

Statement on alternative hangers in a horizontal protective membrane made of Gyproc GK system with double layer of GN 13 gypsum plasterboards

Requested by Saint-Gobain Finland Oy, Aulis Lundell Oy

Date 21 April, 2021

Requested by

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Order Order by e-mail on April 15, 2021 / Harri Kempainen

Organization undertaking statement

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Statement on alternative hangers in a horizontal protective membrane made of Gyproc GK system with double layer of GN 13 gypsum plasterboards

Task The client asks a statement on a horizontal protective membrane made of Gyproc GK system with double layer of GN 13 gypsum plasterboards with alternative hangers.

Background The statement is based on the following report and documents:

1. Test report EUFI29-20006483-T1, Fire resistance test on a horizontal protective membrane made of Gyproc GK system with double layer of GN 13 gypsum plasterboards, Eurofins Expert Services Oy, 26.3.2021.
2. Assessment report EUFI29-21002268-T1, An assessment report of the loadbearing capacity of horizontal protective membrane made of Gyproc GK system with double layer of GN 13 gypsum plasterboards, Eurofins Expert Services Oy, 20.4.2021.

Client delivered product information sheets of the GK 26-01, GK 40 and GK 41 hangers.

Test report EUFI29-20006483-T1: Fire resistance test results of a horizontal protective membrane made of Gyproc GK system with double layer of GN 13 gypsum plasterboards are presented. The size of the six loadbearing timber beams was 75 x 220 mm c/c 585 mm. 18 mm thick particleboard was fixed on the top of the beams. Gyproc GK 26-01+M-wire hangers were fixed under the timber beams (c/c 900 mm / 585 mm) with Würth 6,0x50/46 screws. Upper Gyproc GK1 steel profiles were installed at the timber beams (c/c 585 mm) and lower Gyproc GK1 steel profiles (c/c 400 mm) were installed to the upper GK1 steel profiles with cross connection bracket Gyproc GK 22. Two layers of Gyproc GN 13 gypsum plasterboards were installed under the lower GK1 steel profile with H&H 25x3,5 mm and 40x4,2 mm screws. The dimension between the bottom of the loadbearing timber beam and the top surface of the first gypsum plasterboard layer was 155 mm.

The size of the construction was 5287 x 3000 mm and the span was 5191 mm. The size of the specimen was 5000 mm x 3000 mm.

Test was performed on 15 February 2021 according to standard EN 13381-1:2020 "Test methods for determining the contribution to the fire resistance of structural members. Part 1: Horizontal protective membranes". The construction fulfilled fire resistance requirements for Loadbearing capacity (R) 37 min, integrity (E) 37 min, insulation (I) 37 min and temperature limit in the air cavity 36 min (the limit for timber constructions is 300 °C). Test time was 37 min 30 s.

Analysis

Comparison of hangers Gyproc GK40 and Gyproc GK41 with the tested hanger Gyproc GK 26-01 is presented in table 1. Temperatures in the air cavity and on the surface of the timber joists are presented in table 2.

Table 1. Carrying capacity of the hangers

Hanger	Carrying capacity
GK 26-01	520 N
GK 40	300 N
GK 41	300 N

Table 2. Temperatures in the air cavity and on the surface

Test time [min]	Average temperature in the air cavity [°C]	Maximum temperature in the air cavity [°C]	Average temperature on the surface [°C]	Maximum temperature on the surface [°C]
15	62	67	47	77
20	71	75	56	93
25	83	89	80	106
30	99	107	93	121
31	104	113	97	141
32	112	135	101	135
33	127	163	108	153
34	144	187	118	154
35	165	213	130	170
36	182	237	145	190
37	255	335	200	455

Statement

Based on the results of the fire resistance test EUFI29-20006483-T1 and on the above presented product information we state as our opinion that the use of Gyproc GK 40 or Gyproc GK 41 hangers in the tested structure, instead of Gyproc GK 26-01 hanger, do not weaken the fire resistance of this horizontal protective membrane. Note the following limitations.

The tested horizontal membrane fulfilled the requirements for 36 min. Hangers GK 40 and GK 41 contains flexible soundproofing material, which will soften under heating conditions. Because of that, the modified structure with GK 40 or GK 41 hangers can be assessed only as a 30 min protective membrane. The maximum temperature in the air cavity at test time of 30 minutes was 121 °C. The carrying capacity of the hangers GK 40 and GK41 shall not exceed the 300 N maximum load as presented in table 1.

This statement shall be read together with assessment report EUFI29-21002268-T1.

This statement does not represent type approval or certification of the product but it is an assessment on the fire resistance of structures.

The validity period of the statement is five years.

Espoo, April 21, 2021

Signed

Approved

Teemu Vesala
Senior Expert



Matias Huusko
Senior Expert

Appendicies

Distribution

Client	Original (1 pcs)
Eurofins Expert Services	Original (1 pcs)