Fire technical assessment

Name of sponsor:	**Bygcom A/S**
Product name:	Symmetrical 2-layer gypsum wall – EI60
File no.:	PHA11192E
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Ref:	MKL / NOL

Danish Institute of Fire and Security Technology

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Non-Loadbearing wall

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; a non-loadbearing wall after EN 1364-1, and a loadbearing wall after EN 1365-1. The question concerns the possibility to assess the wall to EI60 by replacing the studs with similar studs of a greater thickness, increase the total thickness of the Fermacell fibre boards, but also create the possibility to use glass- or stone wool with a minimum density of 15 kg/m^3. 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
2006-CVB-R0193	Efectis	March 2006	EN 1364-1:2001	Non-loadbearing wall	E: 65 min I: 65 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 EI60:

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

In test report 2006-CVB-R0193, the wall was tested as a non-loadbearing wall with one layer of 12.5 mm Fermacell fibre board on each side of cc 600 mm steel studs with a width of 75 mm and a steel thickness of 0.6 mm. Stone wool insulation of nominal density 30 kg/m^3 was mounted between the steel studs. The wall failed at a cotton pad test after 65 minutes.

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/m^3 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 two layer of Fermacell fibre board (12.5 + 12.5 mm) on each side of cc 600 mm steel studs with a width of 75 mm and a steel thickness of 1.2 mm designated Bygcom 75x1.2. Stone- or glass wool insulation with a nominal density of at least 15 kg/m^3 is mounted between the steel studs.

Wall:	**Assessed wall**	**2006-CVB-R0193**	**PGA11146A**
Boards side 1:	12.5 + 12.5 mm Fermacell fibre boards	12.5 mm Fermacell fibre boards	15+12.5 mm Fermacell fibre boards
Boards side 2:	12.5 + 12.5 mm Fermacell fibre boards	12.5 mm Fermacell fibre boards	10 mm Calcium silicate
Steel studs:	75 mm wide; 1.2 mm thick	75 mm wide; 0.6 mm thick	89 mm wide; 1.2 mm thick
Stud cc	C/C 600 mm	C/C 600 mm	C/C 450 mm
Insulation	Stone- or glass wool 15 kg/m³	Stone wool 30 kg/m³	Glass wool 15-20 kg/m³
Resistance to fire:	EI60	EI60 + 5 minutes overrun	REI60 + 2 minutes overrun

The only changes to the assessed wall is the type and thickness of the studs and the density of the wool insulation. 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.
The change to a lower density insulation wool will decrease the fire resisting performances of the wall. However, the fire performance of the assessed wall is considered sufficient, because of the additional added layer of 12.5 mm Fermacell fibre boards and the increase in stud thickness.

Based on the given documentation, DBI assesses that the wall shown on the attached drawings fulfils the requirements for a non-loadbearing wall with the classification EI60.

Assessment

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

Assessed DK EI60

Conditions:

- The following changes are allowed (taken from the DIAP in EN 1364-1:2015)
  - Decrease in height (max 3000 mm)
  - Increase in the thickness of the wall (minimum 125 mm thick)
  - Increase in the thickness of component materials
  - Increased in the width of the studs
  - 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 in the width of the wall
- All other details must be constructed as described in test report 2006-CVB-R0193

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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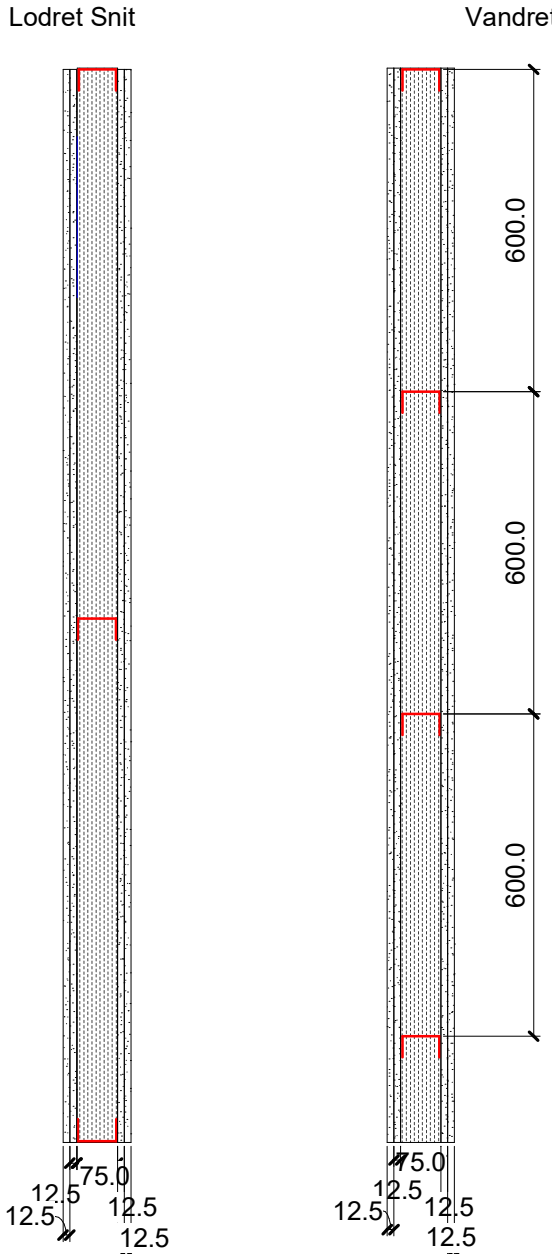

DBI
PHA11192A

EI60 Max. 3m høj

12,5mm Fermacell fiber gips
12,5mm Fermacell fiber gips
75 x 1,2mm BYGCOM - Stålprofiler CC max. 600mm
70mm glasuld/Stenuld på minimum 15kg/m³.
12,5mm Fermacell fiber gips
12,5mm Fermacell fiber gips

Alle detaljer fra Bygcom er vejledende

DBI Tegninger

EI60

Mål: 1 : 5

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Dato: 05/13/19

Sag nr.: DBI

Tegn. nr.: 5