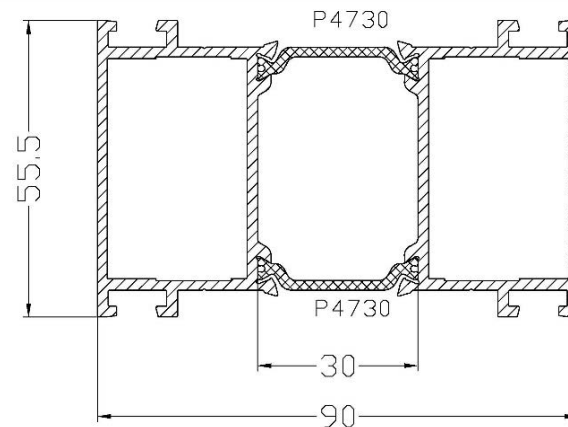
Dimensions of partition:

Width – unlimited with maximum span of vertical mullions limited by maximum glazing width of 1980 mm.

Height – 3966 mm with maximum span of horizontal transoms limited by maximum glazing height of 3850 mm.

The partition can contain an arc or circled screen with a radius of 2120 mm or bigger (ref. report [7]).

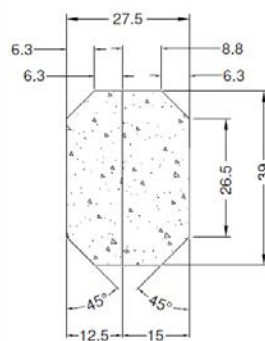
Perimeter frame, mullions and transoms of partition are made of aluminium three chamber profiles with dimensions of (depth x width/height): 90 x 55.5 mm (cat. No. FR102), thickness of profile 2 mm.



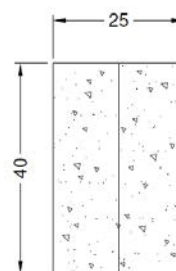
FR102 profile

Outer chambers of profiles are composed of aluminium elements made of aluminium alloy EN AW 6060 T 66 in accordance with EN 573-3 and EN 515, connected by means of thermal breaks (cat. No. P4730), width of 30 mm, thickness 2 mm, made of polyamide reinforced with glass fibre PA 66.

The middle chamber of the profile is filled with insulation inserts made of gypsum boards GKF Nida Ogien type F (cat. No. ACFR155) with dimensions of (39x12.5) mm and (39x15) mm, outer chambers of the profile are filled with insulation inserts made of two gypsum boards GKF Nida Ogien type F (cat. No. ACFR156) with dimensions of (40x12.5) mm, manufacturer of insulation insert is company Siniat Sp. z o.o., Poland.

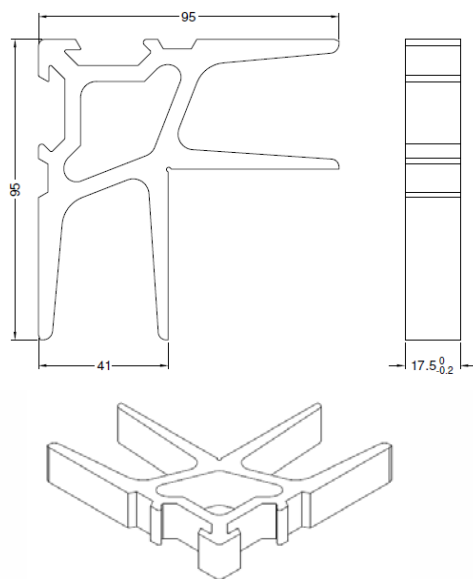


Insulation insert ACFR155

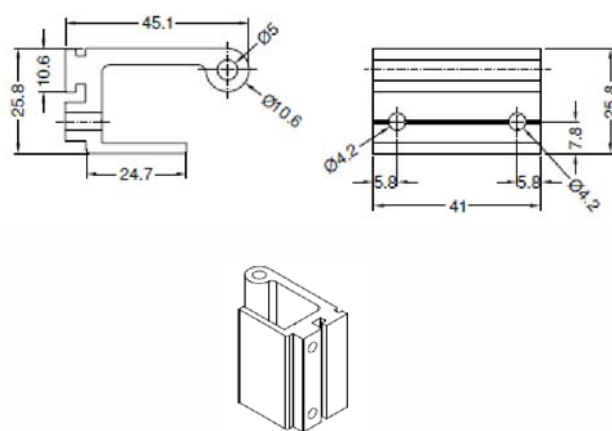


Insulation insert ACFR156

Perimeter frame profiles are joined in corners together by 45° angle with 2 aluminium corner connectors per joint (cat. No. ACFR404) with outer dimensions of (95x95x17.5) mm and covered by insulation plates made of PROMATECT-H boards 8 mm thick with outer dimensions of (93x92.9) mm from PROMAT company (cat. No. ACFR139) or with butt joint with 2 aluminium T-joint connectors (cat. No. ACFR405) with outer dimensions of (45.1x25.8x41) mm, both types are placed in outer profiles chambers. Joints are sealed by means of silicone mastic PROMASEAL-Mastic from PROMAT company (ref. report [1]) or with Cosmofen Duo adhesive of WEISS company (cat. No. ACMX09764, ref. report [2], [3]) and also by means of adhesive sealant of WURTH company (cat. No. ACSIL04).

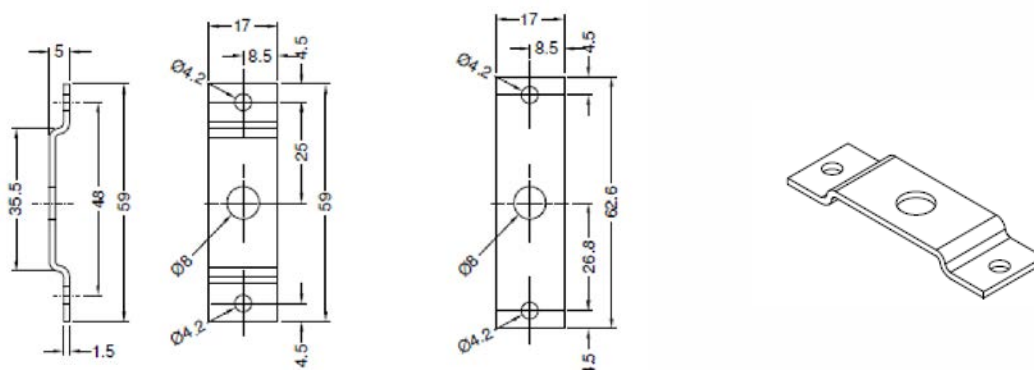


ACFR404



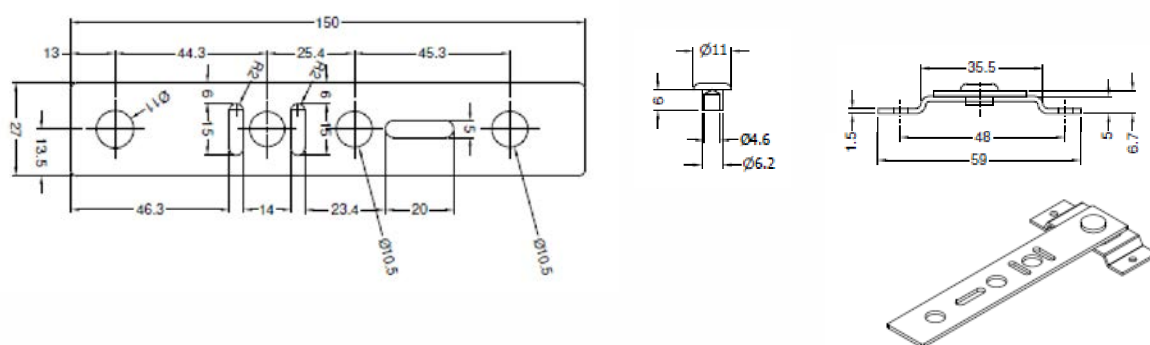
ACFR405

At the back of the perimeter frame profiles fixation plates (cat. No. ACFR199) made of steel 1.5 mm thick with dimensions of (17x59) mm are fixed to the profiles by means of steel screws M4x22_FDS (ref. report [1]) or with steel screws M4.2x25_FR (ref. report [2], [3]) with max c/c span distance of 550 mm, whereupon the distance from edges is 150 mm.



Fixation plate ACFR199

These fixation plates are used for partition fixation to the supporting construction directly through central chamber of the profiles or in combination with steel plates with dimension of (27x150x2) mm (width x length x thickness) mm which are fixed to fixation plates ACFR199 by rivet and create a fixation anchor under cat. No. ACFR198, is the partition fixed to the supporting construction by means of steel screws with minimum diameter of 7.5 mm and minimum length of 100 mm.



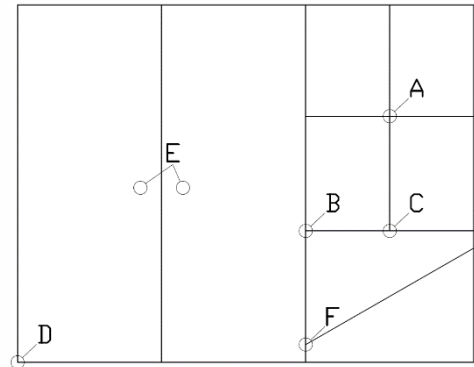
Fixation anchor ACFR198

Transoms and mullions are joined with butt joint with 2 aluminium T-joint connectors (cat. No. ACFR405) with outer dimensions of (45.1x25.8x41) mm, both types placed in outer profiles chambers. Joints are sealed by means of silicone mastic PROMASEAL-Mastic from PROMAT company (ref. report [1]) or with Cosmofen Duo adhesive of WEISS company (cat. No. ACMX09764, ref. report [2], [3]) and also by means of adhesive sealant of WURTH company (cat. No. ACSIL04).

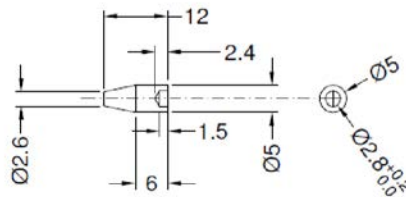
Joints of transom and mullions are under angle 90° or 135°.

Following joints are allowed:

- Type A: four panes joining together;
- Type B: three panes joining together at one point including a full height vertical pane;
- Type C: three panes joining together at one point including a full width horizontal pane;
- Type D: corner junction.
- Type E: two full vertical panes side by side.
- Type F: junction under a 45° or 135° angle.



T-joint connectors (cat. No. ACFR405) are fixed to the FR102 profiles by means of steel pin connectors (Ø5x12) mm (cat. No. ALI601, ref. report [1], [3]) or by means of steel screws (Ø5.0x50) mm (ref. report [2]).



Pin connector ALI601

The mullion profiles are additionally reinforced by means of aluminium profiles with minimum dimensions of (78 x 32.4) mm (depth x width) (cat. No. VL150) fixed to the main profile (cat. No. FR102) by means of steel screws with dimensions of (6.3 x 80) mm, spaced every 400 mm, whereupon the distance of the first fixing from the top of the test specimen is 100 mm and from the bottom of the test specimen is 100 mm. The reinforcing profiles (cat. No. VL150) are filled with insulation inserts made of gypsum boards GKF Nida Ogien type F (cat. No. ACFR164 with dimensions of (50x12.5) mm and (50x15) mm and are covered by means of aluminium masking beads (cat. No. SR014). The reinforcing profiles and aluminium masking beads are made of aluminium alloy EN AW 6060 T 66 in accordance with EN 573-3 and EN 515.

Reinforcing profiles (cat. No. VL150) must be fixed to the side of expected fire.



1.2.1.2 Glazing system

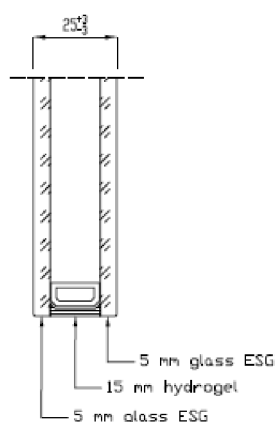
Partition can be glazed with following types of glazing. The glazing in the table below do not have a side limitation:

Type	Thickness [mm]	Maximum dimensions [mm] [width x height]	Maximum area [m ²]
Single glazing POLFLAM EI60	25±3	1980 x 3850	6.93
Double glazing 5ESG/12/EI60	42±3	1980 x 3850	6.93
Double glazing 6ESG/14/EI60	45±3	1980 x 3850	6.93
Double glazing 8ESG/16/EI60	49±3	1980 x 3850	6.93
Double glazing 6ESG/18/EI60	49±3	1980 x 3850	6.93
Triple glazing 5ESG/12/5ESG/12/EI60	59±3	1980 x 3850	6.93
Triple glazing 5ESG/14/5ESG/12/EI60	61±3	1980 x 3850	6.93
Triple glazing 6ESG/12/6ESG/12/EI60	61±3	1980 x 3850	6.93
Triple glazing 8ESG/12/5ESG/12/EI60	61±3	1980 x 3850	6.93

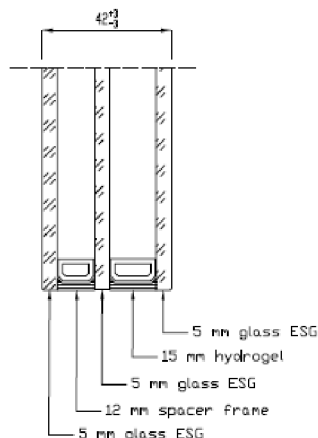
The partition can be glazed with following types of glazing. The glazing in the table below can be used in both directions.

Type	Thickness [mm]	Maximum dimensions [mm] [width x height]	Maximum area [m ²]
Triple glazing 5ESG/12/5ESG/12/EI60	59±3	3500 x 1500	5.25
Triple glazing 5ESG/14/5ESG/12/EI60	61±3	3500 x 1500	5.25
Triple glazing 6ESG/12/6ESG/12/EI60	61±3	3500 x 1500	5.25
Triple glazing 8ESG/12/5ESG/12/EI60	61±3	3500 x 1500	5.25

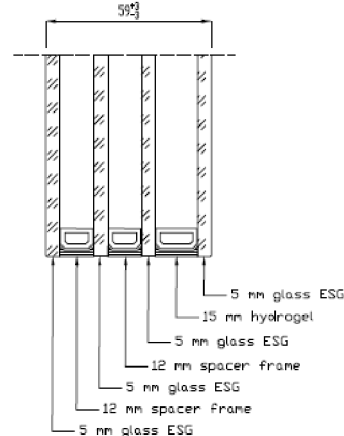
POLFLAM EI60



5ESG/12/EI60



5ESG/12/5ESG/12/EI60



Partition can be glazed also with following panel's type with maximum dimensions:

Type	Composition	Maximum dimensions [mm] [width x height]	Maximum area [m ²]
Panel 32 mm thick	- 0.8 mm steel sheet - 2 x GKF gypsum boards 15 mm - 0.8 mm steel sheet	1440 x 1525	1.85
Panel 52 mm thick	- 0.8 mm steel sheet - 2 x GKF gypsum boards 25 mm - 0.8 mm steel sheet	1435 x 1519	1.83
Panel 62 mm thick	- 0.8 mm steel sheet - mineral wool 60 mm - 0.8 mm steel sheet	1435 x 1519	1.83
Alu panel 32 mm thick	- 1 mm steel sheet - 2 x GKF gypsum boards 15 mm - 1 mm steel sheet	871 x 2210	1.92

Justification of the maximum dimensions can be found in extended application report 19014C.

Panel 32 mm thick is made of two GKF plaster boards type GKF Nida Ogien, type F with thickness of 15 mm, (manufacturer: Siniat Sp. z o.o., Poland) and covered from both sides by steel sheet with thickness of 0.8 mm. Individual parts of infill are glued together by means of PYROCOL (manufacturer: Odice). Intumescent tape FLEXILODICE, 2 mm thick, 30 mm wide (manufacturer: ODICE S.A.S., France) cat. No. ACFR147 is placed around the perimeter of panel and glued on FR90 profiles. Optionally can be panel sealed around its perimeter by means of Promat®-SYSTEMGLAS-Silikon (cat. No. ACSIL021, manufacturer: Promat).

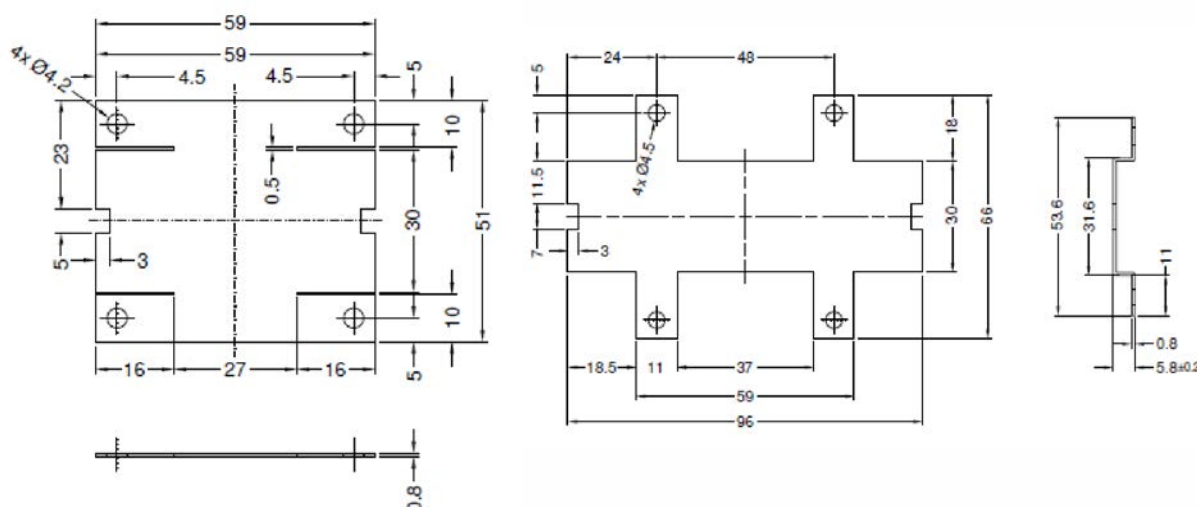
Panel 52 mm thick is made of two GKF plaster boards type GKF Nida Ogien, type F with thickness of 25 mm, (manufacturer: Siniat Sp. z o.o., Poland) and covered from both sides by steel sheet with thickness of 0.8 mm. Individual parts of infill are glued together by means of PYROCOL (manufacturer: Odice). Intumescent tape FLEXILODICE, 2 mm thick, 57 mm wide (manufacturer: ODICE S.A.S., France) cat. No. ACFR149 is placed around the perimeter of panel and glued on FR90 profiles.

Panel 62 mm is made of mineral wool, type CONLIT 150, with thickness of 60 mm, with bulk density 150 kg/m³ (manufacturer: ROCKWOOL) and covered from both sides by steel sheet with thickness of 0.8 mm. Steel sheets are glued to mineral wool by means of PYROCOL (manufacturer: Odice). Intumescent tape KERAFIX FXL 200, 2 mm thick, 30 mm wide (manufacturer: Rolf Kuhn GmbH) cat. No. ACFR144 is placed around the perimeter of panel and glued on FR90 profiles. Panel is sealed around its perimeter by means of Promat®-SYSTEMGLAS-Silikon (cat. No. ACSIL021, manufacturer: Promat).

Alu Panel 32 mm is made of two GKF plaster boards type GKF Nida Ogien, type F with thickness of 15 mm, (manufacturer: Siniat Sp. z o.o., Poland) and covered from both sides by aluminium sheet with thickness of 1 mm. Individual parts of infill are glued together by means of PYROCOL (manufacturer: Odice). Intumescent tape FLEXILODICE, 2 mm thick, 30 mm wide (manufacturer: ODICE S.A.S., France) cat. No. ACFR147 is placed around the perimeter of panel and glued on FR90 profiles.

1.2.1.3 Fixing of the glazing and panels to partition

Glazing (all types) and panels are placed on the setting blocks made of hardwood with minimum thickness of 2 mm with length of 100 mm and with width depending on thickness of glazing or panels and it is fixed to the main profile (cat. No. FR102) by means of glazing brackets with thickness of 0.8 mm with folded edges with minimum length of 16 mm for single glazing and 18.5 mm for double and triple glazing and with a width of 30 mm (cat. No. ACFR102 or ACFR109).



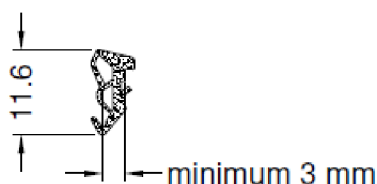
Glazing brackets ACFR102 (+ alternatives)

Steel glazing brackets (cat. No. ACFR102 or ACFR109) are fixed to the main profiles by means of steel screws M4x22_FDS (ref. report [1]) or with steel screws M4.2x25_FR (ref. report [2], [3]) with maximum c/c span distance of 455 mm, whereupon the distance from edges is 150 mm.

Intumescent tapes with self-adhesive layer, type Kerafix FXL 200 of Rolf Kuhn GmbH company with minimum thickness of 2 mm and with width depending on the glazing or panels thickness are fixed to the main profile (cat. No. FR102) on the perimeter of glazing or panels.

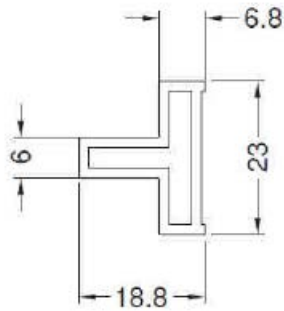
Fixation of glazing or panels is covered by means of aluminium glazing beads with height of 26.5 mm and with width depending on glazing thickness which are sealed by means of glazing gaskets made of EPDM of Secil Kaucuk company with height of 11.6 mm and minimum width of 3 mm. Glazing beads are made of aluminium alloy EN AW 6060 T 66 in accordance with EN 573-3 and EN 515.

ACVG...N /
ACUN...PL

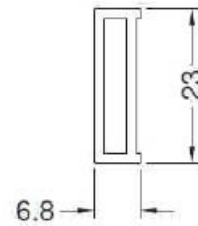


Glazing gasket – EPDM

Optionally aluminium decorative beads (18.8 x 23) mm, cat. No. IP068 and horizontal aluminium decorative beads (6.8 x 23) mm, cat. No. IP069 with 3M™ VHB™ Tape 4611F (19 x 1.1) mm, cat. No. ACVL069 can be glued on glazing or panel surface (ref. report [6]).



Decorative bead IP068

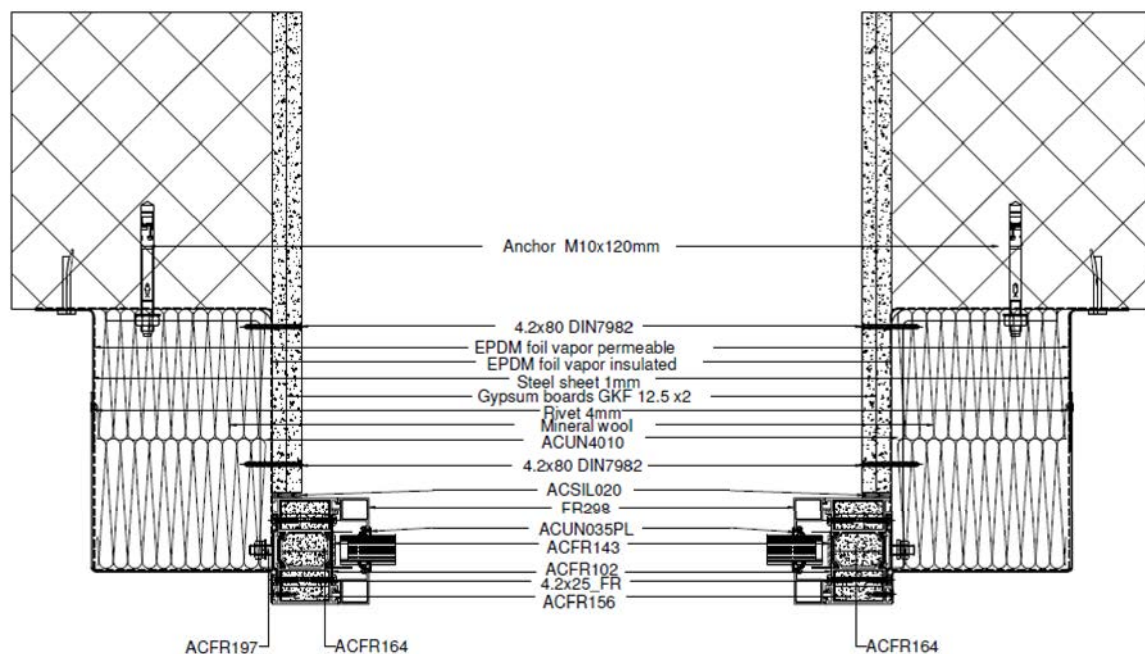


Decorative bead IP069

1.2.1.4 “Thermal fixation” of FR90 profiles

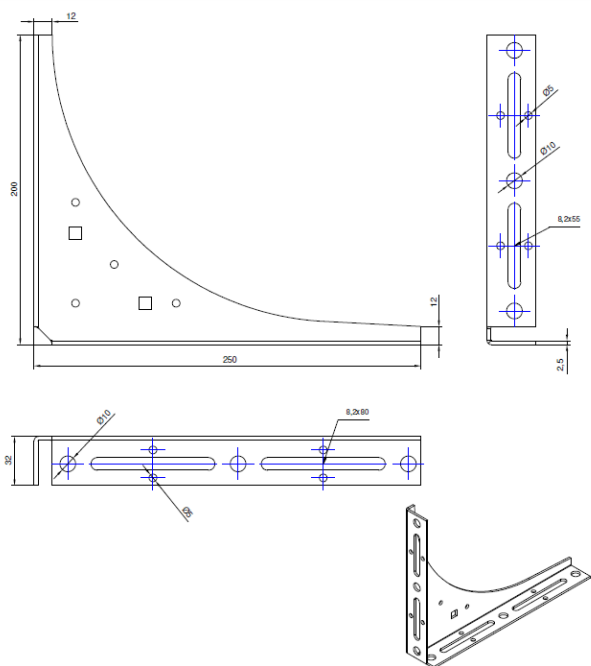
The “thermal fixation” solution can only be applied as described below. The field of application rules given in § 3.3 do not apply to this solution.

FR90 profiles can be alternatively fixed to the supporting construction with additional “thermal fixation” solution. This solution is only valid for a glass pane with maximum dimensions of 1900 mm (width) x 3600 mm (height) and a maximum area of 5.75 m². Only horizontal connections between glass panes are allowed up to a maximum frame opening of 2016 mm (width) x 5160 mm (height). No horizontal connections between glass panes are allowed.

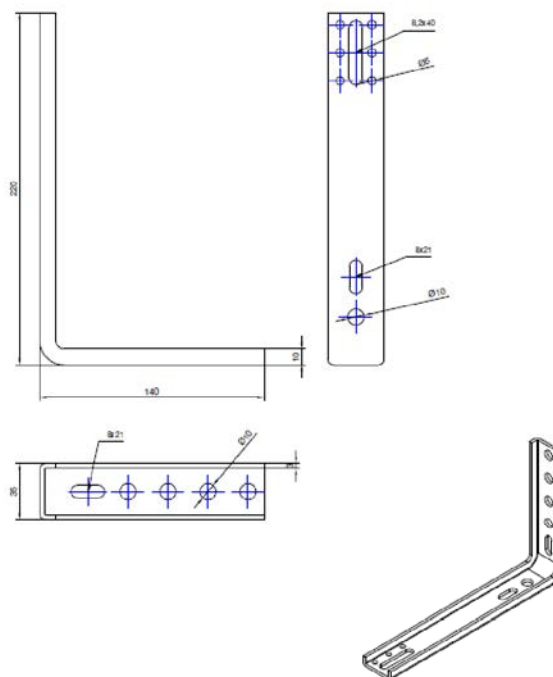


Horizontal cross-section

Frame made of FR90 profiles is fixed to the supporting construction with mounting consoles (250 x 200) mm, steel thickness 2.5 mm, cat. No. ACUN4020 on the bottom edge and mounting consoles (220 x 140) mm, steel thickness 3 mm, cat. No. ACUN4010 on the vertical edges and top edge.



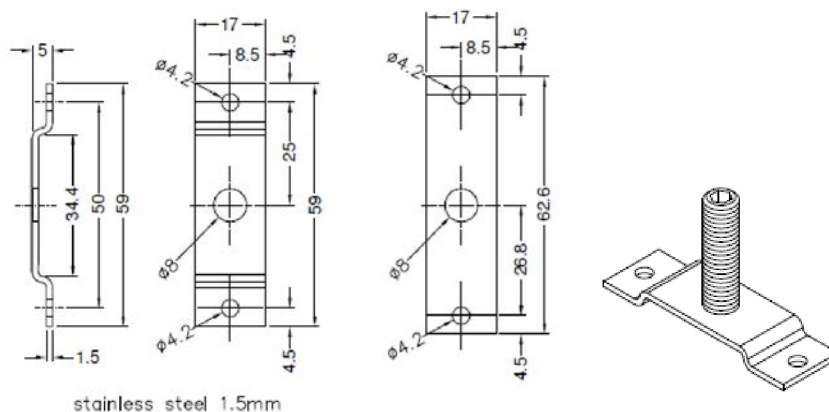
Console ACUN4020



Console ACUN4010

Depending on the low or high density rigid supporting construction type the consoles are fixed to the wall with two steel anchors (M10 x 120) mm or by threaded rod (M10 x 200) mm with chemical anchors.

The frame is fixed to the mounting consoles by means of fixation sheet (59 x 17) mm, steel thickness 1.5 mm, cat. No. ACFR197 with steel threaded rod (M8 x 40) mm DIN913, nut M8 DIN934 A2 and steel washer M8 DIN127A A2.



Fixation plate ACFR197

Space between supporting construction and frame made of FR90 profiles is insulated with two mineral wool boards with thickness of 100 and 120 mm, with minimum bulk density 87 kg/m^3 (fibers melting point $\geq 1000^\circ\text{C}$). Mineral wool is covered with EPDM foil vapor permeable, type ACMC1538 (manufacturer: FOREST SC.) and with EPDM foil vapor insulating, type ACMC1638 (manufacturer: FOREST SC.).

Mineral wool and EPDM foils are covered with steel sheet with thickness 1 mm fixed to the supporting construction with expanding nail (SM DIAL 4x40mm) mm. Steel sheets are connected together with steel rivets $\varnothing 4 \text{ mm}$.

From the inner side of opening are placed two gypsum boards Red Piano GKF, thickness 12.5 mm (manufacturer: Knauf). Gypsum boards are fixed to the mounting consoles with screws (4.2 x 80) mm DIN7982. Gaps between gypsum boards and frame are filled with silicon (manufacturer: WURTH) cat. No. ACSIL020.

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

2.1 Test reports/EXAP reports

No.	Name of the laboratory	Report ref. no.	Name of the owner	Date of the test	Method
[1]	FIRES, s.r.o.	FIRES-FR-156-16-AUNE	ALIPLAST Sp. Z o.o.	28/07/2016	EN 1364-1:2015
[2]	PAVUS, a.s.	Pr-17-2.182-En	ALIPLAST Sp. Z o.o.	10/08/2017	EN 1364-1:2015
[3]	FIRES, s.r.o.	FIRES-FR-193-17-AUNE	ALIPLAST Sp. Z o.o.	19/10/2017	EN 1634-1:2014
[4]	FIRES, s.r.o.	FIRES-FR-099-17-AUNE	ALIPLAST Sp. Z o.o.	17/05/2017	EN 1634-1:2014
[5]	FIRES, s.r.o.	FIRES-FR-012-18-AUNE	ALIPLAST Sp. Z o.o.	31/01/2018	EN 1634-1:2014
[6]	FIRES, s.r.o.	FIRES-FR-191-18-AUNE	ALIPLAST Sp. Z o.o.	24/07/2018 13/09/2018	EN 1634-1:2014
[7]	CERTBUD	562/ALIPLAST/2018/S5A/1 EN	ALIPLAST Sp. Z o.o.	12/10/2018	EN 1634-1:2014
[8]	WFRGENT nv	19020D	ALIPLAST Sp. Z o.o.	-	EN 15269-5:2014
[9]	WFRGENT nv	19014C	ALIPLAST Sp. Z o.o.	-	EN 15254-4:2008+A1:2011

Exposure conditions during the fire resistance test No. FIRES-FR-155-16-AUNE:

Temperature/time curve: standard as in EN 1363-1:2012.

Direction of exposure:

- The framing system is symmetrical.
- The allowed direction of exposure for the glazing system is given in the description.

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

One vertical edge is free, the other edges are fixed.

2.2 Justification worst case

The justification of worst case is based on test results and can be found in the extended application report No. 19014C.

2.3 Test results

2.3.1 Test report No. FIRES-FR-156-16-AUNE

Parameters	Results
Thermal insulation – I	
$\Delta T_m = 140^{\circ}\text{C}$	65 minutes, no failure ⁽¹⁾
$\Delta T_M = 180^{\circ}\text{C}$	63 minutes
Integrity – E	
Spontaneous and sustained flaming	65 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 6 mm	65 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 25 mm	65 minutes, no failure ⁽¹⁾
Ignition of cotton pad	65 minutes, no failure ⁽¹⁾
Radiation – W	
Radiation intensity = 15 kW/m ²	65 minutes, no failure ⁽¹⁾

⁽¹⁾ The test was stopped after 65 minutes at the request of the sponsor.

2.3.2 Test report No. Pr-17-2.182-En

Triple glass (fire resistant glazing POLFLAM EI60 facing the exposed side)

Observations	Exceeded
Thermal insulation – I^(*)	
$\Delta T_m = 140^\circ\text{C}$	88 minutes
$\Delta T_M = 180^\circ\text{C}$	87 minutes
Integrity – E^(*)	
Spontaneous and sustained flaming	91 minutes, no failure ⁽¹⁾
Failure with \varnothing 6 mm gap gauge	91 minutes, no failure ⁽¹⁾
Failure with \varnothing 25 mm gap gauge	91 minutes, no failure ⁽¹⁾
Ignition of cotton pad	91 minutes, no failure ⁽¹⁾
Radiation – W^(*)	
Radiation intensity = 15 kW/m ² (not measured)	87 minutes, no failure ⁽²⁾

(*) Classification according to EN 13501-2.

(1) The test was stopped after 91 minutes at the sponsor's request.

(2) Radiation was not measured during the test. The classification standard 13501-2 § 5.2.4 states that an element which satisfies the thermal insulation criterion I is also deemed to satisfy the W requirement for the same period.

Single glass

Observations	Exceeded
Thermal insulation – I^(*)	
$\Delta T_m = 140^\circ\text{C}$	66 minutes
$\Delta T_M = 180^\circ\text{C}$	64 minutes
Integrity – E^(*)	
Spontaneous and sustained flaming	91 minutes, no failure ⁽¹⁾
Failure with \varnothing 6 mm gap gauge	91 minutes, no failure ⁽¹⁾
Failure with \varnothing 25 mm gap gauge	91 minutes, no failure ⁽¹⁾
Ignition of cotton pad	91 minutes, no failure ⁽¹⁾
Radiation – W^(*)	
Radiation intensity = 15 kW/m ² (not measured)	64 minutes, no failure ⁽²⁾

(*) Classification according to EN 13501-2.

(1) The test was stopped after 91 minutes at the sponsor's request.

(2) Radiation was not measured during the test. The classification standard 13501-2 § 5.2.4 states that an element which satisfies the thermal insulation criterion I is also deemed to satisfy the W requirement for the same period.

Triple glass (fire resistant glazing POLFLAM EI60 facing the unexposed side)

Observations	Exceeded
Thermal insulation – I^(*)	
$\Delta T_m = 140^\circ\text{C}$	68 minutes
$\Delta T_M = 180^\circ\text{C}$	67 minutes
Integrity – E^(*)	
Spontaneous and sustained flaming	91 minutes, no failure ⁽¹⁾
Failure with \varnothing 6 mm gap gauge	91 minutes, no failure ⁽¹⁾
Failure with \varnothing 25 mm gap gauge	91 minutes, no failure ⁽¹⁾
Ignition of cotton pad	91 minutes, no failure ⁽¹⁾
Radiation – W^(*)	
Radiation intensity = 15 kW/m ² (not measured)	67 minutes, no failure ⁽²⁾

(*) Classification according to EN 13501-2.

(1) The test was stopped after 91 minutes at the sponsor's request.

(2) Radiation was not measured during the test. The classification standard 13501-2 § 5.2.4 states that an element which satisfies the thermal insulation criterion I is also deemed to satisfy the W requirement for the same period.

2.3.3 Test report No. FIRES-FR-193-17-AUNE

Parameters	Results
Thermal insulation	
Normal procedure – I ₂ ^(*)	
$\Delta T_m = 140^\circ\text{C}$	64 minutes, no failure ⁽¹⁾
$\Delta T_M = 180^\circ\text{C}$	61 minutes
$\Delta T_M = 360^\circ\text{C}$ on the door frame	64 minutes, no failure ⁽¹⁾
Supplementary procedure – I ₁ ^(*)	
$\Delta T_m = 140^\circ\text{C}$	64 minutes, no failure ⁽¹⁾
$\Delta T_M = 180^\circ\text{C}$	61 minutes
$\Delta T_M = 180^\circ\text{C}$ on the door frame	64 minutes, no failure ⁽¹⁾
Integrity – E	
Spontaneous and sustained flaming	64 minutes
Failure with gap gauge \varnothing 6 mm	64 minutes
Failure with gap gauge \varnothing 25 mm	64 minutes
Ignition of cotton pad	64 minutes
Radiation – W	
Radiation intensity = 15 kW/m ²	61 minutes, no failure ⁽²⁾

⁽¹⁾ The test was stopped after 64 minutes at the request of the sponsor.

⁽²⁾ Radiation was not measured during the test. The classification standard 13501-2 § 5.2.4 states that an element which satisfies the thermal insulation criterion I is also deemed to satisfy the W requirement for the same period.

2.3.4 Test report No. FIRES-FR-099-17-AUNE

Triple glass (fire resistant glazing POLFLAM EI60 facing the unexposed side) in landscape position.

Parameters	Results
Thermal insulation – I	
$\Delta T_m = 140^\circ\text{C}$	67 minutes, no failure ⁽¹⁾
$\Delta T_M = 180^\circ\text{C}$	60 minutes
Integrity – E	
Spontaneous and sustained flaming	67 minutes, no failure ⁽¹⁾
Failure with \varnothing 6 mm gap gauge	67 minutes, no failure ⁽¹⁾
Failure with \varnothing 25 mm gap gauge	67 minutes, no failure ⁽¹⁾
Ignition of cotton pad	67 minutes, no failure ⁽¹⁾
Radiation – W	
Radiation intensity = 15 kW/m ²	67 minutes, no failure ⁽¹⁾

⁽¹⁾ The test was stopped after 67 minutes at the sponsor's request.

2.3.5 Test report No. FR-012-18-AUNE

Parameters	Results
Thermal insulation	
Normal procedure – $I_2^{(*)}$	
$\Delta T_m = 140^\circ\text{C}$	105 minutes
$\Delta T_M = 180^\circ\text{C}$	74 minutes
$\Delta T_M = 360^\circ\text{C}$ on the door frame	123 minutes
Supplementary procedure – $I_1^{(*)}$	
$\Delta T_m = 140^\circ\text{C}$	105 minutes
$\Delta T_M = 180^\circ\text{C}$	72 minutes
$\Delta T_M = 180^\circ\text{C}$ on the door frame	96 minutes
Integrity – E	
Spontaneous and sustained flaming	123 minutes
Failure with gap gauge \varnothing 6 mm	124 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 25 mm	124 minutes, no failure ⁽¹⁾
Ignition of cotton pad	74 minutes, no failure
Radiation – W	
Radiation intensity = 15 kW/m ²	123 minutes

⁽¹⁾ The test was stopped after 124 minutes at the request of the sponsor.

2.3.6 Test report No. FR-191-18-AUNE

Specimen 1: construction outside the fire (standard heating curve according to EN 1363-1)

Parameters	Results
Thermal insulation – I	
$\Delta T_m = 140^\circ\text{C}$	68 minutes, no failure ⁽¹⁾
$\Delta T_M = 180^\circ\text{C}$	66 minutes
Integrity – E	
Spontaneous and sustained flaming	68 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 6 mm	68 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 25 mm	68 minutes, no failure ⁽¹⁾
Ignition of cotton pad	68 minutes, no failure ⁽¹⁾
Radiation – W	
Radiation intensity = 15 kW/m ²	68 minutes, no failure ⁽¹⁾

⁽¹⁾ The test was stopped after 68 minutes at the request of the sponsor.

Specimen 2: construction inside the fire (external fire exposure curve)

Parameters	Results
Thermal insulation – I	
$\Delta T_m = 140^\circ\text{C}$	93 minutes, no failure ⁽¹⁾
$\Delta T_M = 180^\circ\text{C}$	91 minutes
Integrity – E	
Spontaneous and sustained flaming	93 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 6 mm	93 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 25 mm	93 minutes, no failure ⁽¹⁾
Ignition of cotton pad	93 minutes, no failure ⁽¹⁾
Radiation – W	
Radiation intensity = 15 kW/m ²	93 minutes, no failure ⁽¹⁾

⁽¹⁾ The test was stopped after 93 minutes at the request of the sponsor.

2.3.7 Test report No. 562/ALIPLAST/2018/S5A/1EN

Evaluation of the side panel

Parameters	Results
Thermal insulation – I	
$\Delta T_m = 140^\circ\text{C}$	62 minutes, no failure ⁽¹⁾
$\Delta T_M = 180^\circ\text{C}$	62 minutes
Integrity – E	
Spontaneous and sustained flaming	62 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 6 mm	62 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 25 mm	62 minutes, no failure ⁽¹⁾
Ignition of cotton pad	62 minutes, no failure ⁽¹⁾
Radiation – W	
Radiation intensity = 15 kW/m ²	62 minutes, no failure ⁽²⁾

⁽¹⁾ The test was stopped after 68 minutes at the request of the sponsor.

⁽²⁾ Radiation was not measured during the test. The classification standard 13501-2 § 5.2.4 states that an element which satisfies the thermal insulation criterion I is also deemed to satisfy the W requirement for the same period.

Evaluation of the glazed top panel (arc)

Parameters	Results
Thermal insulation – I	
$\Delta T_m = 140^\circ\text{C}$	62 minutes, no failure ⁽¹⁾
$\Delta T_M = 180^\circ\text{C}$	62 minutes, no failure ⁽¹⁾
Integrity – E	
Spontaneous and sustained flaming	62 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 6 mm	62 minutes, no failure ⁽¹⁾
Failure with gap gauge \varnothing 25 mm	62 minutes, no failure ⁽¹⁾
Ignition of cotton pad	62 minutes, no failure ⁽¹⁾
Radiation – W	
Radiation intensity = 15 kW/m ²	62 minutes, no failure ⁽²⁾

⁽¹⁾ The test was stopped after 62 minutes at the request of the sponsor.

⁽²⁾ Radiation was not measured during the test. The classification standard 13501-2 § 5.2.4 states that an element which satisfies the thermal insulation criterion I is also deemed to satisfy the W requirement for the same period.

3 Classification and field of application

3.1 Reference of classification

This classification has been carried out in accordance with clause 7 of EN 13501-2:2016.

3.2 Classification

The element, Aliplast FR90, is 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 wall with the vertical reinforcement profiles on the vertical frame profiles exposed to the fire.

Following classifications are valid for all constructions described § 1.2.1 except for the “Thermal fixation” solution with the construction on the fire side described in § 1.2.1.4.

EI 60, EI 45, EI 30 , EI 20, EI 15

EW 60, EW 30, EW 20

E 60, E 30, E 20

Following classifications are valid for the “Thermal fixation” solution with the construction on the fire side (fire from outside to inside) described in § 1.2.1.4.

EI 60-ef, EI 45-ef, EI 30-ef, EI 20-ef, EI 15-ef

EW 60-ef, EW 30-ef, EW 20-ef

E 60-ef, E 30-ef, E 20-ef

3.3 Field of application

This classification is valid for the following end use applications according to EN 1364-1:2015 and EN 15254-4 :2008+A1:2011.

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.

The field of application described below is not applicable to the “Thermal fixation” solution described in § 1.2.1.4.

3.3.1 Glazed element

3.3.1.1 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 3616 mm.

3.3.1.2 Height of the glazed element with overrun

For the classification times:

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

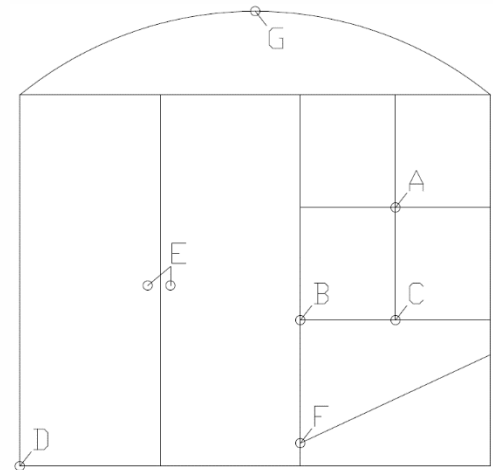
An increase in height up to a maximum of 3966 mm is allowed, provided the allowances for thermal expansion of the construction are increased pro-rata.

3.3.1.3 Width of the glazed element

A greater width is allowed by replicating the tested glazed elements or parts thereof, provided the framing system is identical to the one tested and the connection joints between the glazed elements have been tested.

Tested connection joints:

- Type A: four panes joining together;
- Type B: three panes joining together at one point including a full height vertical pane;
- Type C: three panes joining together at one point including a full width horizontal pane;
- Type D: corner junction.
- Type E: two full vertical panes side by side.
- Type F: junction under a 45° or 135° angle.
- Type G: Arc/Circle with a minimal radius of 2120 mm.



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

For the classification times:

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

Partition can be glazed with following types of glazing. The glazing in the table below do not have a side limitation:

Type	Thickness [mm]	Maximum dimensions [mm] [width x height]	Maximum area [m ²]
Single glazing POLFLAM EI60	25±3	1980 x 3850	6.93
Double glazing 5ESG/12/EI60	42±3	1980 x 3850	6.93
Double glazing 6ESG/14/EI60	45±3	1980 x 3850	6.93
Double glazing 8ESG/16/EI60	49±3	1980 x 3850	6.93
Double glazing 6ESG/18/EI60	49±3	1980 x 3850	6.93
Triple glazing 5ESG/12/5ESG/12/EI60	59±3	1980 x 3850	6.93
Triple glazing 5ESG/14/5ESG/12/EI60	61±3	1980 x 3850	6.93
Triple glazing 6ESG/12/6ESG/12/EI60	61±3	1980 x 3850	6.93
Triple glazing 8ESG/12/5ESG/12/EI60	61±3	1980 x 3850	6.93

The results are given in the following annex:

Annex 3: the maximum allowed dimensions of rectangular shaped glass panes are represented by the outer lines.

The partition can be glazed with following types of glazing. The glazing in the table below can be used in both directions.

Type	Thickness [mm]	Maximum dimensions [mm] [width x height]	Maximum area [m ²]
Triple glazing 5ESG/12/5ESG/12/EI60	59±3	3500 x 1500	5.25
Triple glazing 5ESG/14/5ESG/12/EI60	61±3	3500 x 1500	5.25
Triple glazing 6ESG/12/6ESG/12/EI60	61±3	3500 x 1500	5.25
Triple glazing 8ESG/12/5ESG/12/EI60	61±3	3500 x 1500	5.25

The results are given in the following annex:

Annex 4: the maximum allowed dimensions of rectangular shaped glass panes are represented by the outer lines.

The allowed sizes of the panels are described in § 1.2.1.2.

3.3.2.3 Glazing beads

The tested bead depth may be increased. The bead height may not be changed.

3.3.2.4 Framing system

The distance between frame profiles may be decreased from that tested.

The distance between fixing centres may be decreased from that tested.

The cross sectional dimensions of the frame profiles may be increased from the dimensions tested.

3.3.2.5 Supporting constructions

The classification is valid for the following supporting constructions with at least the same fire resistance as the test specimen:

- Low density rigid supporting construction with a minimum density of 613 kg/m³ (thickness: ≥ 100 mm);
- High density rigid supporting construction (thickness: ≥ 100 mm);
- Flexible wall supporting construction (thickness: ≥ 100 mm);

4 Limitations

Provisions of Regulation (EU) 305/2011, commonly known as the Construction Products Regulation (CPR), prevail over any conflicting provisions in the harmonised standards and technical specifications.

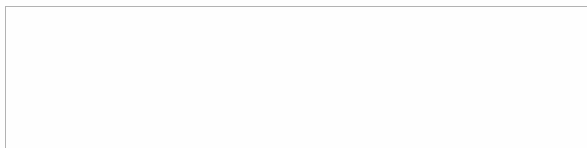
The classification assigned to the product in this report is appropriate to a Declaration of Performance (DoP) of the essential characteristics of the construction product by the manufacturer within the context of System 1 Assessment and Verification of Constancy of Performance (AVCP).

Under the Construction Products Regulation (CPR: EU 305/2011), such a Declaration of Performance (DoP) is a requirement for affixing the CE marking.

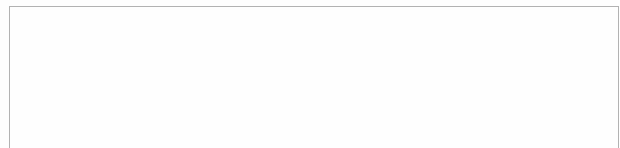
The test laboratory has played no part in sampling the product for the test, although it holds appropriate references, supplied by the manufacturer, to provide evidence for the traceability of the samples tested.

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

SIGNED



APPROVED

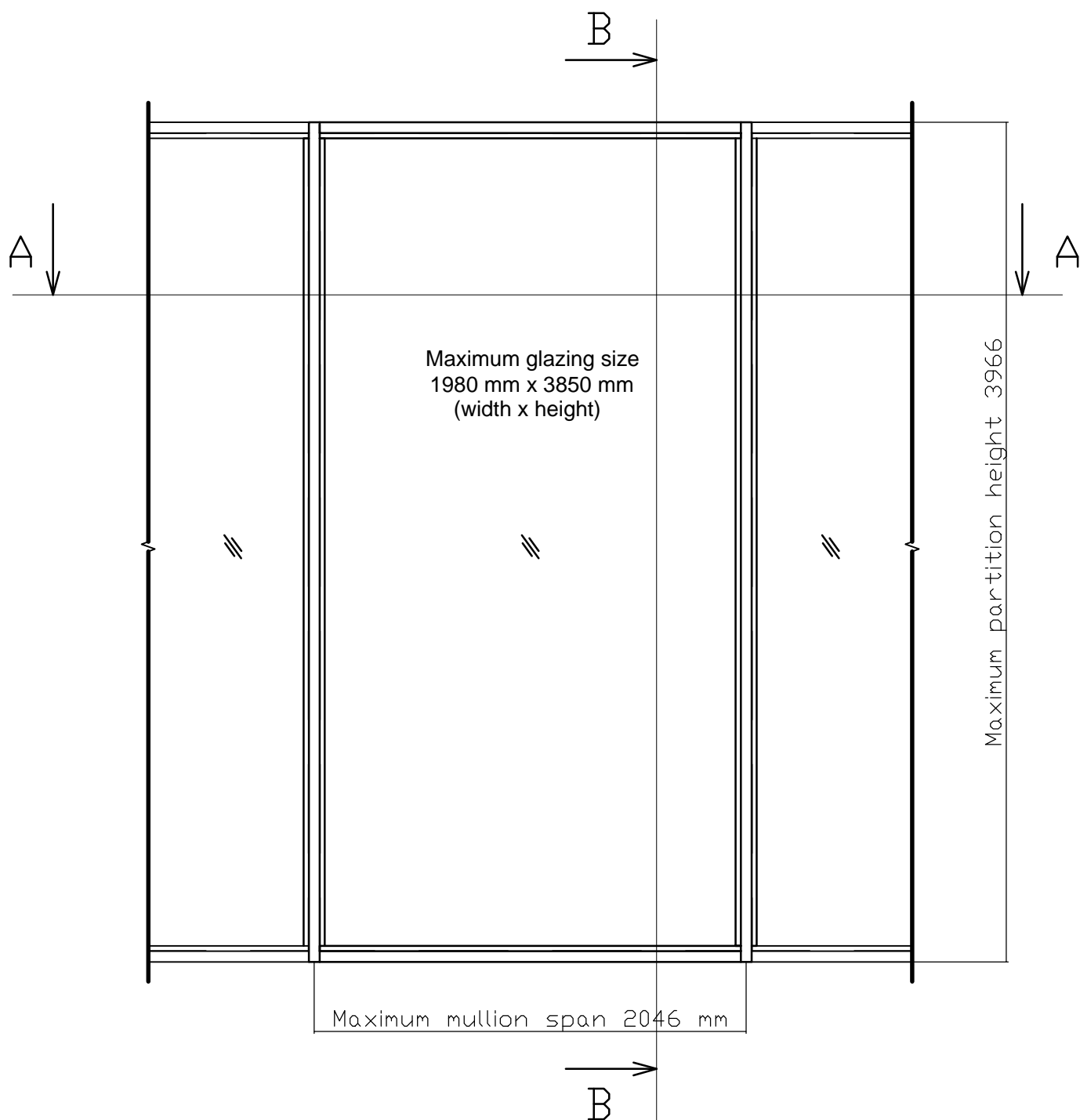


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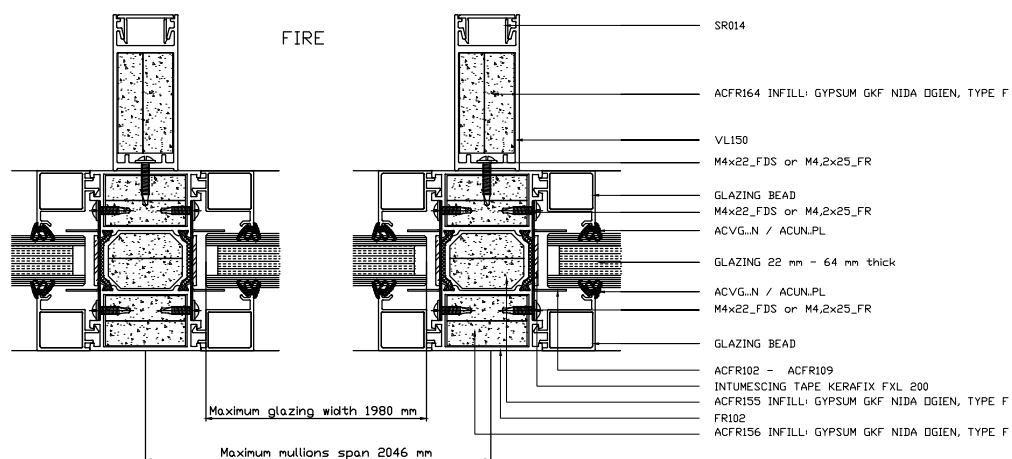
The authenticity of the electronic signatures is assured by Belgium Root CA.

Front view - dimensions

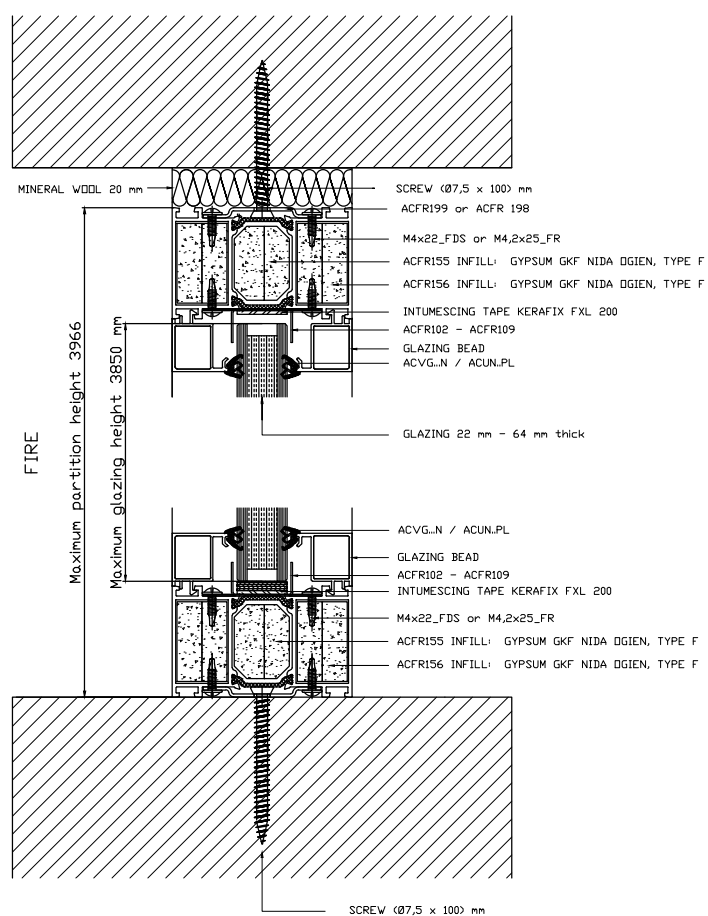


Cross sections

Cross section A-A



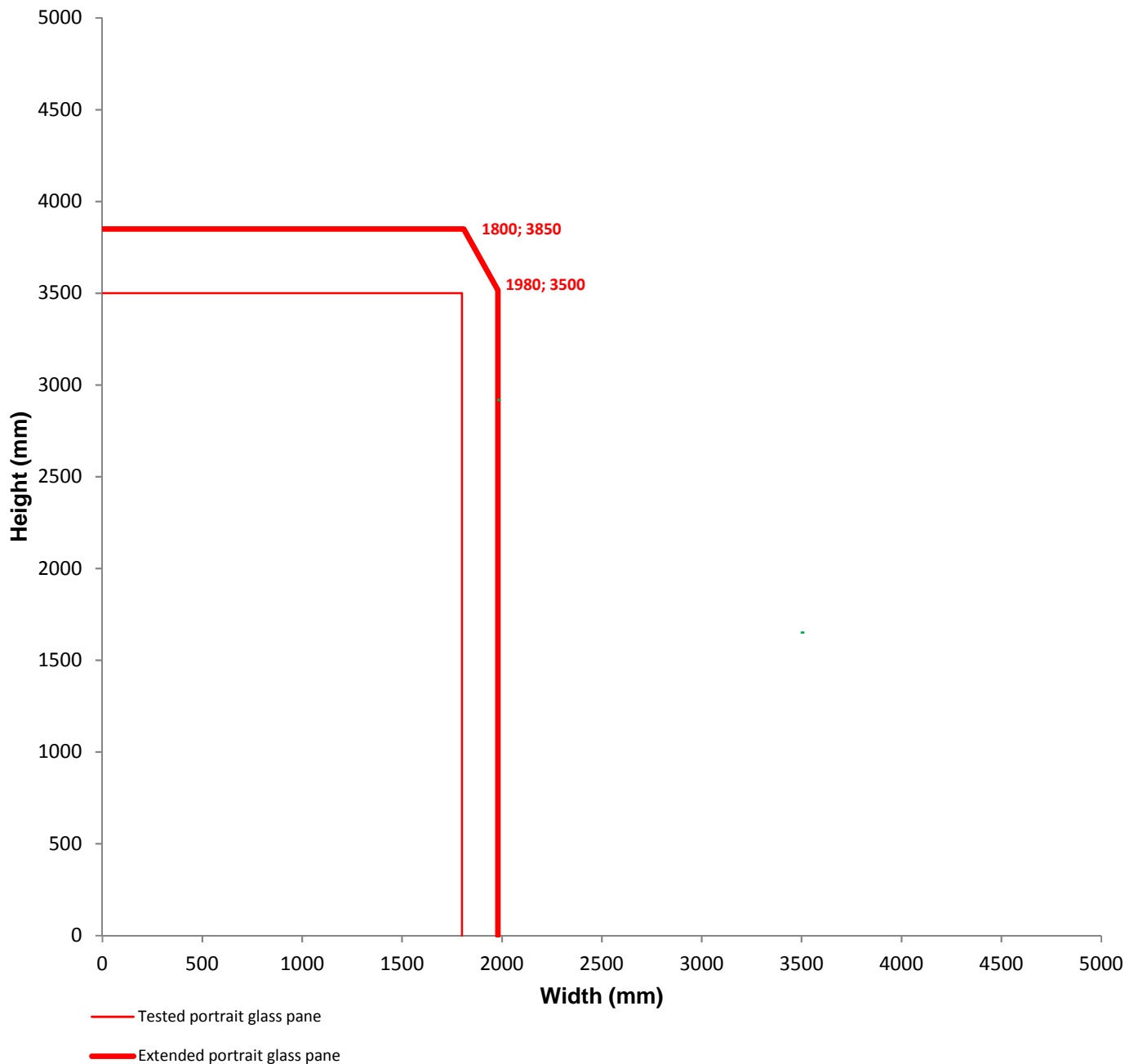
Cross section B-B



Individual rectangular glass panes: aspect ratio and increase in area

The extended dimensions are only valid for the following classifications:

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



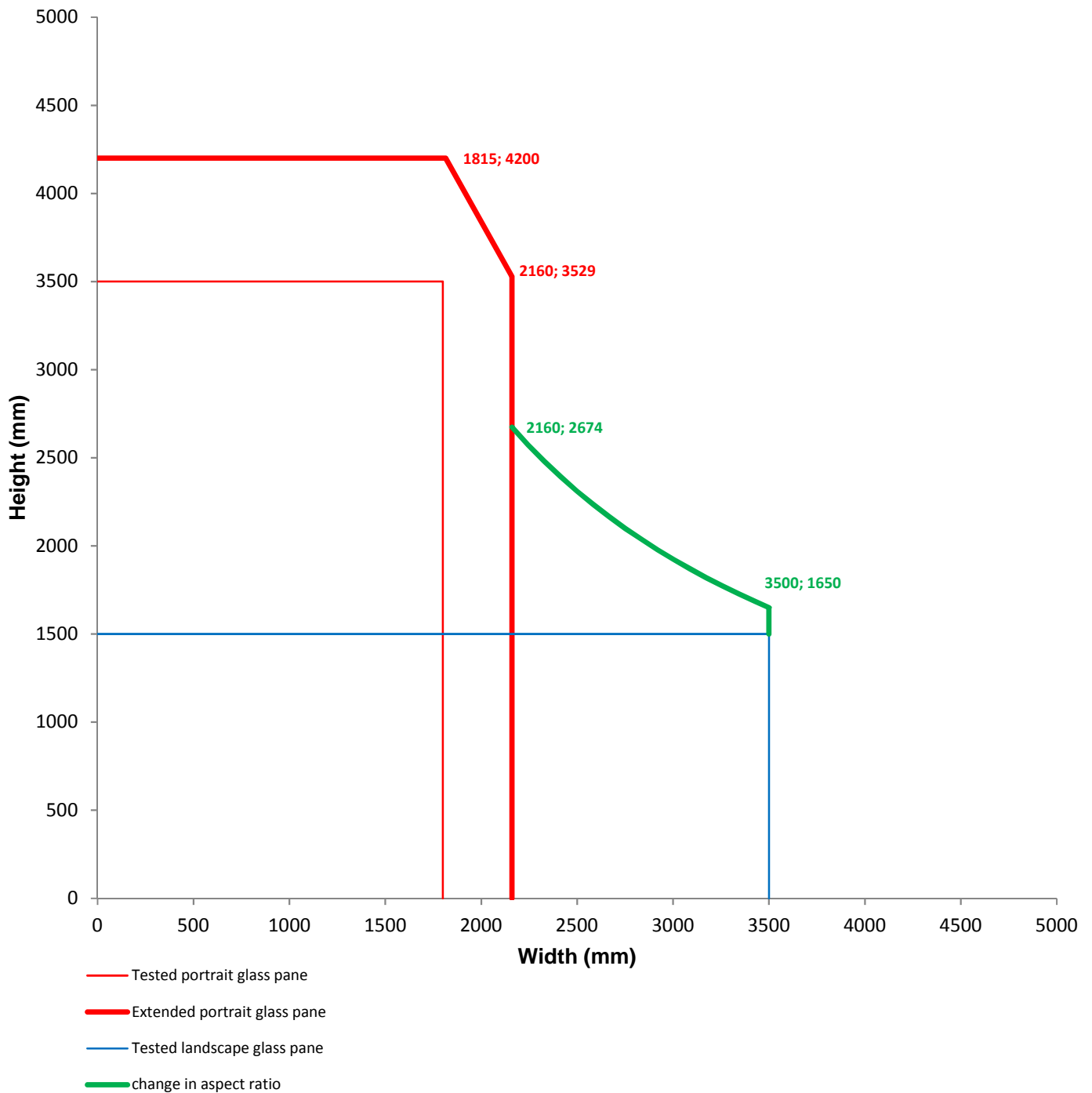
Note:

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 classifications:

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



Note:

The maximum dimensions of rectangular glass panes are represented by the outer lines.
The dimensions mentioned above are only valid for triple glazing without side limitation.