CLASSIFICATION REPORT
2019-A-014

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

SPONSOR

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LATVIA

SUBJECT

Evaluation of the stability in case of fire according to the Belgian Standard NBN 713.020 (edition 1968) of a lowered ceiling.

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

Name of the laboratory	Number of the test report	Date of the test report	Owner of the test report	Test standard
Warringtonfire	19310A	08/02/2019	CEWOOD SIA	NBN 713.020 (1968)
	19310B	08/02/2019		

1.2. Description of the tested elements

Test report No. 19310A gives the description and the results of an orientating fire resistance test carried out according to the Belgian standard NBN 713.020 (edition 1968) on a suspended ceiling (dimensions: approx. 4000 x 3000 mm), composed of a double metal framework in two levels of the Gyproc Plagyp type (c/c distance main supporting profiles: max. 1200 mm; c/c distance supporting profiles: max. 600 mm) and one layer of wood wool cement boards of the CEWOOD Acoustic board type (thickness: 25 mm; measured density: approx. 450 kg/m³). Two layers of stone wool boards (thickness: 2 x 30 mm; nominal density: 45 kg/m³) were applied on the supporting profiles. At two sides of the ceiling, an opening of approx. 200 mm was realized between the suspended ceiling and the adjacent wall. The suspended ceiling was applied underneath a non-loadbearing aerated concrete floor.

Test report No. 19310B gives the description and the results of an orientating fire resistance test carried out according to the Belgian standard NBN 713.020 (edition 1968) on a suspended ceiling (dimensions: approx. 1740 x 3000 mm), composed of a double metal framework in two levels of the Gyproc Plagyp type (c/c distance main supporting profiles: max. 1200 mm; c/c distance supporting profiles: max. 600 mm) and one layer of wood wool cement boards of the CEWOOD Acoustic board type (thickness: 25 mm; measured density: approx. 450 kg/m³). The suspended ceiling was applied underneath a non-loadbearing aerated concrete floor.

2. RESULTS

The results obtained during the above-mentioned tests according to the criteria in the reference documents stated in § 3 are given in the table below:

Test report No.	**19310A**	**19310B**
Openings at the perimeter	yes	no
Insulation	stone wool (surface weight: approx. 2.7 kg/m²)	-
Criteria	**Time in minutes**	
Falling of the 1st ceiling element	14 (*)	20 (*)
Stability of the ceiling	COMPLIANT	COMPLIANT
Test duration	30	30

(*) The dimensions (and the surface weight) of the falling pieces are inferior to the allowed dimensions (and the surface weight) according to § 4 of the document 1392 SN “Stability in case of fire of lowered ceilings”, approved by the Hoge Raad voor Beveiliging tegen Brand en Ontploffing during their meeting on 15 September 2011.

3. REFERENCE 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).

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 boards or of the insulation, if applicable, is minimum 290 mm.

Type of supporting beams	Type of floor			
	Aerated concrete	Gravel concrete	Steel/concrete composite	Timber
Gravel concrete	X	X	X*	-
Hot rolled steel	X*	X*	X*	-
Cold formed steel	X*	X*	X*	-
Timber	-	-	-	X*
No supporting beams	X	X	X*	-

* Only allowed provided that the loadbearing capacity of the floor construction is not inferior to R 30 according to the European Standard EN 13501-2:2016.

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

The metal framework is composed as follows:

- edge profiles of the Gyproc PlaGyp PU27/48 type (galvanized steel U profile; section: 27 x 27 x 48 mm; steel thickness: 0.6 mm), applied around the full perimeter of the ceiling and fixed every 250 mm at the most to a loadbearing construction out of stony material (e.g. concrete, aerated concrete, masonry…) by means of steel nail plugs (min. ∅ 3.7 x 44 mm) and corresponding PVC plugs;
- a double framework in two levels, composed as follows:
  - main supporting profiles of the Gyproc PlaGyp PC60/27 type (galvanized steel C-profile; section: 6 x 27 x 60 x 27 x 6 mm; steel thickness: 0.6 mm; centre-to-centre distance: max. 1200 mm), suspended as described in § 4.2.2. The distance of the main supporting profiles to the edge of the ceiling is 1150 mm at the most. The ends of the main supporting profiles rest on the edge profiles, unless in case of an open edge described in § 4.2.5;
  - supporting profiles of the Gyproc PlaGyp PC60/27 type (galvanized steel C-profile; section: 6 x 27 x 60 x 27 x 6 mm; steel thickness: 0.6 mm; centre-to-centre distance: max. 600 mm) applied perpendicularly under the main supporting profiles and fixed to them by means of steel cross connectors of the Gyproc PlaGyp PD60/60 type (dimensions: 42 x 58 x 62 mm; steel thickness: 1 mm). The cross connectors are fixed to the main supporting profiles by means of two steel screws of the Gyproc Teksschroef type (min. ∅ 4.2 x 13 mm). The distance from the supporting profiles to the edge of the ceiling is 400 mm at the most. The ends of the supporting profiles rest in the edge profiles;
  - adjacent (main) supporting profiles are connected to each other by means of a steel connecting profile of the Gyproc PlaGyp PL60/100 type (dimensions: 25 x 58 x 25 mm; steel thickness: 0.6 mm; length: 100 mm), fixed to both profiles by means of two steel screws of the Gyproc Teksschroef type (min. ∅ 4.2 x 13 mm).

4.2.2. Suspension hangers

The metal framework is suspended to the overlying floor construction as follows:

- the main supporting profiles, described in § 4.2.1, are suspended every 1200 mm at the most by means of steel nonius hangers, composed of a lower part of the Gyproc PlaGyp NH type (steel thickness: 1 mm) that is fixed to an upper part of the Gyproc PlaGyp NL type (steel thickness: 0.8 mm) by means of two steel securing pins of the Gyproc PlaGyp NB type ($\varnothing_{thread}$ 2,5 mm). The lower part is hooked into the main supporting profiles and fixed to them by means of two steel screws of the Gyproc Teksschroef type (min. ∅ 4.2 x 13 mm);
- the distance between the suspension hangers and the extremities of the main supporting profiles is 1200 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 boards

The ceiling boards are applied as follows:

- one layer of wood wool cement boards of the CEWOOD Acoustic board type (thickness: 25 mm; nominal density: 455 kg/m³) is fixed to the underside of the metal framework by means of steel screws (min. ∅ 4.5 x 50 mm; centre-to-centre distance: max. 280 mm; distance from the corner: 20 mm);
- the transversal joints of the panels are located at the supporting profiles.

4.2.4. Insulation

Optionally, one or more layers of stone or glass wool boards (surface weight: max. 2.7 kg/m²; thickness in case of glass wool boards: max. 50 mm) can be applied on the supporting profiles described in § 4.2.1.

4.2.5. Open edge at the perimeter of the suspended ceiling

Optionally, an opening can be realized between the suspended ceiling and the adjacent wall construction, on the condition that the area of the opening is 11 % at the most in proportion to the total area of the compartment.

In that case, the edge of the suspended ceiling is realized as follows:

- the distance between the suspension hangers and the extremity of the main supporting profiles is 300 mm at the most;
- the distance between the main supporting profiles and the edge of the ceiling boards is 200 mm at the most;
- the distance between the supporting profiles and the edge of the ceiling boards is 200 mm at the most;
- the distance between the extremities of the supporting profiles and the edge of the ceiling boards is 50 mm at the most;
- an insulation of stone wool insulation boards (thickness: min. 30 mm; density: min. 45 kg/m³) is applied on the steel framework.

4.2.6. 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.

4.2.7. 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 suspend 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 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 when accompanied by the above-referenced tests reports.

This classification report cannot be combined with another classification report, 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 5 years starting from the issuing date of this classification report and may be extended after a favourable exam.

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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The present classification report contains 8 pages.

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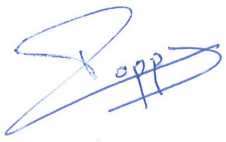 Pieter Poppe (Signature) Head of the Department Consultancy Ghent 2019.05.09 16:22:31 +02'00'	 Edwin Van Wesemael (Signature) Technical Director Ghent 2019.05.09 16:31:41 +02'00'

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