Fire technical assessment

Name of sponsor:	**Bygcom A/S**		
Product name:	Symmetrical 1-layer gypsum wall - REI30		
File no.:	PHA11192C		
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Ref:	MKL / NOL		

Danish Institute of Fire and Security Technology

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Loadbearing wall – REI30

Bygcom A/S has asked the Danish Institute of Fire and Security Technology (DBI) about a fire technical assessment regarding a non-loadbearing wall construction.
Two similar walls have been tested; two loadbearing walls after EN 1365-1. The question concerns the possibility to assess the wall to REI30 by replacing the studs with similar studs of a greater thickness, placed with a smaller C/C. A drawing of the wall is attached to this assessment.

Fire technical documentation

Bygcom A/S has referred to the following documentation.

Reports	Laboratory	Dated	Standard	Product	Results
FIRES-FR-126-08-AUNE	SNAS	14-07-2008	EN 1365-1:2001	Loadbearing wall	R: 41 min E: 41 min I: 41 min
PGA11146A	DBI	07-02-2018	EN 1365-1:2012	Loadbearing wall	R: 62 min E: 62 min I: 62 min

Fire technical rationale

For this fire scenario, Bygcom A/S wishes to build a wall as shown on the attached drawing that follows the criteria for REI30:

DBI have evaluated the above-mentioned variations with regards to the three failure criteria's, Loadbearing capacity (R), Integrity (E) and Isolation (I).

In test report FIRES-FR-126-08-AUNE, the wall was tested as a loadbearing wall with one layer of 15 mm Fermacell fibre board on each side of cc 625 mm steel studs with a width of 120 mm and a steel thickness of 1.0 mm. Stone wool insulation of nominal density 45 kg/m³ was mounted between the steel studs. The fire test was stopped after 41 minutes after request from the sponsor.

In test report PGA11146A the wall was tested with an applied load of 28 kN/m and consisted of two Fermacell fibre boards on the exposed side a 12.5 mm and a 15 mm and an calcium silicate board on the unexposed side. The studs designated U C89S42-1.2 (Bygcom Stålprofiler) were placed with a cc of 450mm with glass wool insulation in between. The studs were 89 mm wide with a steel thickness of 1.2 mm. Glass wool insulation of nominal density 15-20 kg/m³ was mounted between the steel studs. The wall failed the loadbearing criteria at the 62 minute because the load could not be maintained.

The construction shown on the attached drawing consist of one layer of 15 mm Fermacell fibre boards on each side of cc 600 mm steel studs with a width of 150 mm and a steel thickness of 2.0 mm designated Bygcom 150x2.0. Stone wool insulation with a nominal density of at least 45 kg/m³ is mounted between the steel studs.

Wall:	**Assessed wall**	**FIRES-FR-126-08-AUNE**	**PGA11146A**
Boards side 1:	15 mm Fermacell fibre boards	15 mm Fermacell fibre boards	15+12.5 mm Fermacell fibre boards
Boards side 2:	15 mm Fermacell fibre boards	15 mm Fermacell fibre boards	10 mm Calcium silicate
Steel studs:	150 mm wide; 2.0 mm thick	120 mm wide; 1.0 mm thick	89 mm wide; 1.2 mm thick
Stud cc	C/C 600 mm	C/C 625 mm	C/C 450 mm
Insulation	Stone wool 45 kg/m³	Stone wool 45 kg/m³	Glass wool 15-20 kg/m³
Load	21.4 kN/m	21.4 kN/m	28.0 kN/m
Resistance to fire:	REI30	REI30 + 11 minutes overrun	REI60 + 2 minutes overrun

The only changes to the assessed wall is the type, thickness and placements of the studs. The change in stud type and the increase in stud thickness will not deteriorate the performance of the wall and can in some cases improve the stability of a wall during a fire test.

Based on the given documentation, DBI assesses that the wall shown on the attached drawings fulfils the requirements for a loadbearing wall with the classification REI30.

Assessment

It is the opinion of DBI that the loadbearing wall described above and shown on the attached drawing, fulfils the requirements for a loadbearing wall with the classification

Assessed DK REI30

Conditions:

- The following changes are allowed (taken from the DIAP in EN 1365-1:2012)
  - Decrease in load (max 21.4 kN/m)
  - Decrease in height (max 3000 mm)
  - Increase in the thickness of the wall (minimum 180 mm thick)
  - Increase in the thickness of component materials
  - Decrease in linear dimensions of boards but not thickness
  - Decrease in stud spacing
  - Decrease in distance of fixing centres
  - Increase in the number of horizontal joints
  - Unlimited increase of the width of the wall
- All other details must be constructed as described in test report FIRES-FR-126-08-AUNE

Validity

This assessment is issued on the basis of test data and information available at the time of the issue. If contradictory evidence becomes available to DBI the assessment will be unconditionally withdrawn, and the manufacturer will be notified in writing. Similarly the assessment is invalidated if the assessed construction is subsequently tested because actual test data is deemed to take precedence over an expressed opinion. The assessment is valid for 5 years from the date of issue. DBI must reassess the validity after this period.

The assessment is only valid provided that no other modifications are made to the tested construction, other than those described in this report.

Limitation

This is a national assessment and cannot be equated with a classification based on EN 13501-2.

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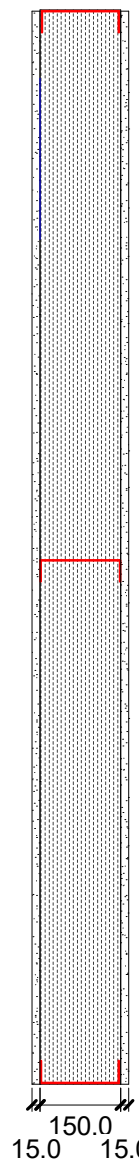
Lodret Snit



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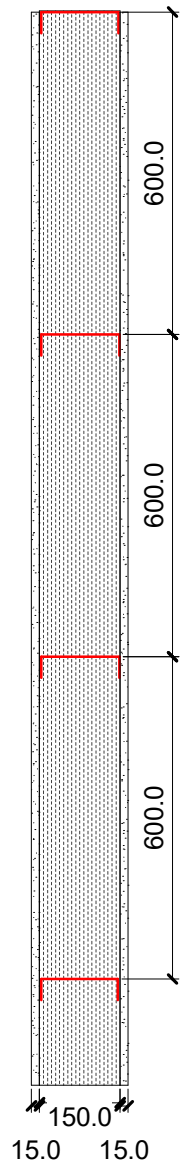

DBI
PHA11192A

REI30 Max. 3m høj, last maks. 28kN/m.

15mm Fermacell fiber gips
150 x 2,0mm BYGCOM - Stålprofiler CC max. 600mm
145mm Stenuld på minimum 45kg/m³.
15mm Fermacell fiber gips

Alle detaljer fra Bygcom er vejledende

DBI Tegninger

REI30

Mål: 1 : 5

BYGCOM

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Dato: 05/13/19

Sag nr.: DBI

Tegn. nr.: 3