

# **CLASSIFICATION OF FIRE RESISTANCE PERFORMANCE IN ACCORDANCE WITH EN 13501-2:2007+A1:2009 OF A KNAUF NON-LOAD BEARING STANDARD FLEXIBLE WALL CONSTRUCTION PROVIDED WITH ABB HOLLOW WALL BOXES WITH VARIOUS WIRING ACCESSORIES**

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**Notified Body No:** 1234

**Product name:** Knauf non-load bearing wall with ABB hollow wall boxes

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## **1. Introduction**

This classification report defines the classification, in accordance with the procedures given in EN 13501-2:2007+A1:2009, assigned to a Knauf non-load bearing standard flexible wall construction, provided with ABB hollow wall boxes with various wiring accessories.

## **2. Details of classified product**

### **2.1 General**

A fire test was carried out on a non-load bearing standard flexible wall construction provided with ABB hollow wall boxes with various wiring accessories, made of:

- Steel edge profiles, type Knauf UW-75;
- Steel vertical profiles, type Knauf CW-75;
- Knauf gypsum boards, type DF;
- ABB hollow wall boxes (type BWHW51-F) with various wiring accessories, provided with flexible cable with installation couplers or conduit with insulated conductor installation wire.

### **2.2 Wall**

#### **2.2.1 Profiles**

In the test frame steel edge profiles type Knauf UW-75, with a width of 75 mm, were applied and mounted in the concrete lining with Knauf nail anchors 6 x 35 mm, c.t.c. 500 mm. Between the top and bottom edge profile, vertical profiles type Knauf CW-75 with a width of 75 mm were applied c.t.c. 600 mm.

#### **2.2.2 Knauf DF gypsum boards**

At the fire and non-fire side, two layers of 12.5 mm Knauf gypsum boards type DF were applied on the steel profiles. The panels were mounted on the steel profiles with screws 3.9 x 25 mm c.t.c. 300 mm and 3.9 x 40 mm for the second (outside) layer, c.t.c 300 mm. The total thickness of the wall was 125 mm.

The joints between the panels were filled with Knauf filler. The wall was not fixed at the left vertical side, the so called free edge, to make deflection possible.

#### **2.2.3 Glass wool insulation**

The areas between the profiles were insulated with Knauf Insulation glass wool with a density of 16 kg/m<sup>3</sup>.

### 2.2.4 ABB hollow wall boxes

In the standard flexible wall construction the ABB hollow wall boxes, type BWHW51-F, with various wiring accessories provided with flexible cable or conduits named in Table 1 are placed.

Table 1:

| Number of sockets                                              | Flexible cable or conduit and direction | Height | Location      |
|----------------------------------------------------------------|-----------------------------------------|--------|---------------|
| <b>ABB hollow wall box with <i>single</i> wiring accessory</b> | Flexible cable, downwards               | 1.1 m  | Non-fire side |
|                                                                | Flexible cable, upwards                 | 2.4 m  | Non-fire side |
|                                                                | Flexible conduit with wire, upwards     | 1.1 m  | Fire side     |
|                                                                | Flexible conduit with wire, downwards   | 2.4 m  | Fire side     |
| <b>ABB hollow wall box with <i>double</i> wiring accessory</b> | Flexible conduit with wire, downwards   | 1.1 m  | Non-fire side |
|                                                                | Flexible cable, upwards                 | 1.1 m  | Fire side     |
| <b>ABB hollow wall box with <i>triple</i> wiring accessory</b> | Flexible conduit with wire, upwards     | 1.1 m  | Non-fire side |
|                                                                | Flexible cable, downwards               | 1.1 m  | Fire side     |

### 2.3 Method of assembly

- Attaching the steel edge profiles to the concrete lining of the test frame with nail anchors;
- Attaching the vertical steel profiles to the edge profiles with screws;
- Placing the Knauf gypsum boards at the fire side;
- Filling up the joints with Knauf filler;
- Placing of the ABB hollow wall boxes at the fire side;
- Insulating the wall with glass wool;
- Placing the Knauf gypsum boards at the non-fire side;
- Placing the ABB hollow wall boxes at the non-fire side;
- Filling up the joints with Knauf filler.

### 2.4 Test frame

The test frame was constructed of steel beams with a fire resistant concrete lining, with internal dimensions of 4000 x 3000 mm (w x h). The depth of the test frame was 250 mm.

### 3. Test report & test result in support of classification

#### 3.1 Test report

| Name of Laboratory                               | Name of sponsor | Test report No.    | Test method    |
|--------------------------------------------------|-----------------|--------------------|----------------|
| Efectis Nederland B.V.<br>Centre for Fire Safety | ABB B.V.        | 2011-Efectis-R0969 | EN 1364-1:1999 |

#### 3.2 Test results

##### 3.2.1 Summary of test results

|                                                                                                     |                                                                                      |
|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Integrity, (E)<br>– Cotton pad<br>– Gap gauges<br>Ø 6 mm<br>Ø 25 mm<br>– Flames longer than 10 sec. | 107 minutes<br><br>108 minutes, no failure<br>108 minutes, no failure<br>107 minutes |
| Thermal insulation, (I)<br>– Maximum temperature rise I                                             | 107 minutes                                                                          |
| Heat radiation, (W)                                                                                 | 108 minutes, no failure                                                              |

### 4. Classification and field of application

#### 4.1 Reference of classification

This classification has been carried out in accordance with clause 7.3.3 of EN 13501-2:2007+A1:2009.

#### 4.2 Classification

The fire resistance of a Knauf non-load bearing standard flexible wall construction, provided with ABB hollow wall boxes with various wiring accessories.

### **Fire resistance classification:**

**EI 90**

**EW 90**

### 4.3 Field of application

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 height of the wall may be decreased for a fire resistance of 90 minutes and increased to 4 meters for a maximum fire resistance of 60 minutes;
- The width of the wall may be increased and decreased;
- The thickness of the wall may be increased;
- The thickness of the component materials may be increased;
- Decrease in dimension of the boards, but not the thickness;
- Decrease the centre to centre distance between the vertical studs;
- Increase in the number of horizontal joints;
- Horizontal and vertical joints, of the type tested;
- Applying single ABB hollow wall boxes up to a height of 2.4 m from floor level, on both sides of the wall but not directly opposite each other;
- Applying single, double and triple ABB hollow wall boxes up to a height of 1.1 m from floor level, on both sides of the wall but not directly opposite each other;
- Using electric cables or conduits both up –and downwards in the flexible wall.

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

**SIGNED**

W. Scheffer, B.Be.

**APPROVED**

P.W.M. Kortekaas

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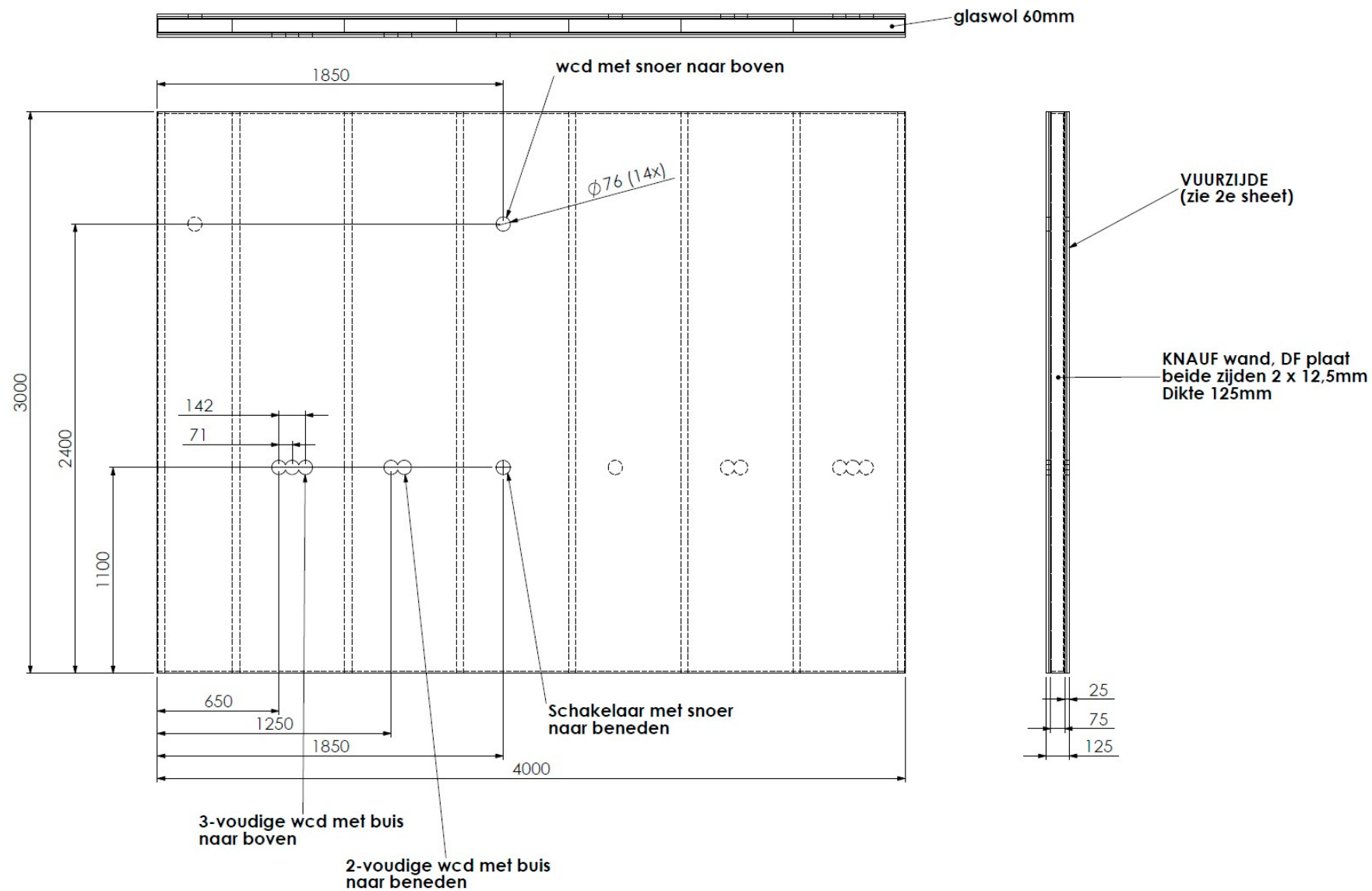


Figure 1: Non exposed side of the wall provided with ABB hollow wall boxes with various wiring accessories

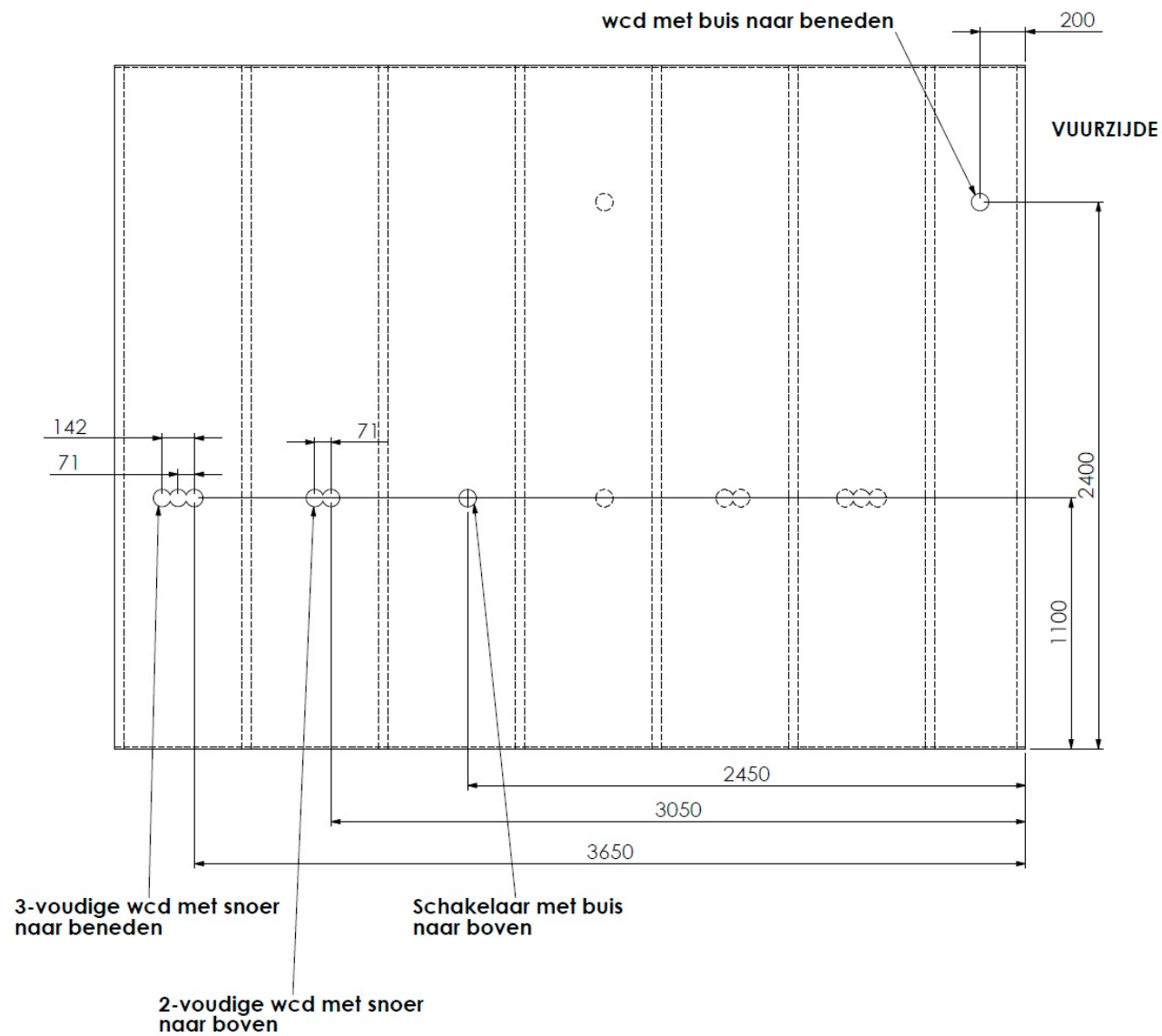


Figure 2: Fire side of the wall provided with ABB hollow wall boxes with various wiring accessories