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global safety

MEMBER OF **Bodycote** TESTING GROUP

Classification report No. 14086A

Fire resistance on a reactive air transfer grille Gz60

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196-1051

1 Introduction

This classification report defines the classification assigned to a fire resistant reactive air transfer grille named Gz60 in accordance with the procedures given in EN 13501-2: 2007: Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services.

2 Details of classified product

2.1 General

The element Gz60, is defined as a reactive air transfer grille. Its function is to resist the spread of fire and hot gases by the intumescent action of its active components, in respect of the fire performance characteristics integrity, thermal insulation and radiation in clause 5 of EN 13501-2: 2007.

2.2 Product description

The reactive air transfer grille consists of a frame, horizontal slats and a finishing frame for grilles.

2.2.1 Air transfer grille frame

The frame is composed of two vertical profiles and two horizontal profiles. The profiles are composed of two strips of intumescent product protected by a plastic sleeve. The horizontal and vertical frame profiles are connected with a plastic corner bracket.

2.2.2 Horizontal intermediate slats

The horizontal intermediate slats are composed of two strips of intumescent product protected by a plastic sleeve. The horizontal intermediate slats are attached to each other and to the frame by means of six steel bars. Over those bars a distance holder is placed. The intermediate distance in between the slats is 13.5 mm. The axis-to-axis distance between the slats is 20 mm.

The vertical frame profiles are fixed at four places to the horizontal intermediate slats by means of screws.

2.2.3 Finishing frame

Two types of finishing frame can be used (type 1 and 2). The frames are each composed of four parts: two horizontal profiles and two vertical profiles. The profiles are connected with aluminium corner brackets. The entire finishing frame is glued to the air transfer grille.

Type 1 covers the air transfer grille frame and type 2 slides over the grille frame.

2.2.4 Actuating mechanism

The intumescent elements swell when exposed to heat and seal off the air path through the grille. There is no mechanical actuating mechanism.

2.3 Mounting

The fire resistant reactive air transfer grilles can be mounted in a door composed as specified below.

The reactive air transfer grille is mounted in a door panel of 50 mm thick made of:

- Core: fibre board with a thickness of 44 mm – volumetric mass: 450 kg/m³ (NV);
- Lining:
 - HDF fibre board with a thickness of 3.2 mm at either side;
 - Volumetric mass: 950 kg/m³ (NV).

The opening provided for the air transfer grilles is 600 mm x 400 mm.

The gap between the grilles and the wall is 2 to 3 mm.

Test report 13441A

	Height of the centre	Finishing frame (Type 1)	Finishing frame (Type 2)
Air transfer grille 2	930 mm	Unexposed side	Exposed side
Air transfer grille 4	930 mm	Exposed side	Unexposed side

The detailed description of the element, Gz60, is fully given in the test report N° 13441A that has been issued in support of this classification and mentioned in clause 3.1.

3 Test reports and test results in support of this classification

There is currently no specific European test standard for testing the resistance to fire of reactive air transfer grilles. Therefore, the procedure shall be based on the principle of testing the product as part of an element. In the case of a door the test shall be in accordance with EN 1634-1.

3.1 Test reports

Name of the laboratory that performed the tests	Identification number of test report	Tested dimension(s) $B_{n \text{ opening}} \times H_{n \text{ opening}}$ (mm) (*)	Supporting construction	Direction of exposure (i - o)	Orientation (h_o, v_o)	Working pressure
WFRGENT NV	13441A	600 x 400	Aerated concrete wall thickness: 100 mm	i→o	v_e	-5.5 Pa

($B_{n \text{ opening}}$ = Nominal width opening)

($H_{n \text{ opening}}$ = Nominal height opening)

Exposure conditions of the fire resistance test:

Temperature/time curve: standard as in EN 1363-1: 1999.

ETAG 026-4: 2008 §2.4.2.1. 'Where the grille is part of a door, the test shall be undertaken in accordance with EN 1634-1.'

Orientation: mounted in a door in a wall construction (v_e = vertical orientation)

Direction of exposure: Test report 13441A

This concerns an asymmetrical construction. The asymmetrical air transfer grilles have been tested with the finishing frame type 1/ type 2 once at the unexposed side and once at the exposed side.

ETAG 026-4: 2008 §2.4.2.1. 'The grilles shall be tested with exposure to fire to each face, unless the grille is symmetrical in construction.'

One side exposed to the fire.

Level of pressure: Test report 13441A

The air transfer grilles are tested at 5.5 Pa underpressure.
 ETAG 026-4: 2008 §2.4.2.1. 'If the product is to be used in both high and low pressure applications, tests must be carried at high and low level in the furnace.'

3.2 Test results

Parameter	Results in minutes
	WFRG 13441A
	i<→o
<u>Test duration</u>	68 min
<u>Dimensions grille (mm)</u>	596 x 396 (B _n x H _n)
<u>Integrity (E criterion):</u> Ignition of the cotton pad during the test after five minutes Spontaneous, continuous flames Gap gauge (Ø 6 mm or Ø 25 mm) around the perimeter of the grille	≥ 68 minutes (1) 65 minutes ≥ 68 minutes (1)
<u>Thermal insulation (I criterion):</u> A maximum temperature rise of 180°C at the unexposed side An average temperature rise of 140°C at the unexposed side	≥ 68 minutes (1) ≥ 68 minutes (1)
<u>Radiation (R criterion):</u> Reaches 15 kW/m ²	≥ 68 minutes (1)

(1) No failures at test termination (68 minutes).

4 Classification and field of application

4.1 Reference of classification

This classification has been carried out in accordance with clause 7.5.2.3 of EN 13501-2: 2006 and with clause 2.4.2.2 of ETAG 026-4: 2008.

4.2 Classification

The element, the air transfer grille, Gz60 is classified according to the clause 7.2.3 of EN 13501-2: 2006 and clause 2.4.2.2. of ETAG 026-4:2008.

Since the performance of the grille can be affected by its position in the vertical plane (due to the pressure gradient within the furnace) any classification is restricted to the position tested i.e. in the underpressure zone of the fire side.

The test report mentioned in table 3.1 allows a large series of combinations of performance parameters and time categories. At the request of the sponsor, only the classes below are given.

For air transfer grilles with finishing frames placed in a

- door (50 mm thick) with a:
 - core of fibre board (44 mm thickness – volumetric mass: 450 kg/m³)
 - lining of HDF (3.2 mm thickness – volumetric mass: 950 kg/m³)
- EI 60 (v_e i↔o)
- EW 60 (v_e i↔o)
- E 60 (v_e i↔o)

(*) the above classifications are valid for air transfer grilles with their top positioned at maximum 1380 mm above floor level.

4.3 Field of direct application

This classification is valid for the following end use applications according to EN 13501-2: 2006, ETAG 026-4: 2008 and EN 1634-1:2000: reactive air transfer grille in doors.

This classification is also valid for the following product varieties:

- **Size of the air transfer grille:**

The type of grille and the fixings, including type and number of fixings, shall not be changed from those tested.

The dimensions of the grilles may be decreased but shall not be increased from the tested configuration.

- **Direction of exposure of the air transfer grille:**

Fire resistant reactive air transfer grilles for vertical mounting are permitted as mentioned in clause 4.2. of this document.

- **Distance between the reactive air transfer grilles and construction elements:**

For grilles in doors, the grille shall be positioned in the element no closer than 200 mm from the edge of the wall construction and with its top at maximum 1380 mm from the threshold.

The filling between the reactive air transfer grille and the wall or floor needs to be done as mentioned in clause 2.3.1, 2.3.2 or 2.3.3 of this document.

- **Construction element (door):**

A construction element of the same type with a fire resistance equal or greater than the tested construction element (thicker and/or denser).

5 Duration of the validity of the classification report

At the time the standard EN 13501-2: 2007 was published, no decision was made concerning the duration of validity of the classification document.

6 Warning

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

Report	Name	Signature*	Date
Prepared by	Ing. N. DE KLERCK		07 OCT 2009
Reviewed by	Prof. dr. ir. P. VANDEVELDE		07 OCT 2009
* For and on behalf of WFRGENT N.V.			

EN 13501-2 FSG REC 017 -version 1

This document is the original version of this classification report and is written in English.

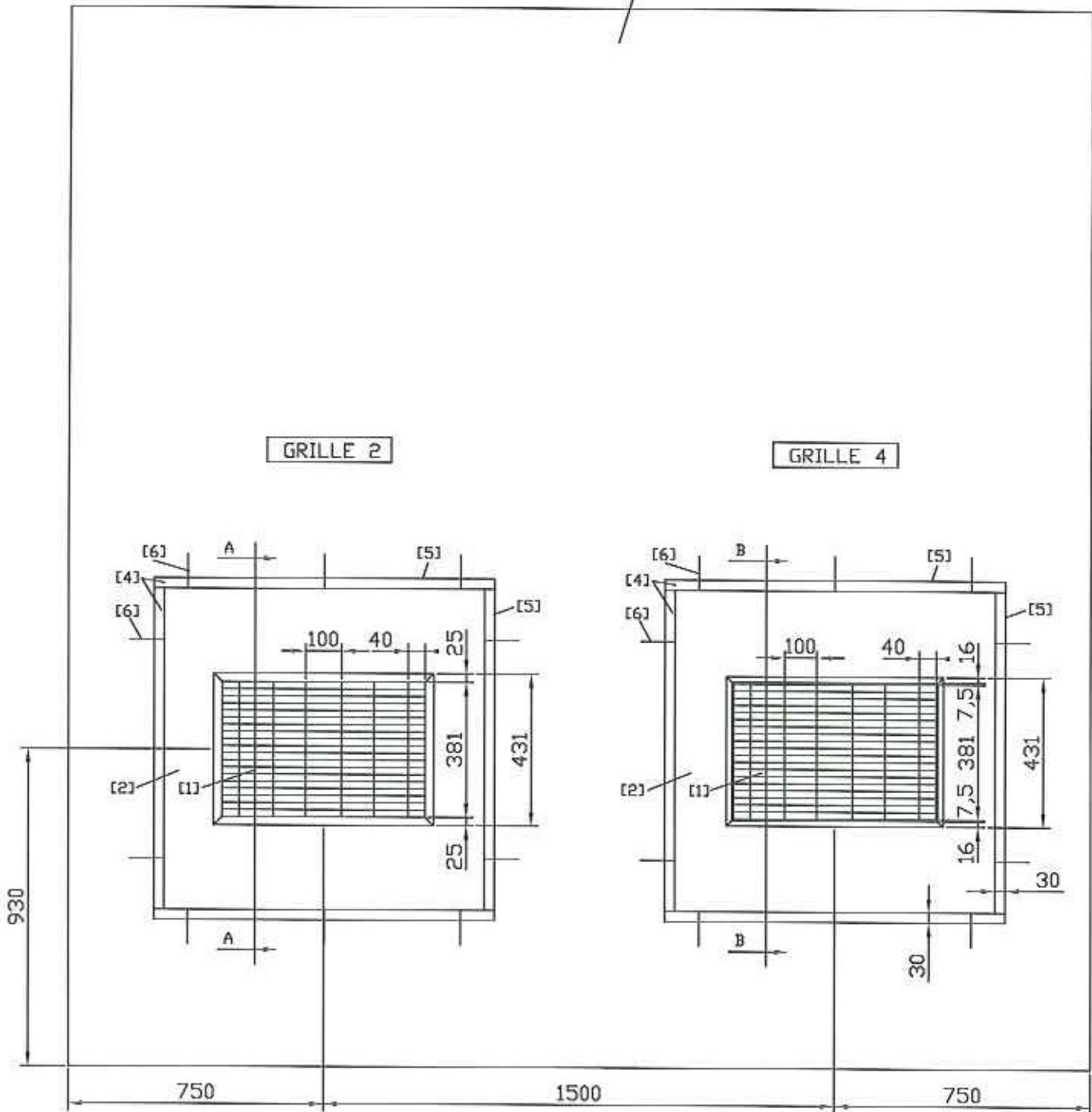
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Unexposed side

[3]

GRILLE 2

GRILLE 4



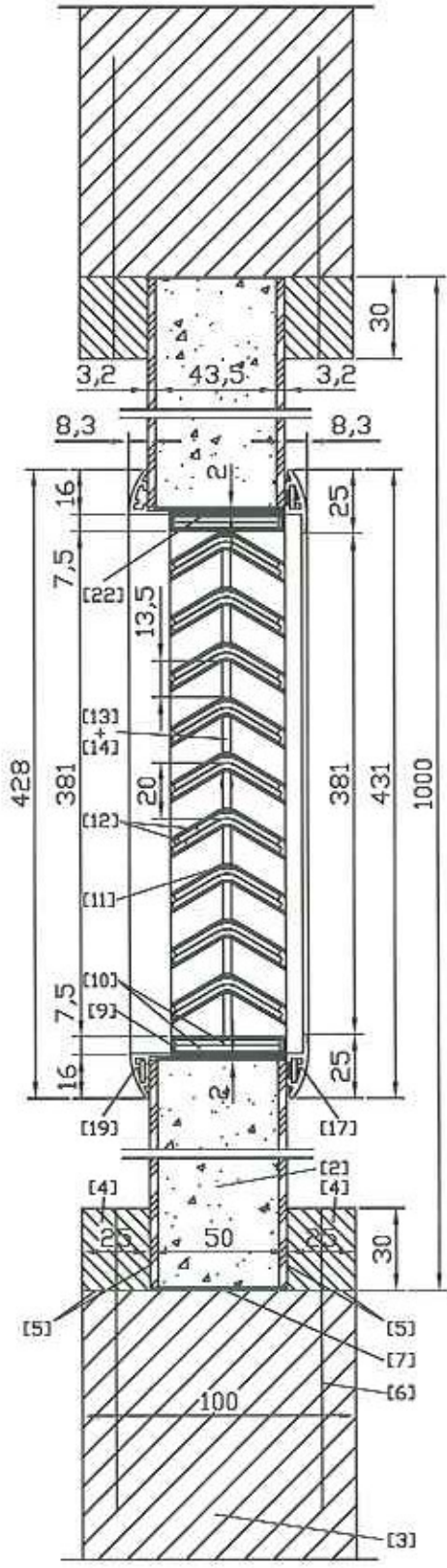
GRILLE 2

Vertical sections AA

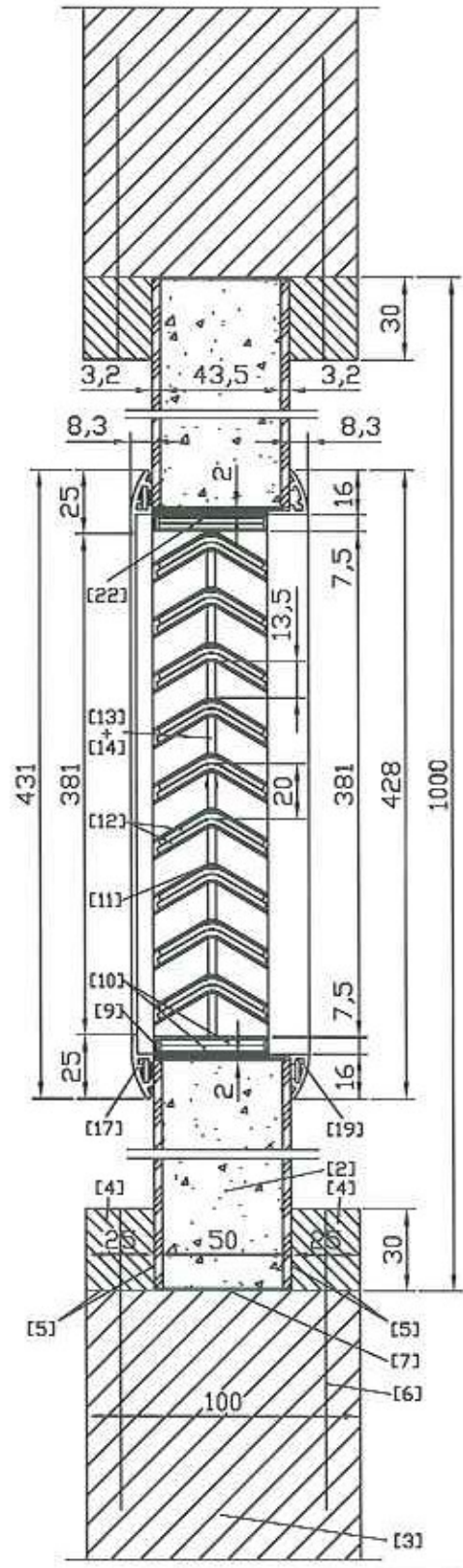
GRILLE 4

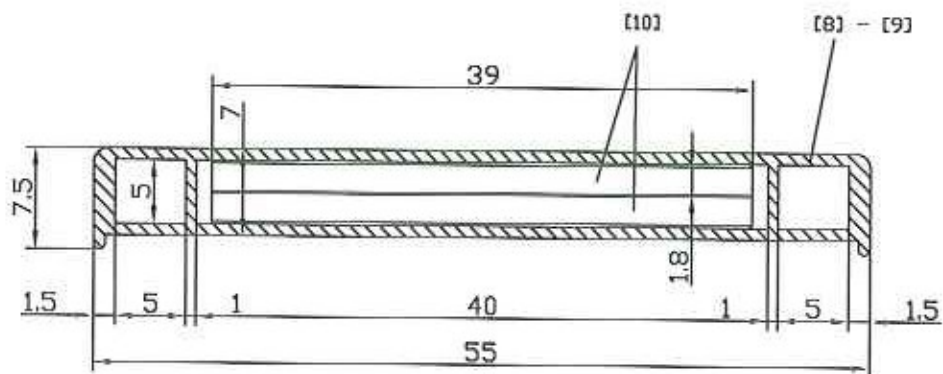
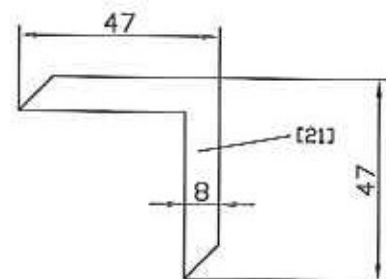
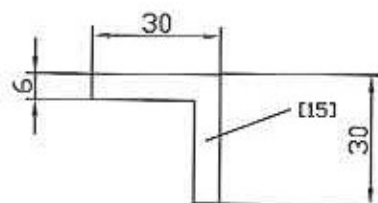
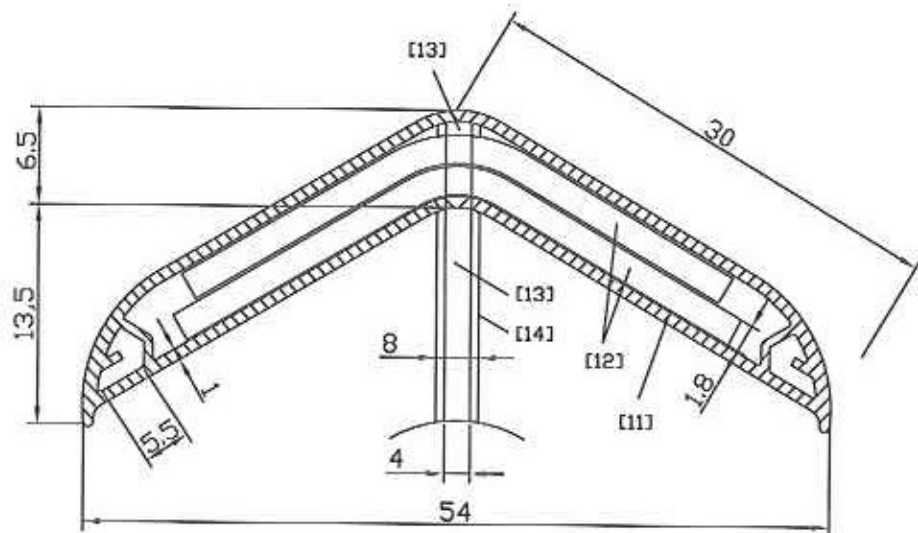
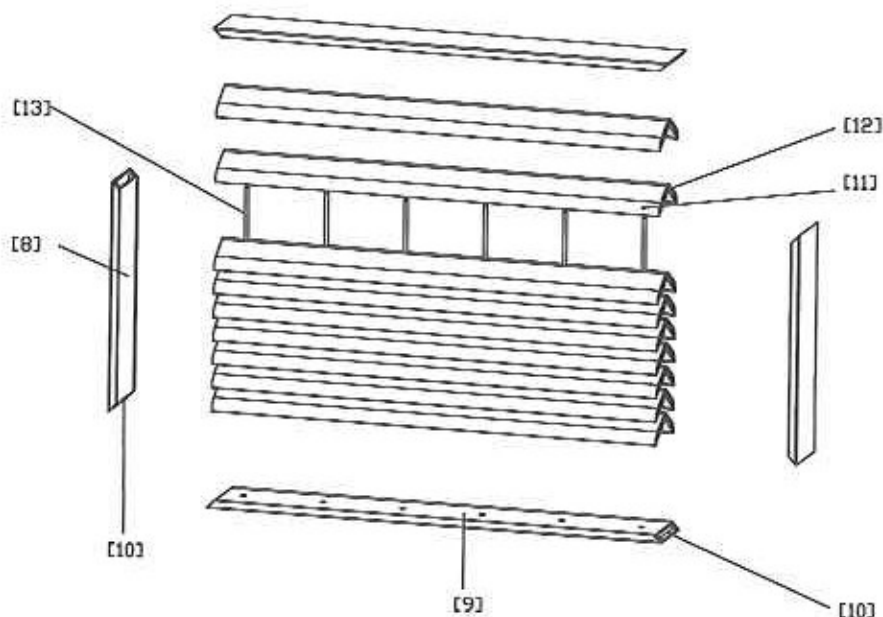
Vertical section BB

Exposed side



Exposed side





LEGEND

- [1] Grille – brand: Gz60 – outside dimensions of the grille: 596 mm x 396 mm x 55 mm.
- [2] Door panel – core of the fibre board with a thickness of 44 mm at both sides finished with HDF fibre board of 3 mm thick – dimensions of the door panel: 1000 mm x 1000 mm; total thickness: 50 mm – in the middle provided with a groove – dimensions of the groove: 400 mm x 600 mm – volumetric mass of the fibre board: 450 kg/m³ (NV) – volumetric mass of the HDF fibre board: 950 kg/m³ (NV).
- [3] Wall – aerated concrete – thickness: 100 mm – volumetric mass: 550 kg/ m³ (NV)
- [4] Balk – calciumsilicate – brand and type: PROMAT Promatect[®] H – dimensions of the section: 25 mm x 30 mm – volumetric mass: 626 kg/m³ (MW).
- [5] Glue – brand and type: PROMAT Promacol[®]-S.
- [6] Screw – steel – diameter: 6 mm, length: 100 mm.
- [7] Glue – brand and type: VELUCA Vergacol.
- [8] Vertical slat – length: 395 mm; width: 55 mm; height: 7,5 mm – polystyrene casing – thickness casing: 1 mm.
- [9] Horizontal slat – length: 595 mm; width: 55 mm; height: 7,5 mm – polystyrene casing – thickness casing: 1 mm.
- [10] Intumescent product – type according to the sponsor: PALUSOL 100 – width: 39 mm; length: 395 mm (vertical) or 595 mm (horizontal); thickness: 1,8 mm.
- [11] Horizontal intermediate slat – dimensions of the section: 30 mm x 30 mm x 6,5 mm – length: 580 mm – polystyrene casing – thickness casing: 1 mm.
- [12] Intumescent product – type according to the sponsor: PALUSOL 100 – width: 46 mm; length: 580 mm; thickness: 1,8 mm.

- [13] Steel bar – diameter: 4 mm; length: 395 mm.
- [14] Distance holder – polystyrene – outside diameter: 8 mm; length: 13,5 mm – wall thickness: 2 mm.
- [15] Corner profile – polystyrene – dimensions of the section: 4,5 mm x 5 mm – dimensions: 30 mm x 30 mm.
- [16] Screw – galvanized steel – diameter: 2,6 mm; length: 20 mm.
- [17] Horizontal profile type 1 – polystyrene – length: 631 mm; width: 25 mm; height: 8,3 mm – wall thickness: 1 mm.
- [18] Vertical profile type 1 – polystyrene – length: 431 mm; width: 25 mm; height: 8,3 mm – wall thickness: 1 mm.
- [19] Horizontal profile type 2 – polystyrene – length: 628 mm; width: 16 mm; height: 16 mm – wall thickness: 1 mm.
- [20] Vertical profile type 2 – polystyrene – length: 428 mm; width: 16 mm; height: 16 mm – wall thickness: 1 mm.
- [21] Corner profile – aluminium – dimensions: 47 mm x 47 mm – width: 8 mm – thickness: 2 mm.
- [22] Silicone kit – brand and type: RF-TECHNOJOINT Mastieklijm.