Instytut Techniki Budowlanej (Institute of Building Technique)
Research Laboratories Complex
Accreditation certificate No. AB 023 accredited by the Polish Center for Accreditation

TEST REPORT
LZP04-06097/21/R37NZP

Purchaser:	**VITRINTEC Sp z o.o.** ul. Karola Olszewskiego 19 C 25-663 Kielce
Test object: (provided by the Client):	Aluminum profile wall, **ULTRA SILENCE FS60** system by VITRINTEC, filled with Contraflam Structure 60 glass made by Vetrotech Saint-Gobain
Release date:	2023-12-20

Fire Test Laboratory (LZP)
fire@itb.pl

the member of egolf

1. Test information

Test start date
Test completion date: 09-10-2023.

Test method: EN 1364-1:2014

Place of testing:
ITB Fire Research Laboratory, ul. Przemysłowa 2, 26-670 Pionki.

2. Test element

2.1. Information provided by the Client

General information:
A test element, a non-load-bearing partition wall with glass connections without mullions, of the ULTRA SILENCE FS60 system was made and installed from elements of the ULTRA SILENCE FS60 system by VITRINTEC Sp. z o. o. ul. Karola Olszewskiego 19 C, 25-663 Kielce.

The structure of the tested test element is presented in Appendix No. A in the Client's technical documentation.

Dimensions:

The test element had the following external dimensions (width * height):

- test element: 3026*3036 mm,

Construction:
The structure of the test element was made of aluminum profiles with the following catalog numbers:

- UI061 - frame profile (vertical and bottom edge),
- UI062 - frame profile (upper edge),
- UI067 - clamped strip in the area between the glass on UI061 and UI062 profiles,
- MI001 - glazing bead attached to UI061 profiles.

Aluminum profiles with a construction depth of 100 mm and a height of 30 mm were used, made of aluminum alloy EN AW 6063, in accordance with PN-EN 573-3 and PN-EN 515, with thermal spacers made of glass fiber-reinforced polyamide (PA 66 GF 25) cat. no. AEI02, clamped in the axis of the fire glass mounting profile parts.

Perimeter frame sections with cat. no. UI061 (side and bottom profile) and UI062 (top profile) were filled with insulating inserts, in accordance with Fig. 1 in Appendix No. A:

- from the PROMATECT-XS board by PROMAT, cat. no. KGI2022, with cross-section dimensions of 20 x 22 mm
- - in the case of the peripheral frame section cat. no. UI061 and UI062
- made of plasterboard, cat. no. KG0618, dimensions 6.5 x 18 mm - in the case of the peripheral frame section

no. corner.

- UI062.

Fillings:

The partition wall is double-glazed. It was filled with Contraflam Structure 60 glass from Vetrotech Saint-Gobain, 31.0 mm thick, and VSG 55.1 laminated glass, 10.38 mm thick.

The dimensions of the glass were (width x height):

- Glass no. 1: 750 x 3000 mm,
- Glass no. 2: 1500 x 3000 mm,
- Glass no. 3: 750 x 3000 mm,

Fixing of fillings:

Contraflam Structure 60 glass was mounted on hardwood under-glass blocks o cat. no.
KXI3816), with dimensions of (width x length x height) 38 x 80 x 16 mm, two blocks for each glass.

VSG 55.1 glass was mounted on hardwood under-glass blocks, cat. no. KXI1208), with dimensions of (width x length x height) 12 x 80 x 8 mm, two blocks for each glass.

The under-glass blocks were placed at a distance of 100 mm from the corners of the glass.

The Contraflam Structure 60 glass was attached by inserting the glass into closed profiles (upper, cat. no. UI062), in the axis of the polyamide gasket, and then into the lower and side profiles (UI061), and latching the glazing beads, cat. no. MI001. Depth of insertion of the glass into the profiles 12 mm. Bent steel sheets were used as additional fastening for Contraflam Structure 60 glass, cat. no. KWIU31 (for upper profile UI062), and cat. no. KWIF31 (attached to side profiles UI061). KWIF31 sheets had oval holes enabling the sheet to be bent after the glazing was installed. The dimensions of the sheets are shown in Fig. 2 in Appendix No. A. The sheets were attached to the structure of the installation hole using self-drilling screws made of galvanized steel, with a diameter of 4.8 mm and a length of 70 mm.

Spacing of sheets, according to Fig. 1 in Appendix No. A:

- in glass no. 1 (glass numbering in accordance with Fig. 6), inserted into the upper and lower profile: 3 pieces of KWIU31 sheets in the upper profile (edge sheets at a distance of 125 mm from the corner of the glass - placed at equal distances from each other),
- in glass no. 2 (glass numbering in accordance with Fig. 6), inserted into the upper and lower profile: 5 pieces of KWIU31 sheets in the upper profile (edge sheets at a distance of 125 mm from the corner of the glass - placed at equal distances from each other),
- in glass no. 3 (glass numbering in accordance with Fig. 6), inserted into the upper, side and lower profile: 2 pcs. KWIU31 sheets in the upper profile (the first anchor with the sheet is 393 mm from the wall corner) and KWIF31 sheets in the side profile, with a spacing of no more than 600 mm between the sheets and a distance of 530 mm from the wall corner.

Additionally, the top and side profiles were attached with a second row of self-drilling screws made of galvanized steel, with a diameter of 4.8 mm and a length of 70 mm, spaced every 600 mm (the first screw at a distance of 393 mm from the wall corner). The bottom profile of the frame was attached with two rows of expansion anchors with a galvanized steel screw and a plastic sleeve with a diameter of 8 mm and a length of 60 mm at a spacing of 600 mm (the first anchor at a distance of 393 mm from the wall corner).

Strips of Rolf Kuhn's FXL 200 intrumescent tape were used on the side and top profile. Strips were glued between the KWIU31 and KWIF31 plates on the glazing side, cat. no. KF0213, with cross-section dimensions of 13 x 2 mm, and then a second layer of intrumescent tape, along the entire length of the profiles with code no. KF0225, with cross-section dimensions of 25 x 2 mm.

TPE thermoplastic elastomer seals are used between the Contraflam Structure 60 and VSG 55.1 glass panes and the aluminum profiles.

Vertical joints of Contraflam Structure 60 glass panes, with a width of 4 mm, were made using silicone type (DC) 895 from Dow Corning (cat. no. KSD895) and the intumescent material Kerafix FXL 200 with a cross-section 2 x 22 mm by Rolf Kuhn, cat. no. KF0222.

The VSG 55.1 glass was attached by inserting the glass into closed profiles- upper (cat. no. UI062), and then into open profiles - bottom and side ones (cat. no. UI061) and latching the glazing beads, cat no. MI001. The depth of embedding VSG glass in the profiles is 12 mm.

Vertical joints of VSG 55.1 glass panes, 4 mm wide, were made using TPE thermoplastic elastomer gaskets, cat. no. KU010H with an "H"-shaped cross-section and double-sided tapes, cat. no. KY061 type TESA ACX PLUS 7055, by TESA

2.2. Information obtained during the inspection by the Laboratory

2.2.1. General information

Hinged doors, aluminum, glazed.

Acceptance of the test object to the laboratory:

Date:	09-10-2023.
Acceptance protocol:	LZP04-06097/21/R37NZP

Preparation of the test element:

Date of construction of the mounting structure:	04-10-2023.
Date of installation of the test element in the mounting structure:	06-10-2023.
Seasoning:	The test element does not require seasoning.
Selection of test elements:	the laboratory participated in the selection.

Acceptance of the object mounted on the test stand:

The object was installed on a test stand in the Fire Research Laboratory of the ITB in Pionki by the manufacturer - VITRINTEC Sp. z o. o. ul. Karola Olszewskiego 19 C, 25-663 Kielce.

Condition of the research object:

The sample was provided in a condition and quantity suitable for testing. The sample was mounted in the mounting structure in a way that allows the test to be performed in accordance with the method.

2.2.2. Verification of the test element

Before and after the test, the compliance of the data (to the extent possible) contained in the documentation provided by the Ordering Party with the delivered test element was checked. Verification measurements are not covered by accreditation.

Total dimensions of the door leaf: 3026 x 3036 mm (width x height) visible part on the non-heated side.

Construction: Asymmetrical - heating from the glass side 55.1

Glass Thickness:

	Fire-resistant glass	VSG glass
Glass no. 1 (from the left, looking from the unheated side)	32.1 mm	9.9 mm
Glass no. 2:	32.3 mm	9.9 mm
Glass no. 3:	31.3 mm	9.9 mm

Glazing angles: in accordance with the Ordering Party's documentation.

Fixing structure: Standard flexible mounting structure made of C50/U50 profiles with 2 x 12.5 GKF cladding on both sides. Thickness 100 mm.

Attachment to the mounting structure: in accordance with the Ordering Party's documentation.

Fig. 1. Test element before testing - heated side

Fig. 2. Test element before testing - details

Fig. 3. Test element before testing - filling details

2.3. Fire resistance test

2.4. Test method 2.4.1. General information

Method:

EN 1364-1:2014

Deviations:

None.

Standards referred to in the method relevant to testing:

EN 1363-1:2020

Scope of application of the method:

This report provides the method of construction, test conditions and results obtained when a specific element of the described design has been tested in accordance with the procedure set out in EN 1363-1 and, where appropriate, with EN 1363-2. Any significant change in size, construction details, loads, stresses, boundary conditions or end conditions, other than those permitted by the direct scope of use in this particular test method, is not covered by the report.

Additional notes:
The implementation of the study, environmental conditions and the accuracy of the measuring devices used were consistent with the requirements of the method.

The uncertainties of the measurements taken during the test are within the ranges required by the relevant testing standards.

Due to the nature of the fire resistance test and the resulting difficulty in quantifying the uncertainty of the fire resistance measurement, it is not possible to determine a fixed level of accuracy for the results.

2.4.2. Test conditions

Heating temperature: Fig. 3, standard curve.

Initial furnace temperature: 18.0°C < 50°C.

Initial temperature of the test element,

initial temperature of the unheated surface: 17.7°C.

Heating accuracy: Fig. 5.

Pressure in the furnace: Fig. 6.

Ambient temperature: Fig. 7.

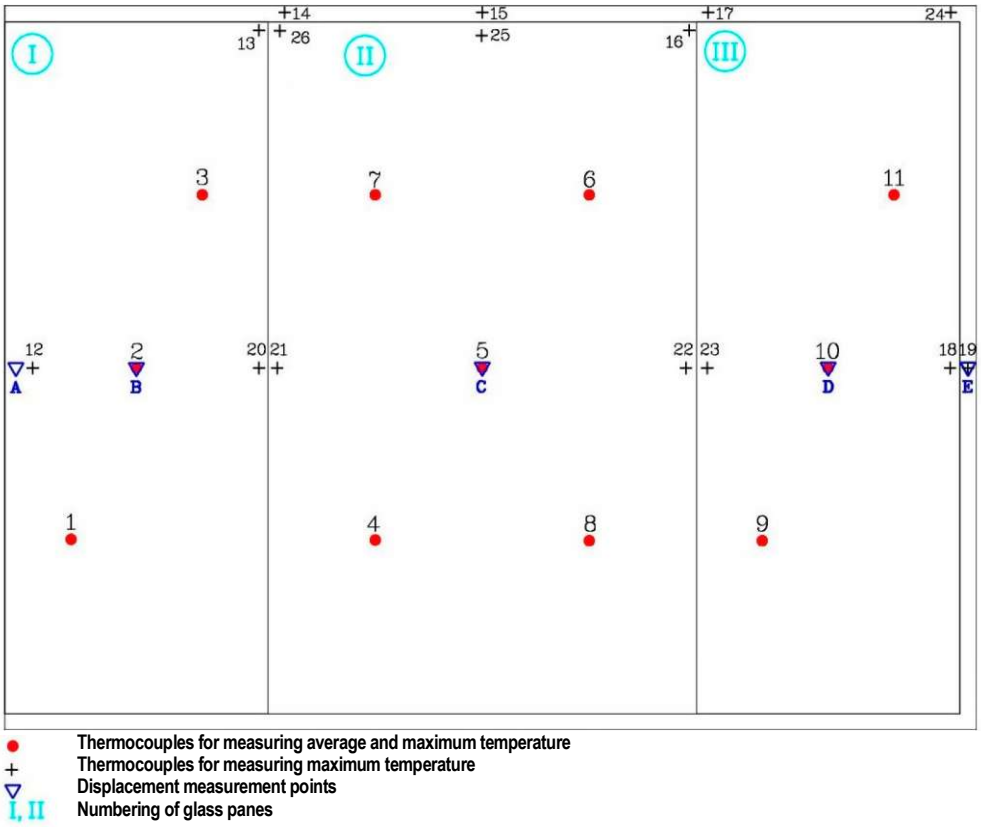


Fig. 4 Arrangement of measurement points on the unheated surface of the test element, with indication of the pressure measurement point in the furnace other than that permitted by the scope of direct application in the specific test method, is not covered by this report.

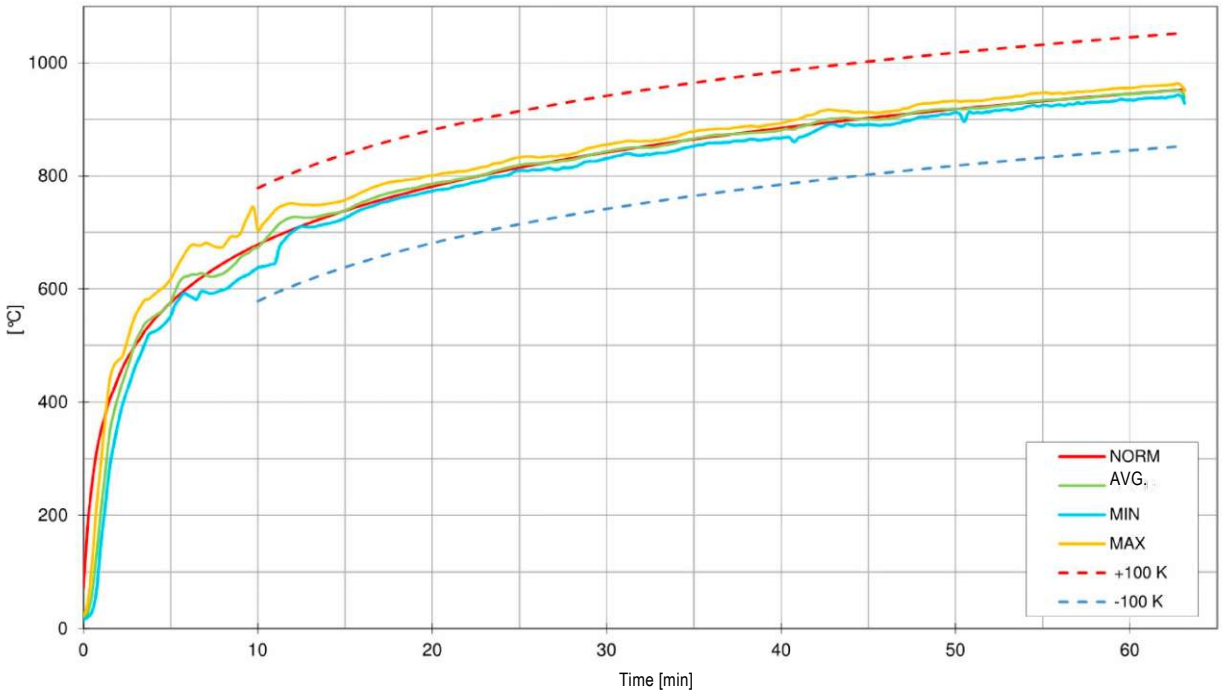


Fig. 5. Graph of the heating temperature of the tested element

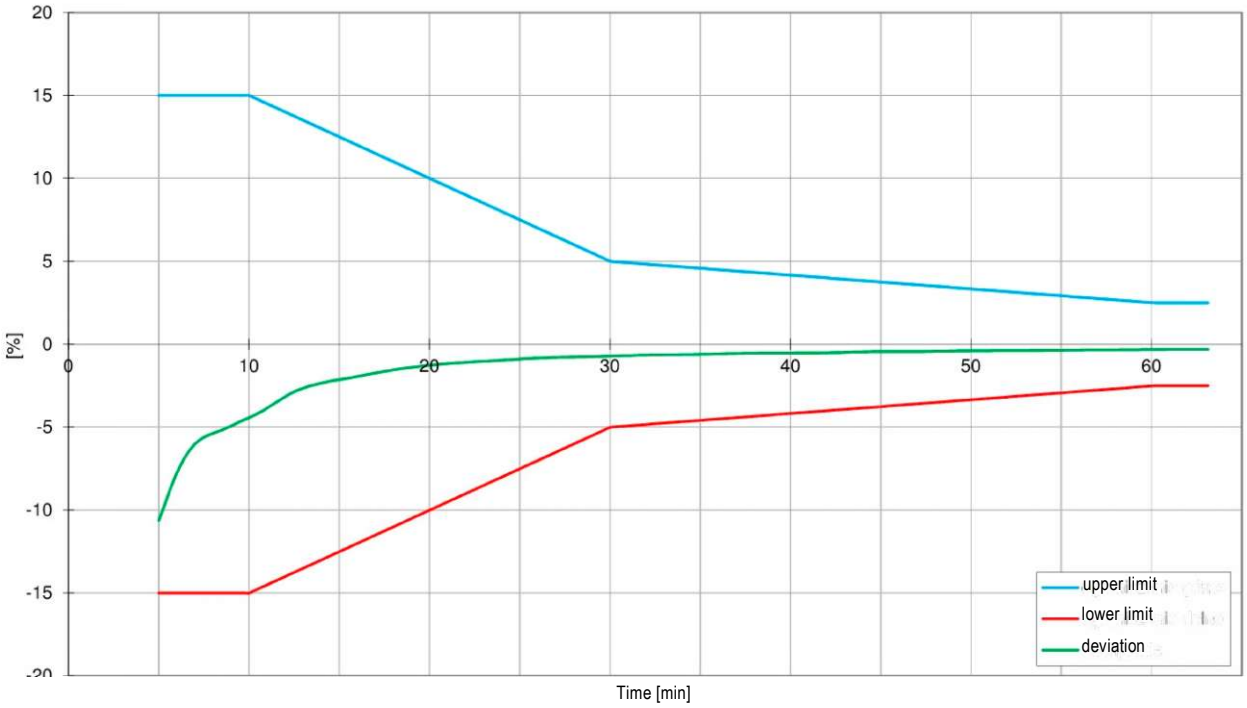


Fig. 6. Heating accuracy chart

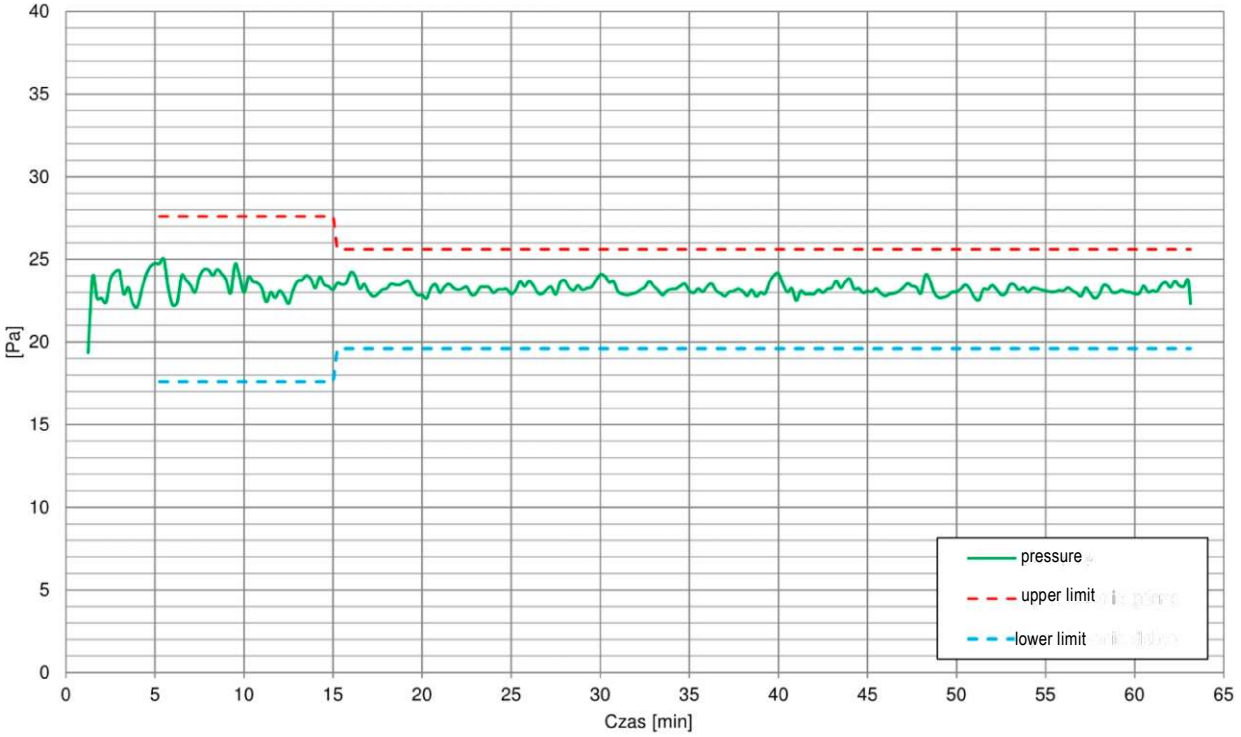


Fig. 7. Graph of pressure in the furnace during the test

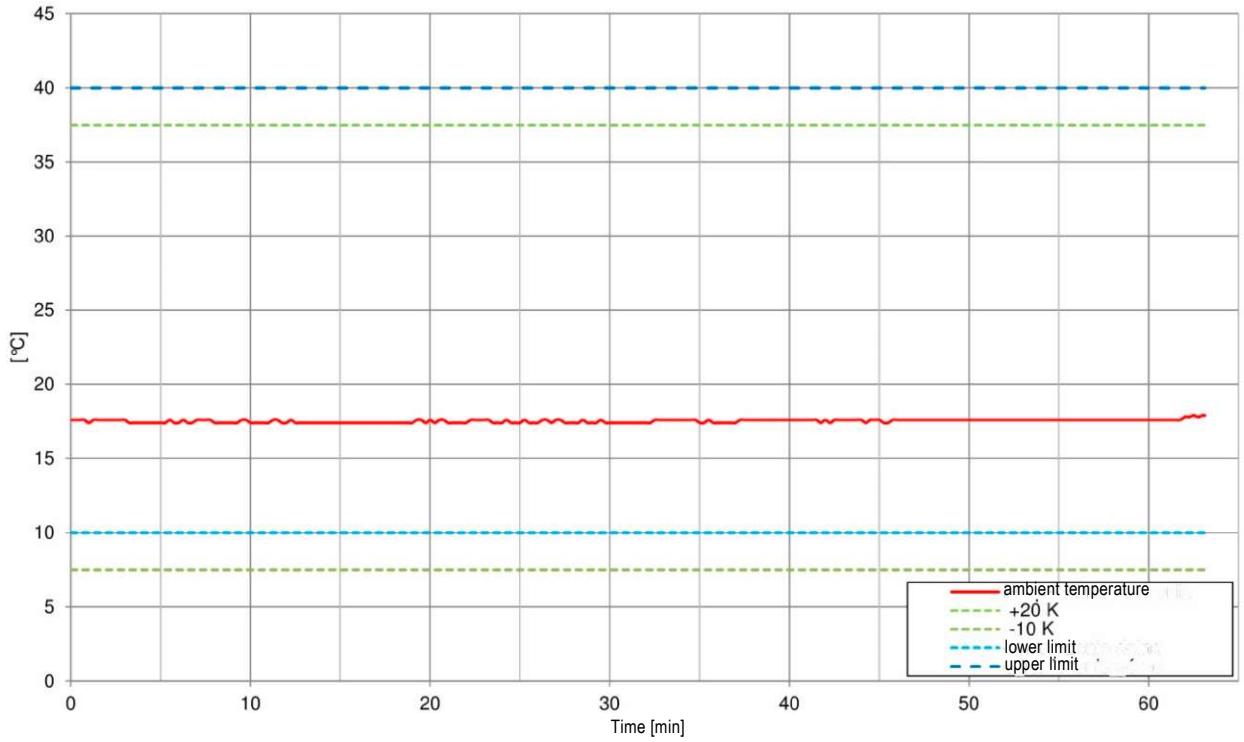


Fig. 8. Graph of ambient temperature during the test

2.5. Test results

2.5-1- General information

Test duration: 63m 05s

Temperature increases on the unheated surface: Fig. 9 -14

Tab. 1.
Observations

Time	Record
0m 0s	Start of the study
5m 01s	The inner glass panes of glass 1, 2 and 3 broke and fell into the furnace
7m 01s	Intensive combustion in the furnace - VSG glass foil
9m 55s	Opaque glass
52m 30s	Applying a movable thermocouple to the burnout on glass no. 3 (the first glass from the side of the fixed edge) in the upper right corner, T = 58°C
56m 50s	Intense smoke in the upper right corner of glass no. 3
63m 05s	End of the test (reason: in consultation with the Client)

Tab. 2. Displacements

Time	Displacements, mm					
min	A	B	C	D	E	F
0	0	0	0	0	0	0
10	+20	+24	+32	+28	+22	+13
20	+19	+22	+27	+20	13	+8
30	+26	+42	+48	+29	10	+7
40	+48	+49	+40	+25	+15	+8
50	+62	+70	+70	+45	+30	+18
55	+67	+77	+85	+64	+42	+27
60	+69	+79	+92	+75	+50	+35

Negative values indicate displacement outside the furnace chamber.

Temperature increases on the unheated surface:

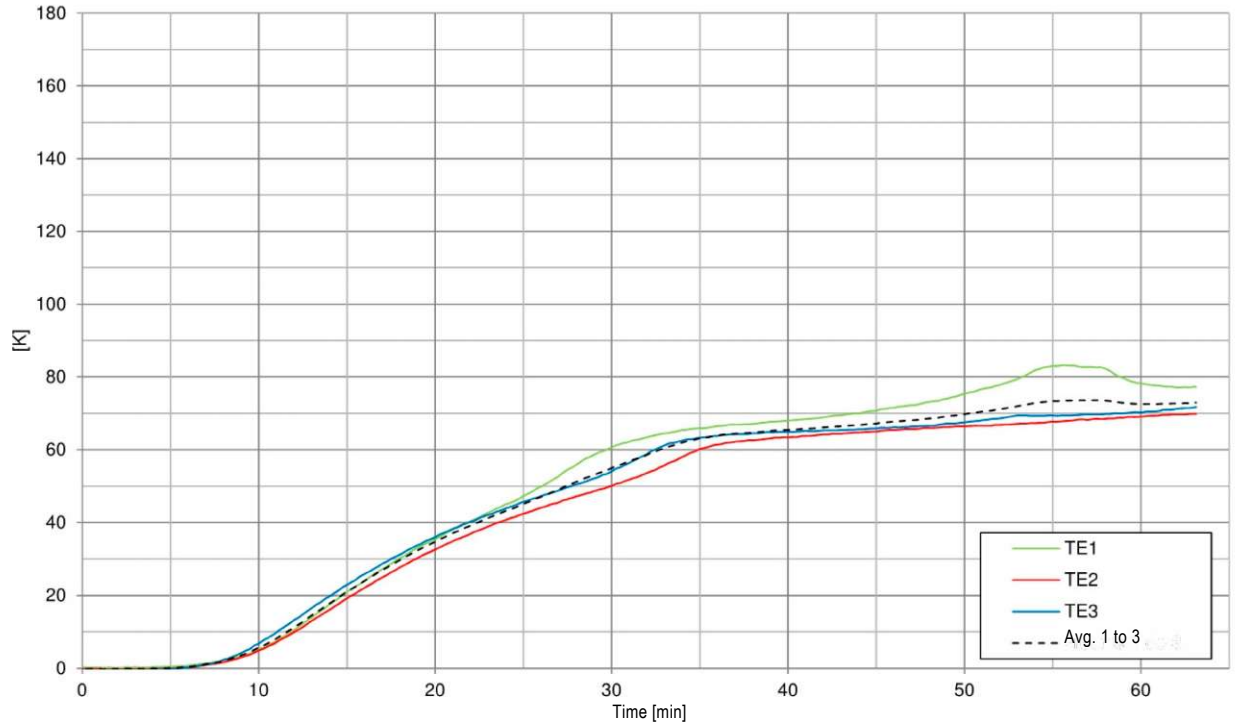


Fig. 9. Graph of temperature increases on the unheated surface of the test element - indications of thermocouples for measuring the average and maximum temperature

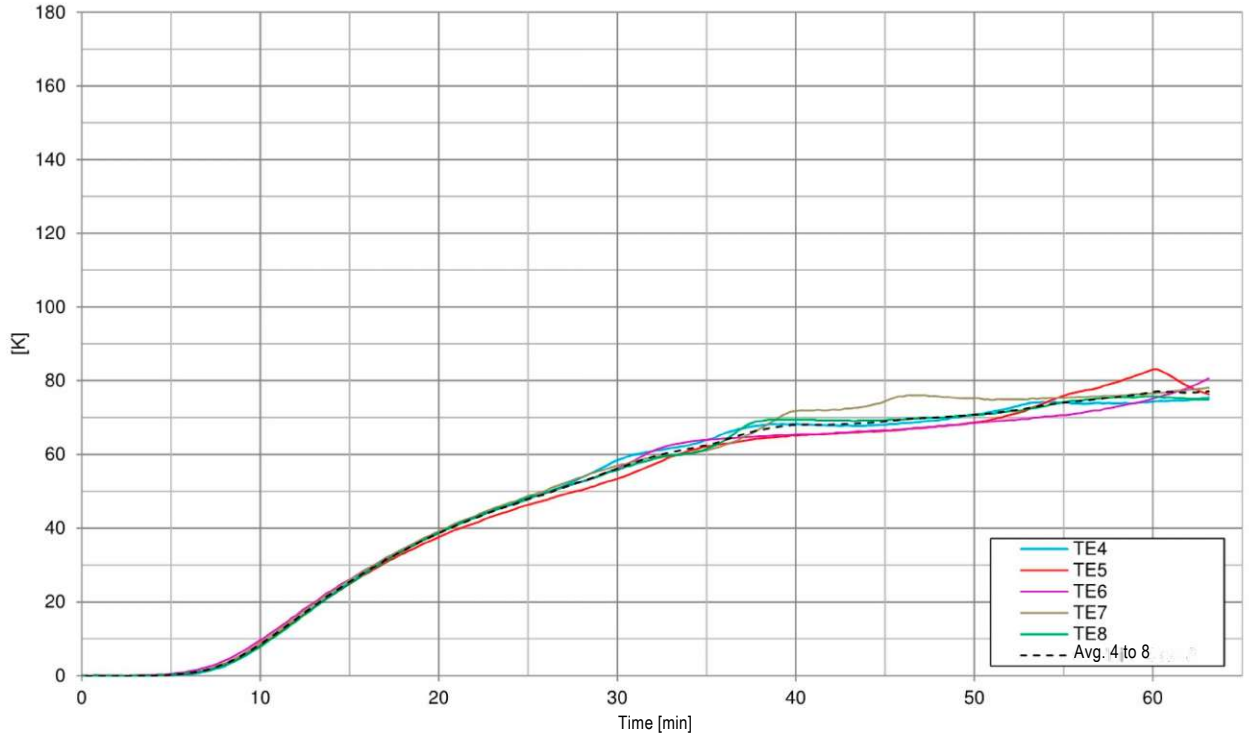


Fig. 10. Graph of temperature increases on the unheated surface of the test element - indications of thermocouples for measuring the average and maximum temperature

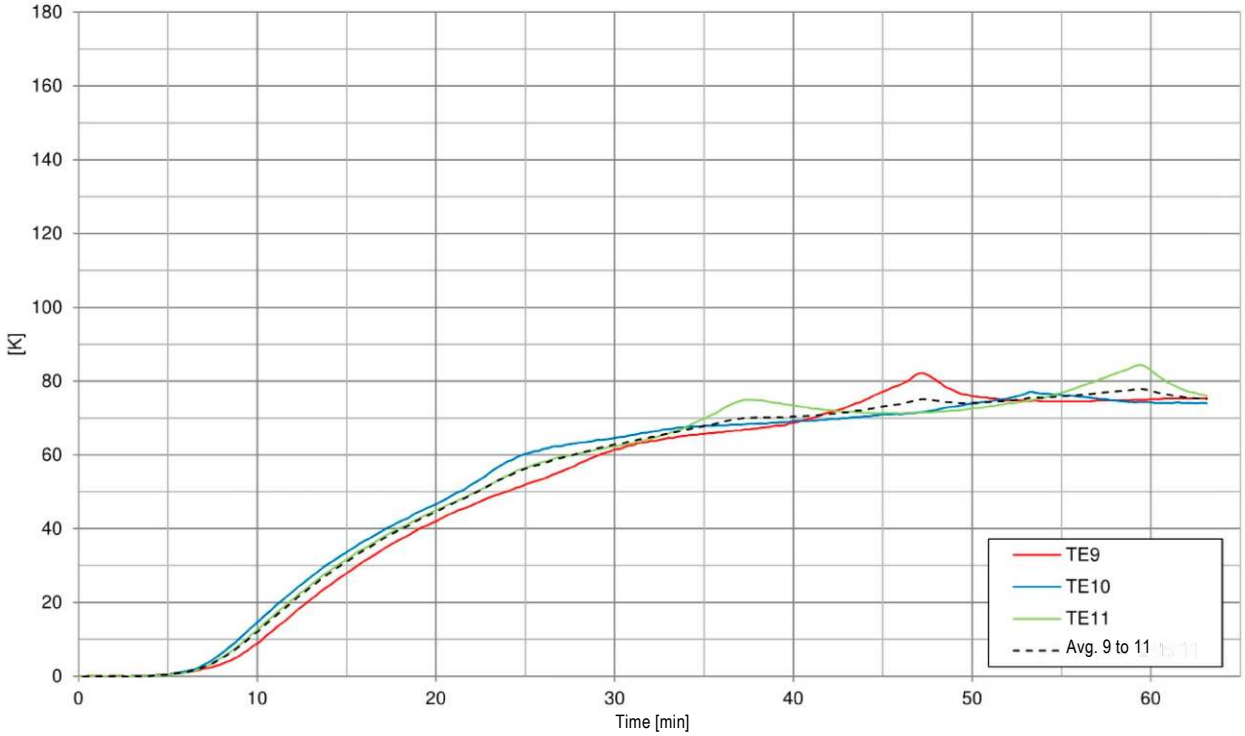


Fig. 11. Graph of temperature increases on the unheated surface of the test element - indications of thermocouples for measuring the average and maximum temperature

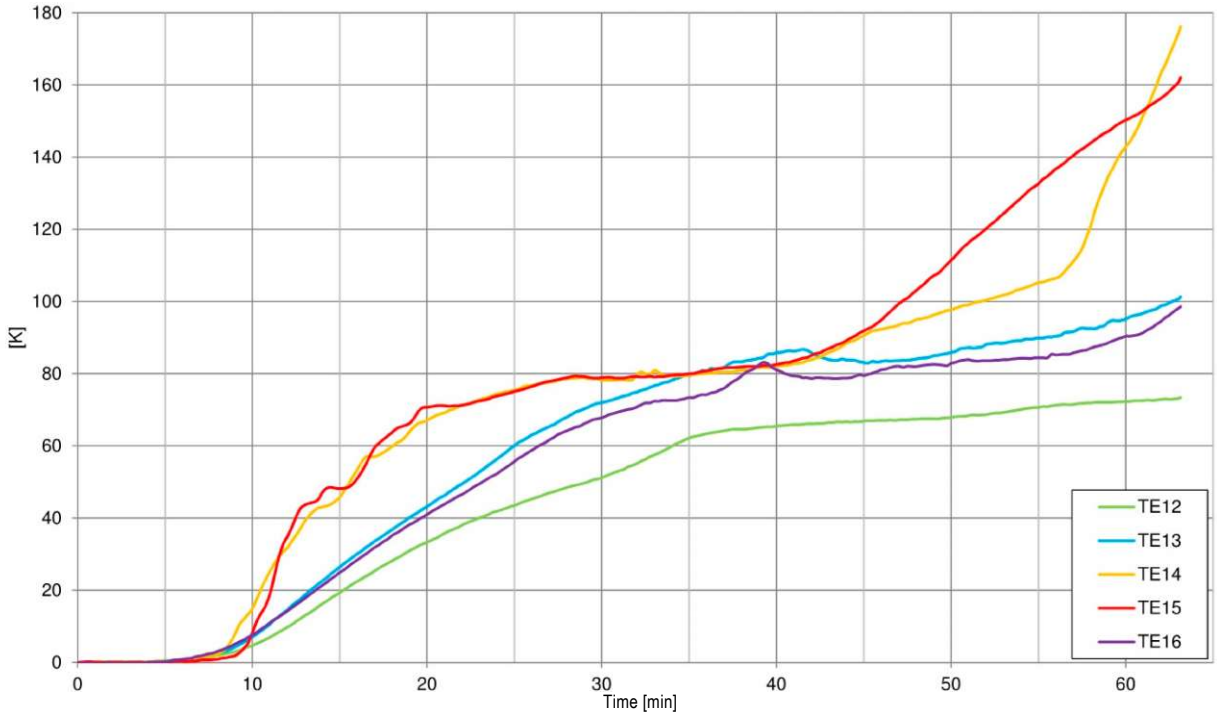


Fig. 12. Graph of temperature increases on the unheated surface of the test element - indications of thermocouples for measuring the average and maximum temperature

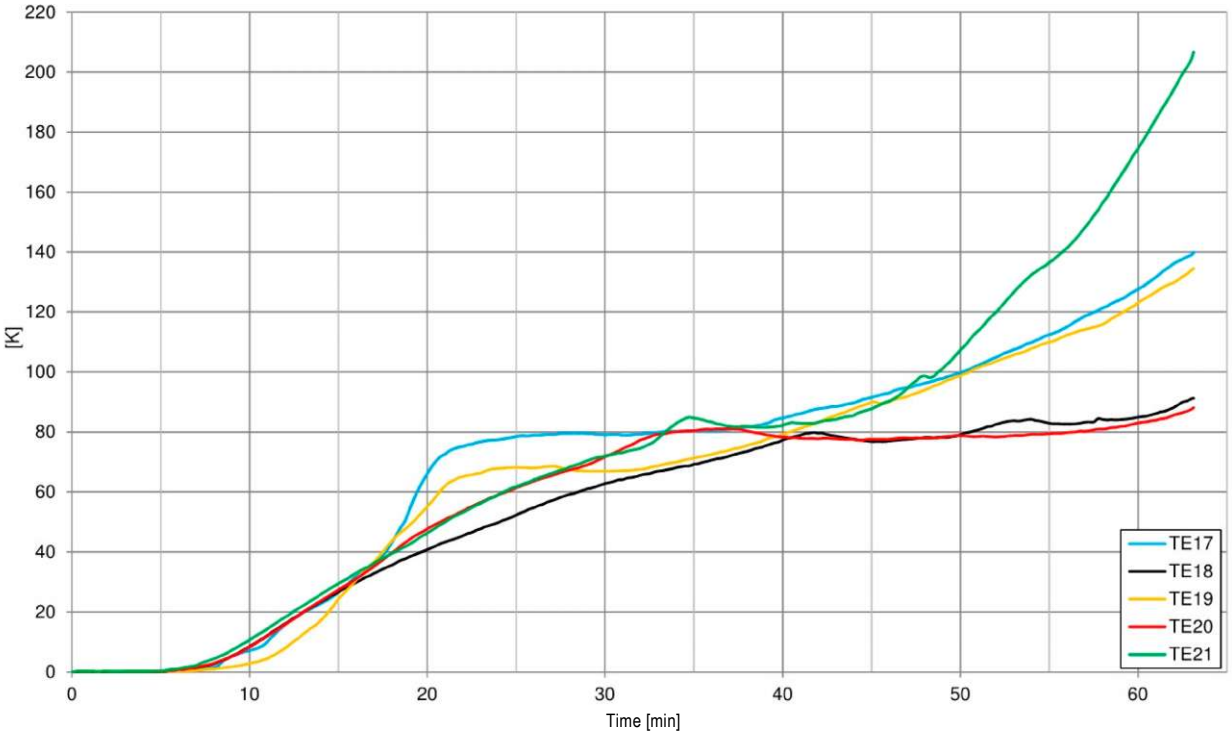


Fig. 13. Graph of temperature increases on the unheated surface of the test element - indications of thermocouples for measuring the average and maximum temperature

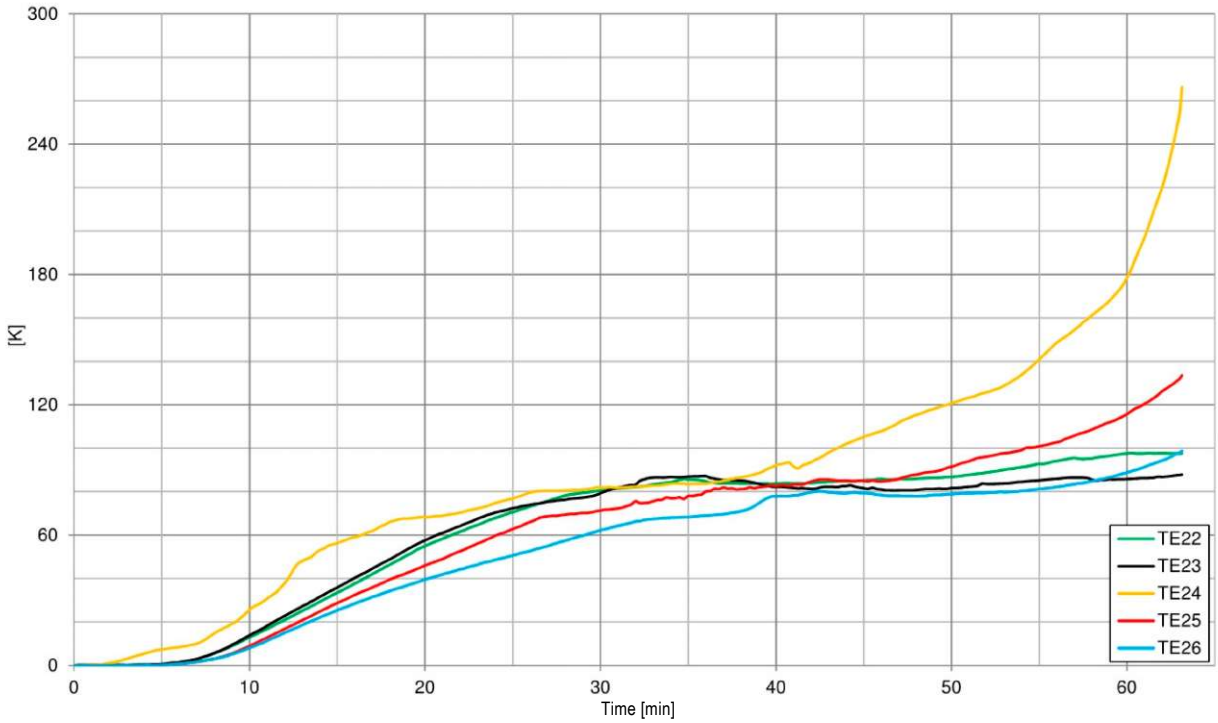


Fig. 14. Graph of temperature increases on the unheated surface of the test element - indications of thermocouples for measuring the average and maximum temperature

2.5.2 Fire resistance criteria

Fire tightness (E)	Time	Location
Persistence of flame	63 minutes without loss	-
Cotton tampon	63 minutes without loss	-
6 mm feeler gauge	63 minutes without loss	-
25 mm feeler gauge	63 minutes without loss	-

Fire insulation (I)	Time	Location
Average temperature increase by 140°C above the initial average temperature:	63 minutes without loss	-
Maximum temperature increase by 180°C above the initial average temperature	61 minutes	TE21
Maximum temperature increase by 180°C above the initial temperature (other fixed thermocouples, if used, or movable thermocouple)	63 minutes without loss	

In accordance with the provisions of EN 13501-2:2016, the assessment of compliance of the results with the criteria is included in a separate document (so-called classification report), unless the owner of this report has requested such a document.

2.5.3 Scope of direct application of research results (DIAP)

In accordance with EN 1634-1:2014, Section 13.

Appendix A
Technical documentation of the Ordering

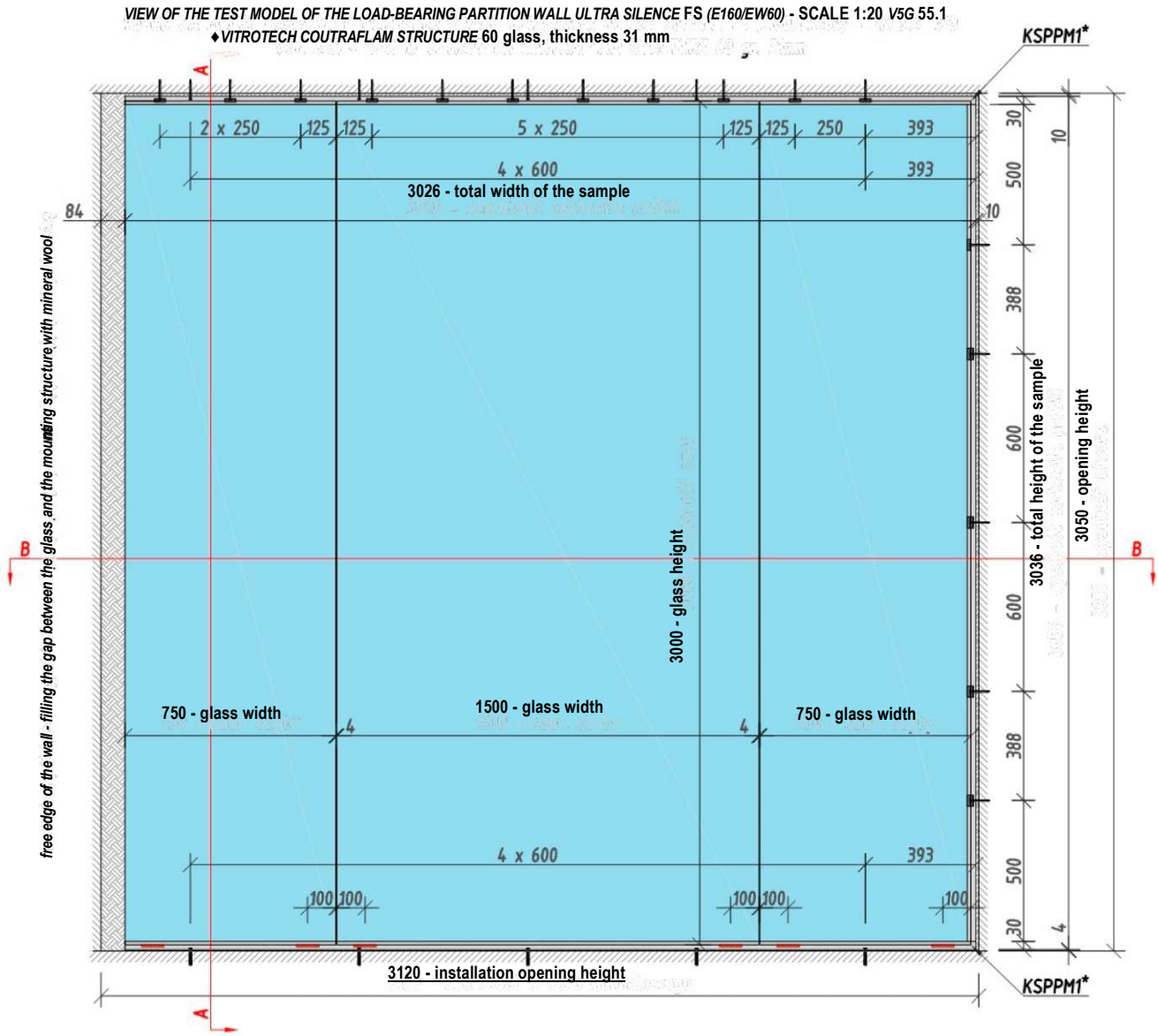


Fig. 1A. General view of the test element, marking of sections

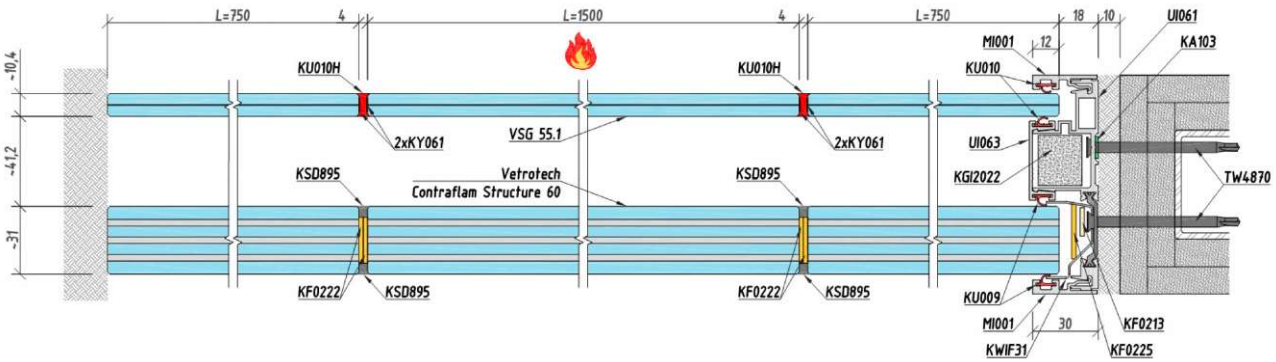
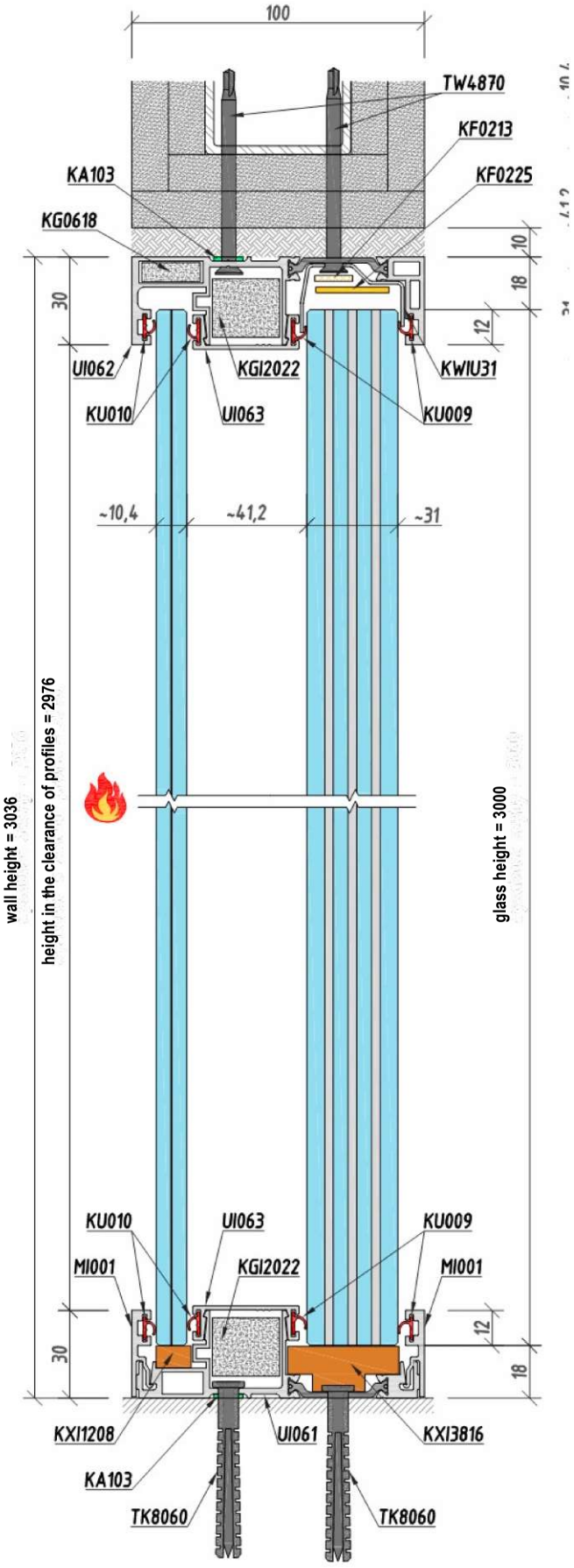


Fig. 2A. Horizontal cross-section B-B


100
TW4870
KF0213
KA103
KF0225
KG0618
10
18
12
30
UI062
KGI2022
KWIU31
KU010
UI063
KU009
~10,4
~41,2
~31
wall height = 3036
height in the clearance of profiles = 2976
glass height = 3000
KU010
UI063
KU009
MI001
KGI2022
MI001
12
30
18
KXI1208
UI061
KXI3816
KA103
TK8060
TK8060

Fi

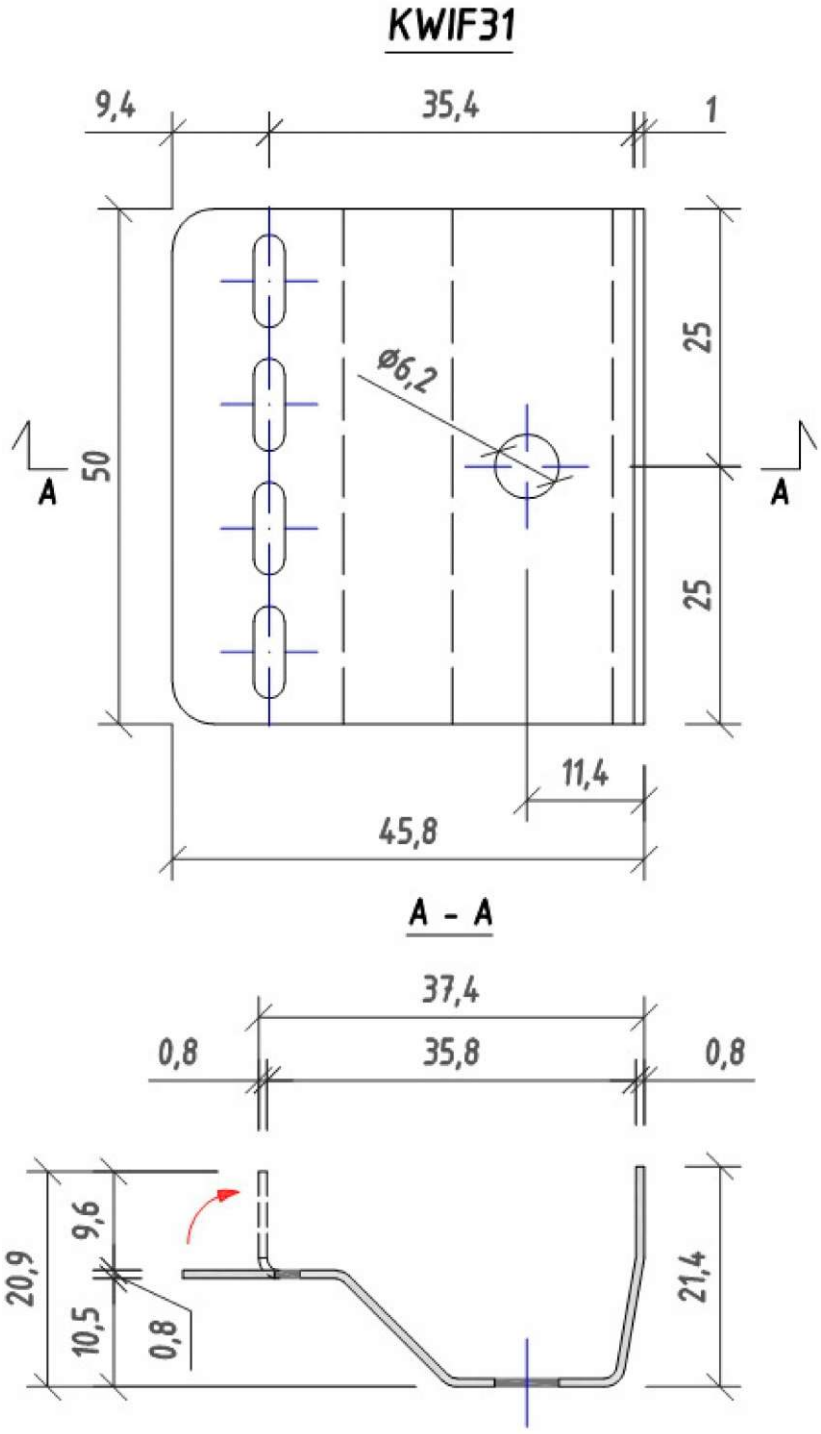


Fig. 4A. KWIF31 glass mounting plate

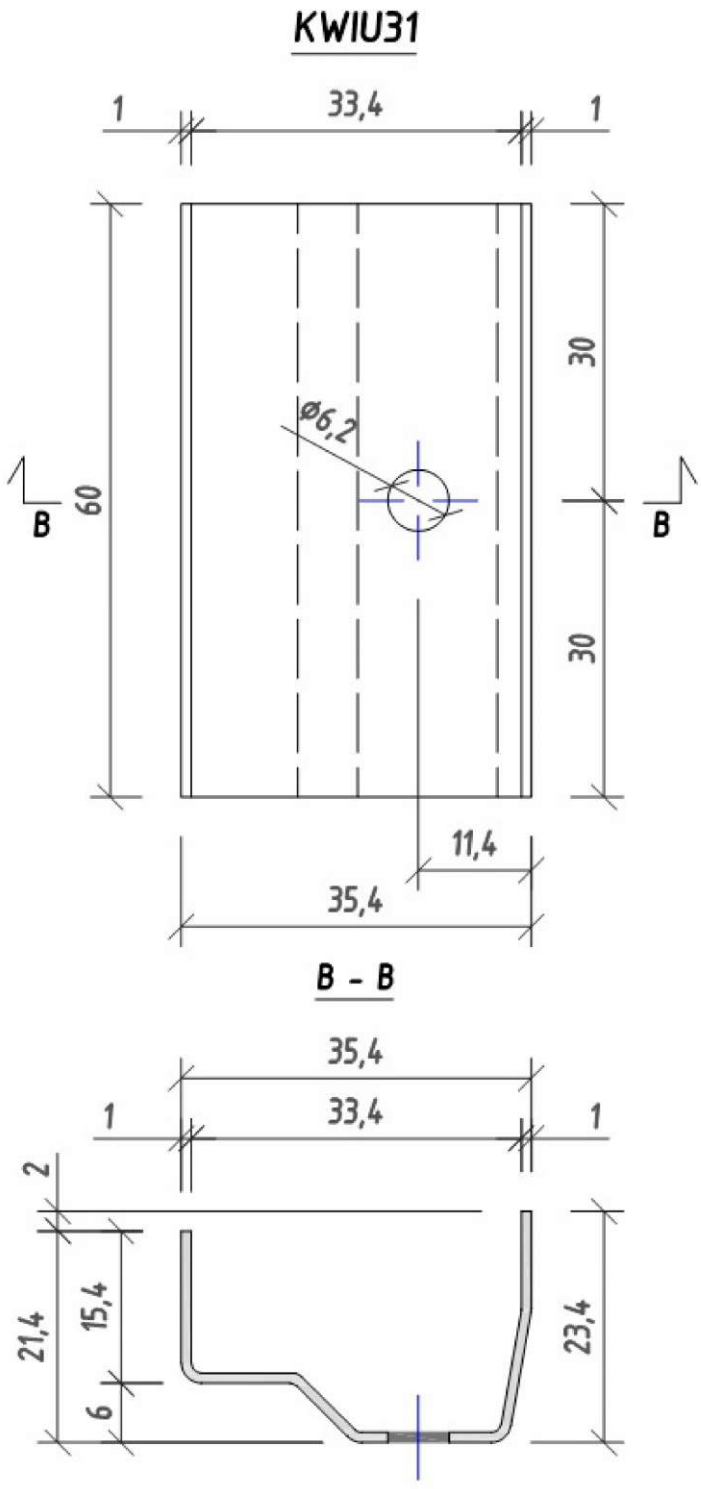
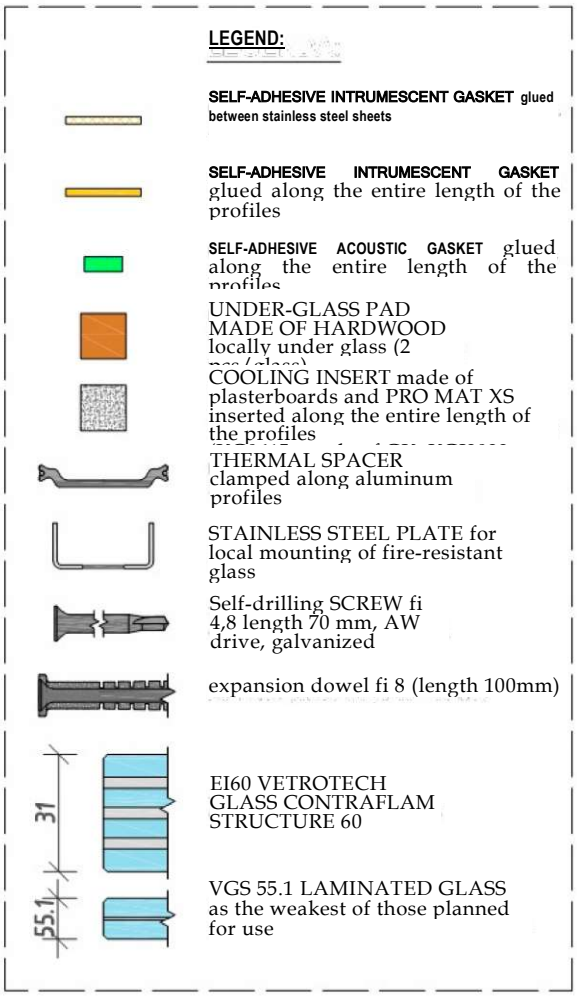


Fig. 5A. KWIU31 glass mounting plate



*KSPPM1 - fireproof mass based on acrylic resin

Fig. 6A. Legend

Appendix No. B
Photographic documentation of the test process

Fig. 1B. The unheated side of the test element before testing

Fig. 2B. Unheated side of the test element, t = 8'10"

Fig. 3B. Unheated side of the test element, t = 31'20"

Fig. 4B. Unheated side of the test element, t = 46'01"

Fig. 5B Unheated side of the test element, t = 60'05"

Fig. 6B. The unheated side of the test element after testing

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Responsible for research

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Jacek Kinowski ITB
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Document signed by Paweł Sulik; ITB
Date: 2023.12.20 12:01:38 CET

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Head of the NZP Laboratory

Bartłomiej Papis; ITB - 2023/12/20 15:39:38+01'00'

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