

DETERMINATION OF THE FIRE RESISTANCE ACCORDING TO EN 1364-1:2015 OF A NON-LOAD BEARING PARTITION CONSISTING OF A METAL PROFILE FRAME COVERED WITH PLASTERBOARD BY KNAUF, INCORPORATING ELECTRICAL INSTALLATIONS OF THE TYPES HW252-F BW AND HW52-F IGD BW

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On behalf of ABB in Ede, the fire resistance was determined of a non-loadbearing partition containing electrical installations, which were installed on both, exposed and non-exposed, sides at a height of 2600 mm.

The test is performed according to EN 1364-1:2015. Details and results are given in Efectis report 2018-Efectis-R001483 dated August 2018.

The main details of the investigated construction is summarized below:

The partition of type "W112" by Knauf was assembled of a metal profile frame with A type EN 520 gypsum boards. Incorporated into the wall where electrical installations of type "HW252-F BW" and "HW52-F IGD BW" from ABB BV.

The examination of these electrical installations was the main goal for ABB BV. Nevertheless, the wall including the electrical installations, constitutes as the whole specimen regarding EN 1364-1.

Two types of insulation where used alternately inside the wall. One type was a glass wool variant by Isover and the other was a mineral wool type "Rocksono" by Rockwool.

The electrical installations where all mounted in parts of the wall insulated with "Rocksono" mineral wool.

Inside the wall electrical cables were installed, which were placed inside flexible tubing.

Summary of test results for non-loadbearing partition of type "W112" by Knauf containing electrical installations of types "HW252-F BW" and "HW52-F IGD BW"

Criterion	Time [minutes]	Test result
Integrity (E)		
Cotton pad	68	Not determined
Gap gauge:		
∅ 6 mm	68	Not determined
∅ 25 mm	68	Not determined
Flames longer than 10 sec.	68	Failure
Insulation (I)		
Average temperature	68	No failure
Maximum temperature	68	No failure
Heat radiation (W)	68	Max. 0.17 kW/m ² at 68 minutes
The heating was terminated after 68 minutes after consulting the client.		
300°C was not reached and radiation stayed below 6kW/m ² for extension of height for EW30.		
Deflection exceeded 100 mm at 48 minutes.		

Summary of test results for electrical installation of type “HW252-F BW” mounted at the non-exposed side of the wall

Criterion	Time [minutes]	Test result
Integrity (E)		
Cotton pad	68	Not applied
Gap gauge Ø 6 mm	68	Not applied
Gap gauge Ø 25 mm	68	Not applied
Flames longer than 10 sec.	68	Not detected
Insulation (I)		
Average temperature	68	No failure
Maximum temperature (at 2600mm)	68	No failure
Heat radiation (W)	68	No failure

Summary of test results for electrical installation of type “HW252-F BW” mounted at exposed side and measured on wall at non-exposed side

Criterion	Time [minutes]	Test result
Integrity (E)		
Cotton pad	68	Not applied
Gap gauge Ø 6 mm	68	Not applied
Gap gauge Ø 25 mm	68	Not applied
Flames longer than 10 sec.	68	Not detected
Insulation (I)		
Average temperature	68	No failure
Maximum temperature (at 2400mm)	68	No failure
Heat radiation (W)	68	No failure

Summary of test results for electrical installation of type “HW52-F IGD BW” mounted at the non-exposed side of the wall

Criterion	Time [minutes]	Test result
Integrity (E)		
Cotton pad	68	Not applied
Gap gauge Ø 6 mm	68	Not applied
Gap gauge Ø 25 mm	68	Not applied
Flames longer than 10 sec.	68	None detected
Insulation (I)		
Average temperature	68	No failure
Maximum temperature (at 2400mm)	68	No failure
Heat radiation (W)	68	No failure

Summary of test results for electrical installation of type “HW52-F IGD BW” mounted at exposed side and measured on wall at non-exposed side

Criterion	Time [minutes]	Test result
Integrity (E)		
Cotton pad	68	Not applied
Gap gauge Ø 6 mm	68	Not applied
Gap gauge Ø 25 mm	68	Not applied
Flames longer than 10 sec.	68	None detected
Insulation (I)		
Average temperature	68	No failure
Maximum temperature (at 2400mm)	68	No failure
Heat radiation (W)	68	No failure

Classification according to EN 13501-2

Classification according to EN 13501-2 is described in a separate report.
The non-load bearing wall can be classified as follows: **E60, EI60 and EW60.**

Direct 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, except with respect to the construction types covered in Annex A and Annex B where specific direct field of application rules are given.

- a) decrease in height;
- b) increase in the thickness of the wall;
- c) increase in the thickness of component materials;
- d) decrease in linear dimensions of boards or panels but not thickness;
- e) decrease in stud spacing;
- f) decrease in distance of fixing centres;
- g) increase in the number of vertical joints, of the type tested;
- h) the use of the tested hollow wall junction boxes at heights from 2600 mm to the bottom;
- i) horizontal and/or vertical joints, of the type tested.

EXTENSION OF WIDTH

For test specimens tested without a supporting construction the width of an identical construction, max. E60 and EI60 for partitions, may be increased if the specimen was tested at a minimum of nominally 3 m wide with one vertical edge without restraint.

In case of EW classification, max. EW60 for partitions, an increase in width of an identical construction, is only allowed when the average unexposed surface temperature of any discrete area of the test specimen remains below 300°C or the measured radiation remains below 6 kW/m², which were both satisfied in this test. In any other case no increase in width is allowed.

EXTENSION OF HEIGHT

The height of the partition may be increased by 1.0 m under the following conditions:

- a) minimum tested height is 3 m when tested without a supporting construction or 2.8 m when tested with a supporting construction
- b) the maximum deflection of the test specimen was not in excess of 100 mm. This was satisfied until 48 min., so only applicable to maximum EI45 classification.
- c) the expansion allowances are increased pro-rata

In case of EW classification, max. EW30 for partitions due to premature excess of max. deflection at 48 min., an increase in height of an identical construction, is only allowed when the average unexposed surface temperature of any discrete area of the test specimen remains below 300 °C or the measured radiation remains below 6 kW/m², which were both satisfied in this test. In any other case no increase in height is allowed.