

## CLASSIFICATION OF FIRE RESISTANCE ACCORDING TO EN 13501-2: 2016

Classification no.	2019-Efectis-R001254
Sponsor	ABB P.O. Box 104 6710 BC EDE THE NETHERLANDS
Product name	ABB central ceiling box
Prepared by	Efectis Nederland BV
Notified body no.	1234
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## 1. INTRODUCTION

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This classification report defines the resistance to fire classification assigned to a load bearing floor ceiling construction with two ABB central ceiling boxes in accordance with the procedures given in EN 13501-2:2016.

## 2. DETAILS OF CLASSIFIED PRODUCT

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### 2.1 GENERAL

For the dimensions and specifications of the materials and components of the examined construction, also see the figures in chapter 8. Details of the installation of the construction are given in the paragraphs below.

### 2.2 TEST SPECIMEN

The test specimen was a load bearing floor ceiling construction with a ceiling of type Knauf D153 27/52 DF 60SW. Two ABB central ceiling boxes, type CHP60 BW, were mounted in the floor ceiling construction.

#### 2.2.1 Test frame

The test frame was composed of steel profiles. An aerated concrete brickwork (thickness 150 mm, density 650 kg/m<sup>3</sup>) with a clear opening of 3200 x 4000 mm (w x l) was erected in order to create a supporting construction.

#### 2.2.2 Free edges

The construction was provided with two free edges, situated parallel to the timber beams, over the width of the construction. The gap between the construction and aerated concrete was packed with high density rock wool panels, to provide a seal without restricting freedom of movement.

### 2.3 BUILD UP OF THE FLOOR CEILING CONSTRUCTION

The build-up of the floor construction is from outside to inside:

- Pine floor boards, 85 x 18 mm with tongue and groove;
- Pine beams C24, 75 x 200 mm, c.t.c. 675 mm.

Insulation between the beams:

- Rockwool RockSono Base, 60 mm thick, density 35 kg/m<sup>3</sup>, applied between the timber beams.

Ceiling:

- Knauf UD 28/27 edge profile;
- Knauf resilient bars, c.t.c 400 mm, perpendicular to the timber beams;
- 2 layers Knauf DF board 12,5 mm.

Central ceiling boxes:

- Two ABB central ceiling boxes, type CHP60 BW, with two Knauf CD60/27 profiles, equipped with 80 cm of electrical wiring;

## 2.4 FIXINGS

The floor boards were fixed to the timber beams with concealed headless steel nails, 2.0 x 40 mm.

The UD28/27 profiles were fixed to the aerated concrete framework with Hilti HUS3-P 6x60 mm at c.t.c. 500 mm.

Knauf drywall screws 3.9 x 35 mm for mounting the resilient bars. Two screws were placed in each timber beam.

The first layer of gypsum boards were fixed to the resilient bars with Knauf drywall screws, 3.9 x 25 mm, c.t.c. 350 mm. The second layer was fixed with Knauf drywall screws, 3.9 x 35 mm, c.t.c. 170 mm.

## 2.5 METHOD OF ASSEMBLY

The test specimen was built in the following order:

- Prepare the aerated concrete framework in the test frame;
- Assembly of the timber beams on the aerated concrete;
- Mounting of the floor boards;
- Mounting of the UD 28/27 edge profiles and resilient bars;
- Mounting of the two Knauf 60 x 27 profiles and the ABB central ceiling boxes CHP60 BW;
- Mounting of the Rockwool RockSono Base insulation between the timber beams;
- Mounting of the gypsum board layers.

## 3. TEST REPORT & TEST RESULTS IN SUPPORT OF CLASSIFICATION

### 3.1 TEST REPORT

Name of laboratory	Name of sponsor	Test report no.	Test method
Efectis Nederland BV THE NETHERLANDS	ABB THE NETHERLANDS	2019-Efectis-R000927	EN 1365-2:2014

### 3.2 TEST RESULTS

Criterion	Time (min.)	Result
<b>Load bearing capacity (R)</b>		
▪ Displacement	67	Failure
▪ Displacement speed	67	Failure
<b>Integrity (E)</b>		
▪ Cotton pad	67	Not applied
▪ Gap Gauge:		
Ø 6 mm	67	Not applied
Ø 25 mm	67	Not applied
▪ Sustained flaming > 10 seconds	67	No failure
<b>Insulation (I)</b>		
▪ Average temperature	67	No failure
▪ Maximum temperature	67	No failure
The heating was terminated after 67 minutes		

#### 4. CLASSIFICATION

##### 4.1 REFERENCE OF CLASSIFICATION

This classification has been prepared in accordance with clause 7 of EN13501-2:2016.

##### 4.2 CLASSIFICATION

The load bearing floor ceiling construction with a ceiling of type Knauf D153 27/52 DF 60SW. Two ABB central ceiling boxes, type CHP60 BW, were mounted in the floor ceiling construction. is classified according to the criteria and classes:

**REI 60**

#### 5. FIELD OF APPLICATION

The test results are directly applicable to a similar untested floor or roof construction provided the following is true:

- a) With respect to the structural building member:
  - The maximum moments and shear forces, which when calculated on the same basis as the test load, shall not be greater than those tested. The specimen was loaded during the fire test. Each timber beam was loaded with dead weight with a weight of 7.6 kN.
- b) With respect to the ceiling system:
  - The size of panels of the ceiling lining may be increased by a maximum of 5 % but limited to a maximum of 50 mm. The length of the grid members can be increased accordingly.
  - The total area occupied by fixtures and fittings relative to the area of the ceiling lining is not increased and the maximum tested opening in the lining is not exceeded.
- c) With respect to the cavity:
  - The height of the cavity  $h$  and the minimum distance  $d$  between the ceiling and the structural members (see Figure 1) are equal to or greater than those tested.
  - No material is added to the cavity unless the same amount (in terms of both weight and fire load) of material was included in the test specimen.
- d) With respect to the inclination of roof constructions:
  - For trussed rafter roof construction, the inclination of the bottom member (chord) is equal to its tested inclination with a tolerance of  $\pm 5^\circ$ .
  - For roofs incorporating one or more purlins, tested at an inclination angle of  $\leq 10^\circ$ , the results are valid for installation in practice under an angle from  $0^\circ$  up to  $80^\circ$ .
  - For apex or monopitch roof construction as defined in 6.3.2 b) the inclination is  $\pm 15^\circ$  in accordance with Table 1.

Table 1

Tested at $\alpha$ from the horizontal	Valid for installation in practice
$\leq 10^\circ$ (nominally 'horizontal') $30^\circ$ Any other angles	$0^\circ$ up to $15^\circ$ $15^\circ$ up to $45^\circ$ $\pm 10^\circ$ from the angle tested up to a limit of $80^\circ$

## 6. LIMITATIONS

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



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8. FIGURES

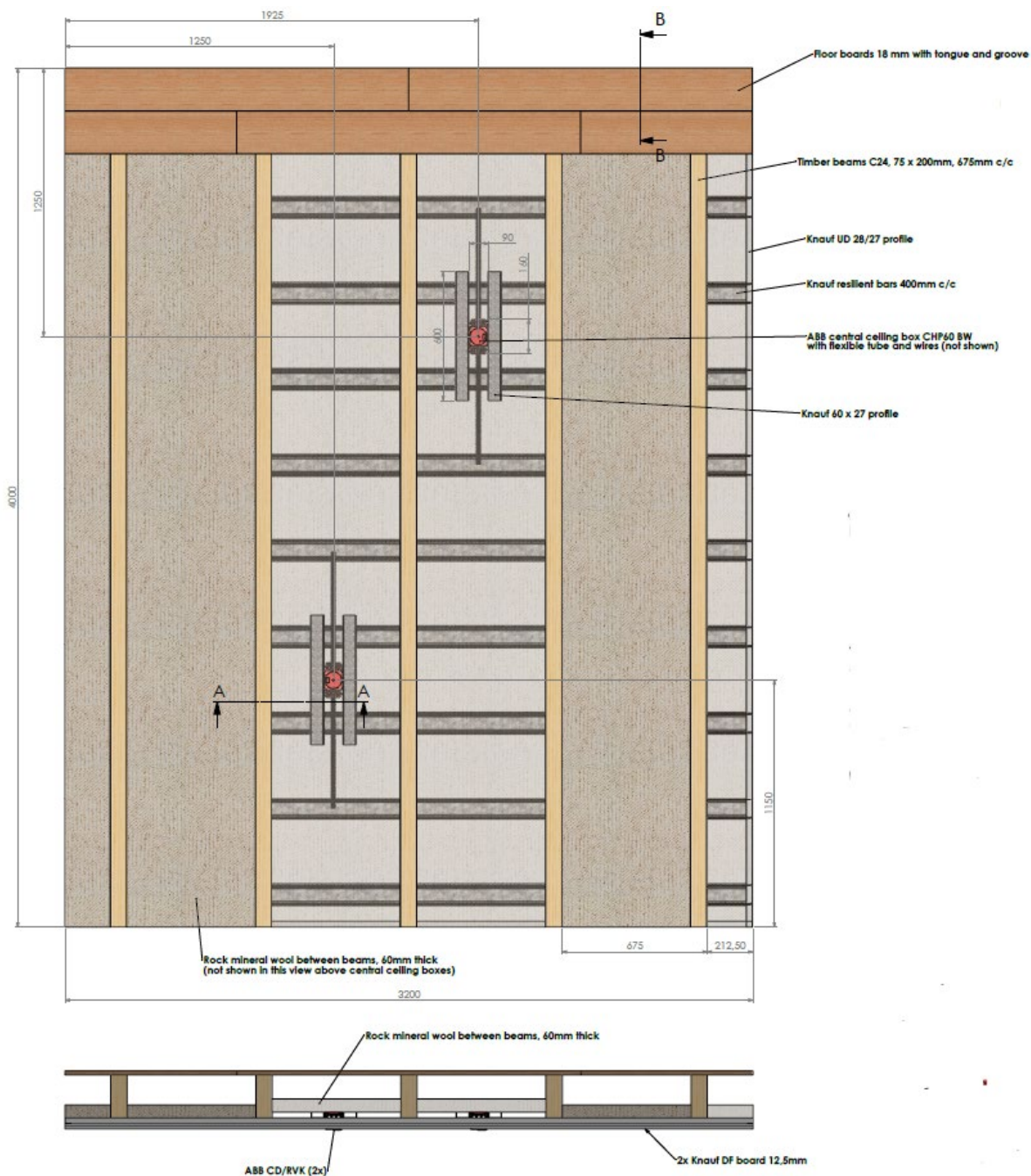


Figure 1 General overview of the floor ceiling system

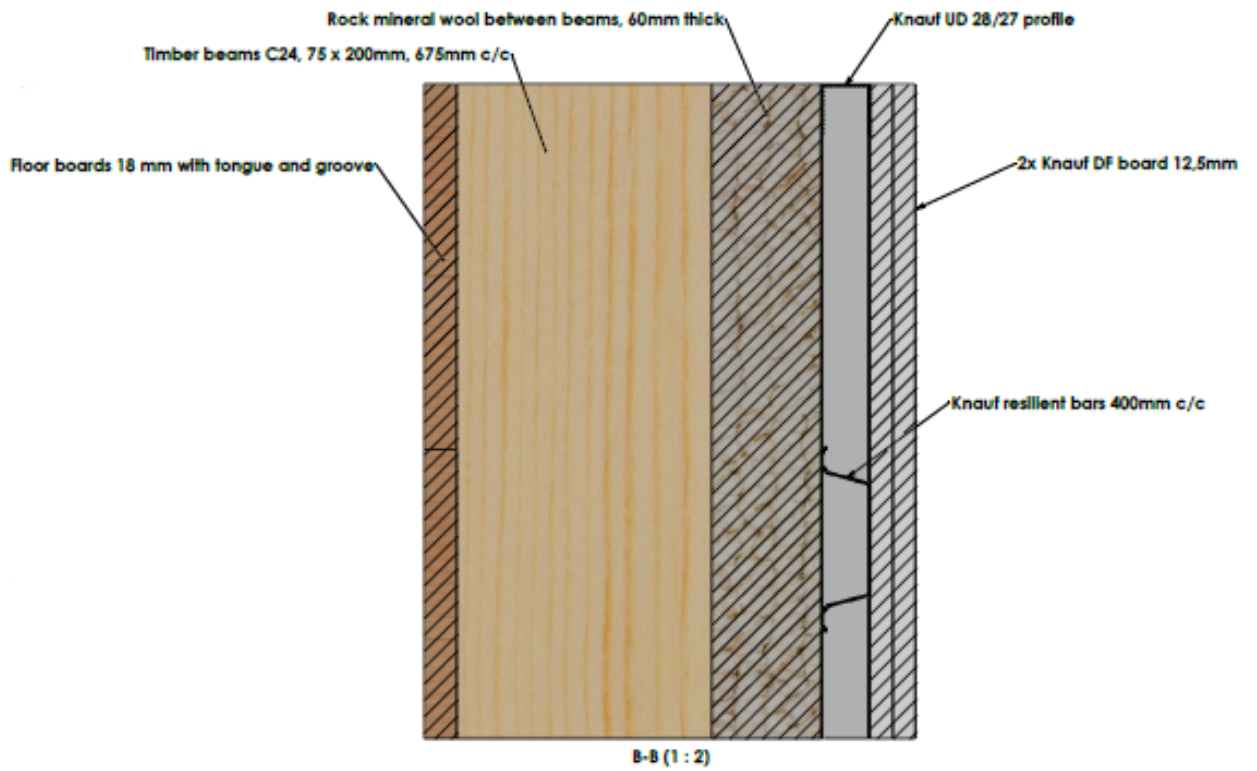


Figure 2 Section view of the built-up of the floor ceiling system

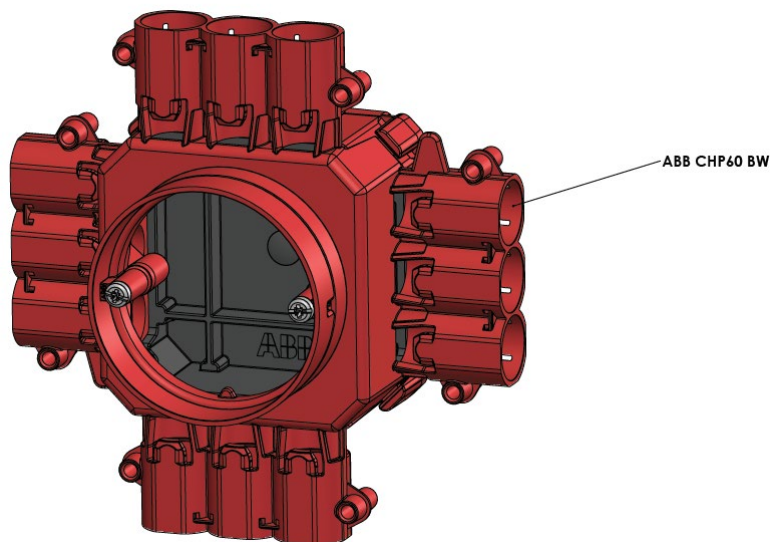


Figure 3 Ceiling box

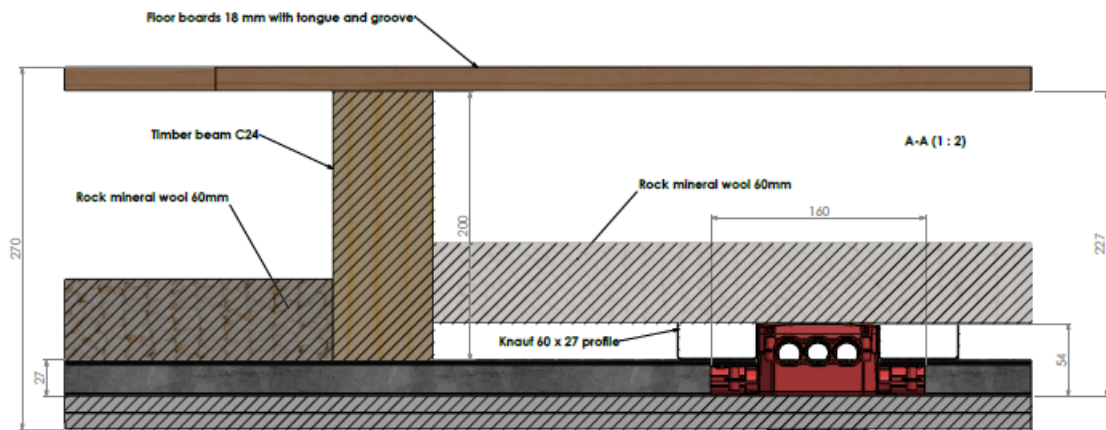


Figure 4 Composition of the floor ceiling system