

CLASSIFICATION REPORT

2021-A-006B

in relation to the fire resistance
leading to a specific field of application

SPONSOR

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SUBJECT

Evaluation of the stability in case of fire according to the Belgian Standard NBN 713.020 (edition 1968) of a suspended ceiling composed of self-supporting straight ceiling tiles of the Eurocoustic A type (thickness: 25 mm and 40 mm).

This document has been drawn up in the framework of an analysis of test results as described in § 2.1-2° -a) 4) of 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-006A (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-006A (or the latest revision of it).

2. RESULTS

The results obtained during the tests mentioned in § 1.1 of this classification report are mentioned in § 2 of the Technical Assessment 2021-A-006A (or the latest revision of it).

3. REFERENCE DOCUMENTS

3.1. Basic documents

NBN 713.020 (edition 1968).

Document 1392 SN “Stabiliteit bij brand van verlaagde plafonds”, approved by the Hoge Raad voor Beveiliging tegen Brand en Ontploffing during their meeting on 15 September 2011. This document interprets the specific criteria for the stability in case of fire of a suspended ceiling where these are open to interpretation in the Belgian Standard NBN 713.020 (edition 1968).

3.2. Additional 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.

Classification Report 2021-A-004B, concerning the evaluation of the stability in case of fire according to the Belgian Standard NBN 713.020 (edition 1968) of a suspended ceiling, composed of self-supporting straight ceiling tiles of the Eurocoustic A type (thickness: 22 mm).

4. FIELD OF APPLICATION

Based on the results mentioned in § 2 and the reference documents described in § 3, we are of the opinion that the **stability in case of fire** of a suspended ceiling, composed as described below, will not be inferior to **30 minutes** according to the Belgian Standard NBN 713.020 (edition 1968).

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 or of the insulation, if applicable, is at least 300 mm.

Type of supporting beams	Type of floor				
	Aerated concrete	Gravel concrete	Steel/concrete composite	Timber	Steeldeck
Gravel concrete	X	X	X	-	X ⁽²⁾
Hot rolled steel	X	X	X	-	X ⁽²⁾
Cold formed steel	X	X	X	-	X ⁽²⁾
Timber	-	-	-	X ⁽¹⁾	-
No supporting beams	X	X	X	-	X ⁽²⁾

(¹) Only allowed if one of the following conditions is satisfied:

- a stone wool insulation of the EUROLENE type (thickness: 160 mm; density: approx. 34 kg/m³) is applied on the metal framework of the suspended ceiling, taking into account the restrictions stated in § 4.2.4.2;
- the loadbearing capacity of the floor construction is not inferior to R 30 according to the European Standard EN 13501-2:2016.

(²) Only allowed if a stone wool insulation of the EUROLENE type (thickness: 160 mm; density: approx. 34 kg/m³) is applied on the metal framework of the suspended ceiling, taking into account the restrictions stated in § 4.2.4.2.

Important remark:

The stability in case of fire does not give any evaluation of the fire resistance of the floor/ceiling construction.

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. \varnothing 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. 1200 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 350 mm at the most. The extremities of the main supporting profiles rest on/in the edge profiles at the perimeter of the ceiling;
 - (primary) transversal profiles of the 86281 type (steel T-profile; section: 32 x 24 mm; steel thickness: 0.35 mm; length: max. 1200 mm; c/c distance: max. 600 mm), applied perpendicularly between the main supporting profiles and hooked into the provided openings in the main supporting profiles. The distance between the (primary) transversal profiles and the edge of the ceiling is 350 mm at the most. The extremities of the (primary) transversal profiles at the edge of the ceiling rest on/in the edge profiles at the perimeter of the ceiling;
 - if applicable (modular dimensions ceiling tiles: max. 600 x 600 mm): secondary transversal profiles of the 87835 type (steel T-profile; section: 32 x 24 mm; steel thickness: 0.35 mm; length: max. 600 mm), applied perpendicularly between the primary transversal profiles and hooked into the provided openings in the primary transversal profiles. The extremities of the secondary 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. \varnothing 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. 1200 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 350 mm at the most. The extremities of the main supporting profiles rest on/in the edge profiles at the perimeter of the ceiling;
 - (primary) transversal profiles of the 66415 type (steel T-profile; section: 32 x 24 mm; steel thickness: 0.35 mm; length: max. 1200 mm; c/c distance: max. 600 mm), applied perpendicularly between the main supporting profiles and hooked into the provided opening in the main supporting profiles. The distance between the (primary) transversal profiles and the edge of the ceiling is 540 mm at the most. The extremities of the (primary) transversal profiles at the edge of the ceiling rest on/in the edge profiles at the perimeter of the ceiling;
 - if applicable (modular dimensions ceiling tiles: max. 600 x 600 mm): secondary transversal profiles of the 66414 type (steel T-profile; section: 25 x 24 mm; steel thickness: 0.3 mm; length: max. 600 mm), applied perpendicularly between the primary transversal profiles and hooked into the provided opening in the primary transversal profiles. The extremities of the secondary 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 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 § 4.2.1.1, 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 ($\varnothing_{\text{wire}}$ 3.8 mm) that is connected to a lower part ($\varnothing_{\text{wire}}$ 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 ($\varnothing_{\text{wire}}$ 4.0 mm) that is connected to a lower part ($\varnothing_{\text{wire}}$ 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 400 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 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 ($\varnothing_{\text{wire}}$ 4.0 mm) that is connected to a lower part ($\varnothing_{\text{wire}}$ 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

4.2.3.1. Type of ceiling tiles

The following self-supporting straight ceiling tiles of the Eurocoustic A type (thickness and density: see Table 1; modular dimensions: max. 1200 x 600 mm; mineral wool type: stone wool) are applied in one of the metal frameworks described in § 4.2.1 and supported quadrilaterally by the profiles in the metal framework:

Table 1: Ceiling tiles of the Eurocoustic A type		
Type	Thickness	Density
Acoustichoc, Alizé, Altès, Athena, Atoll, Atrium, Clini' Clean, Clini' Safe A, Coral, Neptune, Samoa A, Tonga, Vega	25 mm	approx. 90 kg/m ³
Acoustichoc, Acoustished CV 40, Acoustisport, Alizé, Orchestra, Tonga, Tonga Ultra Clean A 40	40 mm (*)	approx. 105 kg/m ³
(*) Only allowed if the restrictions stated in § 4.2.3.2 are taken into account.		

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 stability in case of fire of the suspended ceiling, composed as described in § 4.2, negatively.

4.2.3.2. Restrictions

In case of 40 mm thick ceiling tiles, the c/c distance of the main supporting profiles, described in § 4.2.1, is 600 mm at the most. In this case, the primary transversal profiles are omitted and the secondary transversal profiles (c/c distance: max. 1200 mm) are applied perpendicularly between the main supporting profiles.

4.2.4. Insulation

4.2.4.1. Type of insulation

Optionally, a layer of stone wool or glass wool insulation (surface weight (in case of 25 mm thick ceiling tiles): max. 5.5 kg/m²; surface weight (in case of 40 mm thick ceiling tiles): max. 3.55 kg/m²) may be applied on the metal framework of the suspended ceiling, taking into account the restrictions stated in § 4.2.4.2.

4.2.4.2. Restrictions

The layer of insulation may only be applied provided that the c/c distance of the main supporting profiles, beschreven in § 4.2.1, is 600 mm at the most and that the modular dimensions of the self-supporting straight ceiling tiles, beschreven in § 4.2.3, are limited to 600 x 600 mm at the most. In this case, the primary transversal profiles are omitted and the secondary transversal profiles are applied perpendicularly between the main supporting profiles.

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 CLASSIFICATION REPORT

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

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

This classification report 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 classification report, 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 classification report is only valid insofar as the composition of the ceiling components is identical to that of the components subjected to the above-referenced tests.

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

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

The duration of validity of the present classification report is limited to 5 years starting from the issuing date of this classification report, unless the relevant standard or legislation is modified before that date. The classification report 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 classification report, and in consequence the obtained conclusions.

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

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