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FIRE RESISTANCE CLASSIFICATION REPORT

Object of classification: *Non-loadbearing walls in accordance with ČSN EN 13501-2:2017, cl. 7.5.2*

Identification number: ***PK2-05-20-009-E-0***

Name and type of element: *Glass-concrete wall made of glass blocks 1919/13 F 120 with hydrogel filling, bonded with PROMASTOP–M with inserted reinforcement of 6 mm in diameter*

Sponsor: ***VITRABLOK, s.r.o.***
Bílinská 42
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Czech Republic

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1. INTRODUCTION

1.1. This Classification Report defines the resistance to fire classification assigned to the given element in accordance with procedures given in ČSN EN 13501-2.

1.2. This Classification Report includes 5 pages and may only be used or reproduced in its entirety.

2. DETAILED INFORMATION ON CLASSIFIED PRODUCT

2.1. General

„Glass-concrete wall made of glass blocks 1919/13 F 120 with hydrogel filling, bonded with PROMASTOP–M with inserted reinforcement of 6 mm in diameter" has been defined as an element on non-loadbearing construction. It has been designated as a fire separating construction with regard to its fire resistance parameters mentioned in cl. 5 of ČSN EN 13501-2:2017.

For the purposes of this document, the with following abbreviations apply:

RTC roving thermocouples

2.2. Description

- Reinforced concrete construction with always 2 concrete reinforcements of ∅ 6.0 mm (length approx. 2,930 mm) made of ribbed steel B500B inserted between glass blocks in vertical and horizontal ribs; at the edges in the frame of the construction, the reinforcements are laid side by side with a spacing of approx. 50 mm. The width of the perimeter concrete frame of the wall is 70 mm and of the concrete ribs between the glass blocks it is 15 mm. Concrete: fire protection mortar PROMASTOP – M (manufacturer, Promat GmbH, Austria).
- Clear, corrugated four-layer glass blocks with fire-resistant hydrogel filling SEVES Glassblock 1919/13 F 120 inside (manufacturer Vitrablok s.r.o., Duchcov, Czech Republic) of 190 x 190 x 128 mm in dimensions and of 5.00 kg in weight (196 pcs in total) made of two glass blocks SEVES Glassblock 1919/5 (glass thickness 4x 7.0 mm connected around the entire perimeter by a fiberglass U-shaped frame 10x27.7x 10 mm with a thickness of 2.4 mm, glued together using the adhesive BUTYL GD 115 hobok (manufacturer Kömmerling GmbH, Germany). The cavity between the two blocks is filled with a fire-resistant hydrogel filling based on hydrophilic monomers (supplier RETRE, Czech Republic). All around the perimeter the block axis it treated with Polyurethane sealant GD 677 NA component A + B (manufacturer Kömmerling GmbH, Germany) thickness of 10 mm.
- The wall is anchored to the reinforced concrete lintel using 2 pieces of steel plates 60 x 180 x 5.0 mm with a spacing of 1,655 mm (670 mm from the edges of the wall) and using 2x 2 pieces of turbo screws ∅ 7.4x90 mm. The plates are screwed to the upper wall reinforcements with screwing using screws M14x35 mm. There is no anchoring for the other sides of panels.
- Around the entire perimeter, the wall is embedded in a test frame without any supporting construction, using a strip of ceramic wool Fiberfrax Durablanket S 1250 (UNIFRAX s.r.o., Czech Republic) of 170 mm in width, 25 mm in thickness and 96 kg/m^3 in volume density. The right free edge between the specimen and the test frame is sealed with a mineral wool strip of 40 mm in thickness.

The total dimensions of the panel are 2,995 x 2,995 x 128 mm, the construction is symmetrical, the thickness of the reinforced concrete frame of the panel is 120 mm, the width of the panel frame around the perimeter is 70 mm and the width of the reinforced concrete rib between the glass blocks is 15 mm.

The tested specimen was manufactured by company *S.B.P. INTERNATIONAL s.r.o., Czech Republic.*

For a detailed product description including drawings see Test Report No. *Pr-20-2.200-En of 10. December 2020.*

3. TEST REPORTS / EXTENDED APPLICATION REPORTS AND TEST RESULTS IN SUPPORT OF THIS CLASSIFICATION

3.1. Test reports / extended application reports

Name of laboratory Address Accreditation number	Sponsor of the Test Report	Report number Date of issue	Test method
PAVUS, a. s. *Veselí nad Lužnicí* *ATL No. 1026* *Czech Republic*	***VITRABLOK, s.r.o.*** *Bílinská 42* *419 01 Duchcov* *Czech Republic*	*Pr-20-2.200-En* *2020-12-10*	*ČSN EN 1364-1*

3.2. Stress conditions and test results

Test method, Report number, Date of issue	Parameter	
ČSN EN 1364-1 *Pr-20-2.200-En* *2020-12-10*	Fire scenario Direction of fire exposure Applied load Supporting conditions	*Standard temperature / time curve* *Symetrical construction* - *In the test frame without supporting construction, the upper side is anchored, one vertical side is free without restricting freedom of movement*
	Integrity (E) - Cotton pad - Gap gauge penetration - Sustained flaming	 ***135 minutes,*** *no failure* ***135 minutes,*** *no failure* ***135 minutes,*** *no failure*
	Insulation (I) - average temperature (ΔT = 140 °C) - maximum temperature (ΔT = 180 °C)	 ***135 minutes,*** *no failure* ***120 minutes****, measured by RTC*
	Radiation (W) - Heat flux (< 12,3 kW.m^{-2}) - Heat flux (< 15,0 kW.m^{-2})	 ***135 minutes,*** *no failure* ***135 minutes,*** *no failure*

4. CLASSIFICATION AND FIELD OF APPLICATION

4.1. Reference

This classification has been carried out in accordance with ČSN EN 13501-2+A1:2017 cl. 7.

4.2. Classification

This element has been classified according to the following combinations of performance parameters and classes:

E 120 / EI 120 / EW 120

4.3. Field of direct application

The fire resistance test results can be applied directly to similar construction – in accordance with ČSN EN 13501-2:2017 and ČSN EN 1364-1 – where one or more changes listed below are made and the construction continues to comply with the appropriate design code for its stiffness and stability:

For the tested specimen with fire resistance **E 120 / EI 90 / EW 120,** overrun classification time B according to ČSN EN 1364-1:2017 cl. A.4.3.1 (≥ 10 % overrun time of the intended classification period) has been achieved.

For the tested specimen with fire resistance **E 120**, no overrun time according to ČSN EN 1364-1:2017 cl. A.4.3.1 was achieved.

Installation angle:

- Test results on vertical glazed elements cover glazed elements sloped to a maximum angle of ± 10° from the vertical plane, provided the height of the glazed element is not larger than the maximum height tested.

Dimensions of the glazed element (glass concrete walls):

- For classification **E 120 / EI 120 / EW 120**, the increase in dimensions of the glazed element is permited provided the allowances for thermal expansion of the construction are increased pro-rata.

Height of the glazed element (glass-concrete wall)

- For classification **E 120 / EI 90 / EW 120** – the test results of the glazed element cover the height up to a maximum of the tested height multiplied by a factor of 1,2 provided overrun time B is achieved. This is irrespective of the measured deflection.
- For classification **EI 120** – test results cover rectangular glazed elements with a height increase of 10% subject to a maximum increase of 0,3 m, above the height tested, provided that
  - the maximum deflection of the test specimen did not exceed 100 mm (max. deflection 71 mm);
  - the allowances for thermal expansion of the construction are increased pro-rata.

Width of the glazed element (glass-concrete wall)

- For classification **E 120 / EI 90 / EW 120** – the test result of the glazed element covers the width up to a maximum of the tested width multiplied by a factor of 1,2 provided overrun time B is achieved. This is irrespective of the measured deflections.
- For classification **EI 120** – Test results cover rectangular glazed elements of greater width by replication of the tested glazed element or parts thereof, provided:
  - the framing system is identical to the one tested
  - the width of the specimen in the test was 2,8 m or greater with one vertical edge unrestrained
  - the mullions within and/or connection joints between glazed elements have been tested.

Supporting constructions

- For specimens tested in the test frame without any supporting construction, the result is applicable to high density rigid supporting constructions with at least the same fire resistance as the test specimen.

5. LIMITATIONS

This classification is valid, unless the conditions, under which it was issued, have been changed. The sponsor may request the issuing authority to review the influence of changes to the classification validity.

The validity of this classification report is limited for 5 years after the date of issue.

This classification report does not represent type approval or certification of the product.

Elaborated by:	*Checked by:*	*Approved by:*
František ČEČKA	Zdeňka STARÁ	Jaroslav DUFEK
Fire Testing Laboratory		