TECHNICAL ASSESSMENT 2021-A-005C

based on an analysis of test results

SPONSOR

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SUBJECT

Evaluation of the fire resistance according to the European Standard EN 13501-2:2016 of a floor/ceiling construction (REI 30).

This document has been drawn up as part of an analysis of test results as described in the RD of 13/06/2007, modifying the RD of 07/07/1994.

1. TEST REPORTS

1.1. Reports

The examined reports are mentioned in § 1.1 of the Technical Assessment 2021-A-005A (or the latest revision of it).

1.2. Description of the tested elements

A description of the tested elements is mentioned in § 1.2 of the Technical Assessment 2021-A-005A (or the latest revision of it).

2. RESULTS

The results obtained during the tests mentioned in § 1.1 of this technical assessment are mentioned in § 2 of the Technical Assessment 2021-A-005A (or the latest revision of it).

3. REFERENCE DOCUMENTS

Technical Assessment 2021-A-004A, concerning the evaluation of the stability in case of fire according to the Belgian Standard NBN 713.020 (edition 1968) of a lowered ceiling and the evaluation of the fire resistance according to the European Standard EN 13501-2:2016 of a floor/ceiling construction.

Technical Assessment 2021-A-004C, concerning the evaluation of the fire resistance according to the European Standard EN 13501-2:2016 of a floor/ceiling construction.

4. FIELD OF APPLICATION

Based on the results mentioned in § 2 and the field of application described in the Classification Report 2021-A-005B (or the latest revision of it), we are of the opinion that the **fire resistance** of a floor/ceiling construction, composed as described below, will not be inferior to **REI 30** according to the European Standard EN 13501-2:2016.

4.1. Floor construction

The suspended ceiling is applied underneath one of the following floor types, placed or not on the supporting beams mentioned in the table below. The plenum height, i.e. the distance between the bottom side of the floor and the upper side of the ceiling tiles, is at least 378 mm.

Type of supporting beams	Type of floor	
	Aerated concrete [1]	Gravel concrete [2]
Gravel concrete	X	X
Hot rolled steel	X	X
Cold formed steel	X	X
No supporting beams	X	X

[1] Thickness: min. 100 mm; density: min. 650 kg/m³.
[2] Thickness: min. 60 mm; density: min. 2300 kg/m³.

4.2. Suspended ceiling

4.2.1. Metal framework

4.2.1.1. Metal framework of the Quick Lock Hook-On type

The metal framework is composed as follows:

- edge profiles of one of the following types, applied around the full perimeter of the ceiling and fixed every 300 mm at the most to an adjacent supporting construction out of stony materials (e.g. concrete, aerated concrete, masonry...) by means of nail plugs of the Fischer FDN type (min. ∅ 6 x 35 mm):
  - steel L-profile of the 87924 type (section: 24 x 24 mm; steel thickness: 0.5 mm);
  - steel U-profile of the 87926 type (section: 19 x 40 x 19 mm; steel thickness: 0.5 mm);
- a metal framework of the Quick Lock Hook-On type, composed as follows:
  - main supporting profiles of the 86282 type (steel T-profile; section: 38 x 24 mm; steel thickness: 0.35 mm; c/c distance: max. 600 mm), provided with a firebreak and suspended as described in § 4.2.2.1. Adjacent main supporting profiles are connected by means of an integrated coupling. The distance between the main supporting profiles and the edge of the ceiling is 300 mm at the most. The extremities of the main supporting profiles rest on/in the edge profiles at the perimeter of the ceiling;
  - transversal profiles of the 87835 type (steel T-profile; section: 32 x 24 mm; steel thickness: 0.35 mm; length: max. 600 mm; c/c distance: max. 2400 mm), applied perpendicularly between the main supporting profiles and hooked into the provided openings in the main supporting profiles. The distance between the transversal profiles and the edge of the ceiling is 600 mm at the most. The extremities of the transversal profiles at the edge of the ceiling rest on/in the edge profiles at the perimeter of the ceiling.

4.2.1.2. Metal framework of the Quick Lock Clip-On type

The metal framework is composed as follows:

- edge profiles of one of the following types, applied around the full perimeter of the ceiling and fixed every 300 mm at the most to an adjacent supporting construction out of stony materials (e.g. concrete, aerated concrete, masonry...) by means of nail plugs of the Fischer FDN type (min. ∅ 6 x 35 mm):
  - steel L-profile of the 87924 type (section: 24 x 24 mm; steel thickness: 0.5 mm);
  - steel U-profile of the 87926 type (section: 19 x 40 x 19 mm; steel thickness: 0.5 mm);
- a metal framework of the Quick Lock Clip-On type, composed as follows:
  - main supporting profiles of the 66413 type (steel T-profile; section: 38 x 24 mm; steel thickness: 0.35 mm; c/c distance: max. 600 mm), provided with a firebreak and suspended as described in § 4.2.2.2. Adjacent main supporting profiles are connected by means of an integrated coupling. The distance between the main supporting profiles and the edge of the ceiling is 300 mm at the most. The extremities of the main supporting profiles rest on/in the edge profiles at the perimeter of the ceiling;
  - transversal profiles of the 66414 type (steel T-profile; section: 25 x 24 mm; steel thickness: 0.3 mm; length: max. 600 mm; c/c distance: max. 2400 mm), applied perpendicularly between the main supporting profiles and hooked into the provided openings in the main supporting profiles. The distance between the transversal profiles and the edge of the ceiling is 540 mm at the most. The extremities of the transversal profiles at the edge of the ceiling rest on/in the edge profiles at the perimeter of the ceiling.

4.2.2. Suspension hangers

4.2.2.1. Suspension hangers for the metal framework of the Quick Lock Hook-On type

The metal framework of the Quick Lock Hook-On type is suspended to the overlying floor construction as follows:

- the main supporting profiles of the 86282 type, described in § 4.2.2.1, are suspended every 900 mm at the most by means of one of the following types of steel quick suspension hangers:
  - steel quick suspension hangers of the 87559 type, composed of an upper part ($\varnothing_{wire}$ 3.8 mm) that is connected to a lower part ($\varnothing_{wire}$ 3.8 mm) by means of a steel spring clip (steel thickness: 0.5 mm);
  - steel quick suspension hangers of the 87560 type, composed of an upper part ($\varnothing_{wire}$ 4.0 mm) that is connected to a lower part ($\varnothing_{wire}$ 4.0 mm) by means of a steel spring clip (steel thickness: 0.5 mm).

  The main supporting profiles are hooked onto the lower part of the suspension hangers;
- the distance between the suspension hangers and the extremities of the main supporting profiles is 300 mm at the most;
- the stability in case of fire of the fixing of the suspended ceiling to the overlying floor construction has to be at least 30 minutes.

4.2.2.2. Suspension hangers for the metal framework of the Quick Lock Clip-On type

The metal framework of the Quick Lock Clip-On type is suspended to the overlying floor construction as follows:

- the main supporting profiles of the 66413 type, described in § 4.2.1.2 are suspended every 900 mm at the most by means of steel quick suspension hangers of the 87565 type, composed of an upper part ($\varnothing_{wire}$ 4.0 mm) that is connected to a lower part ($\varnothing_{wire}$ 4.0 mm) by means of a steel spring clip (steel thickness: 0.5 mm). The main supporting profiles are hooked onto the lower part of the suspension hangers;
- the distance between the suspension hangers and the extremities of the main supporting profiles is 300 mm at the most;
- the stability in case of fire of the fixing of the suspended ceiling to the overlying floor construction has to be at least 30 minutes.

4.2.3. Ceiling tiles

The following self-supporting straight ceiling tiles of the Eurocoustic Tonga A type (thickness: 22 mm; modular dimensions: max. 2400 x 600 mm; mineral wool type: stone wool; density: approx. 110 kg/m³) are applied in one of the metal frameworks described in § 4.2.1 and supported quadrilaterally by the profiles of the metal framework:

- Acoustichoc;
- Altés;
- Athena;
- Clini'Care;
- Clini'Clean;
- Clini'Safe;
- Minerval A 22.

The edge of the ceiling is finished by means of cut ceiling tiles. The cut edge of the ceiling tile rests on the edge profiles of the metal framework.

We are of the opinion that the application of identical ceiling tiles with the exception of the colour and/or the textured finishing at the visible side, will not influence the fire resistance of the floor/ceiling construction, composed as described above, negatively.

4.2.4. Insulation

The application of insulation on the metal framework or on the ceiling tiles is not allowed.

4.2.5. Accessories in the suspended ceiling

It is possible to apply accessories in the suspended ceiling, provided that these have no negative influence on the obtained classification of the above-mentioned suspended ceiling and that this can be demonstrated by means of additional fire resistance tests.

4.2.6. Accessories above the suspended ceiling

It is possible to apply accessories above the suspended ceiling, provided the prescriptions mentioned below are respected:

- the accessories are installed independently from the suspended ceiling, i.e. the accessories are not part of the suspended ceiling;
- the stability in case of fire of the accessories and the fixing of these accessories to the overlying construction is at least 30 minutes.

5. CONDITIONS FOR THE USE OF THE PRESENT ASSESSMENT

The present assessment is only valid insofar as the stability of the construction, composed as described in § 4, is guaranteed under normal conditions according to the standards in force.

This assessment is only valid in case of a closed ceiling, i.e. there are no openings in the ceiling.

This assessment is only valid in case of a closed ceiling, i.e. a ceiling that connects to the adjacent wall construction around the full perimeter of the ceiling.

If a fire resistance classification of a construction element is mentioned in this assessment, this classification must be demonstrated by means of a document as described in Article 1 of the RD of 13/06/2007, modifying the RD of 07/07/1994

This assessment is only valid insofar as the composition of the products has not been modified with respect to that of the products subjected to the above-referenced tests.

This assessment is only valid in combination with the above-referenced tests reports. These tests reports can be consulted by request to the sponsor of these tests.

This technical assessment cannot be combined with another technical assessment and/or classification report, except when mentioned explicitly.

This assessment is issued on the basis of test data and information handed over at the time of the demand by the sponsor. If contradictory evidence becomes available afterwards, the assessment will be unconditionally withdrawn and the sponsor will be notified of this.

The duration of validity of the present assessment is limited to the validity of the above-referenced technical assessment and/or classification report.

The duration of validity of the present assessment is limited to 5 years starting from the issuing date of this assessment, unless the relevant standard or legislation is modified before that date. The assessment might be extended after an evaluation.

The sponsor has the right to use the above-referenced tests reports and has also confirmed that he has not been informed about any non-public information which could influence this assessment, and in consequence the obtained conclusions.

If the sponsor is informed afterwards about such information, he agrees to withdraw the assessment above and its use for regulated purposes – if applicable.

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