

TECHNICAL ASSESSMENT 2021-A-004A

based on an analysis of test results

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 lowered ceiling.

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

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

Name of the laboratory	Number of the test report	Date of the test report	Owner of the test report	Test standard
WFRGent nv	16007A	13/09/2013	Saint-Gobain Eurocoustic	NBN 713.020 (1968)
	16007B	13/09/2013		EN 1363-1:1999 EN 1365-2:1999
ISTITUTO GIORDANO	307589/3551FR	16/07/2013		EN 1363-1:2012 EN 1365-2:1999
Efectis France	12-U-348	15/10/2012		EN 1363-1:2012 prCEN/TS 13381-1:2005
	13-U-202	20/06/2013		

1.2. Description of the tested elements

Test report No. 16007A 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. 6000 x 3000 mm), composed of a metal framework (current commercial name according to your declarations: **Quick Lock Hook-On**; c/c distance main supporting profiles: 1200 mm; c/c distance transversal profiles: 600 mm) and self-supporting straight ceiling tiles of the **Eurocoustic Tonga A – Athena** type (thickness: 22 mm; modular dimensions: 1200 x 600 mm; density: approx. 105 kg/m³). The suspended ceiling has been applied underneath an non-loadbearing aerated concrete floor (thickness: 150 mm).

Test report No. 16007B gives the description and the results of a fire resistance test carried out according to the European Standards EN 1363-1:1999 and EN 1365-2:1999 on a non-loadbearing aerated concrete floor (dimensions: approx. 6000 x 3300 mm; thickness: 150 mm; density: approx. 650 kg/m³; span: 3000 mm), protected from below by means of a suspended ceiling, composed as described in test report No. 16007A.

Test report No. 307589/3551FR gives the description and the results of a fire resistance test carried according to the European Standards EN 1363-1:2012 and EN 1365-2:1999 on a loadbearing reinforced gravel concrete floor (dimensions: approx. 4500 x 3000 mm; thickness: 200 mm; density: approx. 1750 kg/m³; span: 4200 mm), protected from below by a suspended ceiling (dimensions: approx. 4000 x 3000 mm). The suspended ceiling was composed of a metal framework of the **Quick Lock Clip-On** type (c/c distance main supporting profiles: 1200 mm; c/c distance primary transversal profiles: 600 mm) and self-supporting straight ceiling tiles of the **Eurocoustic Tonga A** type (thickness: 22 mm; modular dimensions: 600 x 600 mm; density: approx. 110 kg/m³). During the test, a supplementary load was applied on the floor to obtain a maximal bending moment of approx. 52 kNm.

Test report No. 12-U-348 gives the description and the results of a fire resistance test carried out according to the European Standards EN 1363-1:2012 and prCEN/TS 13381-1:2005 on a loadbearing floor (dimensions: approx. 5100 x 3100 mm), composed of aerated concrete slabs (thickness: 125 mm) placed on steel supporting beams (IPE 160; c/c distance: 600 mm; span: 4900 mm), protected from below by a suspended ceiling (dimensions: approx. 4100 x 3100 mm). The suspended ceiling was composed of a metal framework (current commercial name according to your declarations: **Quick Lock Hook-On**; c/c distance main supporting profiles: 600 mm; c/c distance transversal profiles: 600 mm) and self-supporting straight ceiling tiles of the **Eurocoustic Tonga A** type (thickness: 22 mm; modular dimensions: 600 x 600 mm; density: approx. 105 kg/m³). At the ceiling tiles, anti-lift clips, composed of pins, were applied. A layer of stone wool insulation of the Eurocoustic EUROLENE 603 type (thickness: 160 mm; density: approx. 34 kg/m³) was applied perpendicularly onto the main supporting profiles. During the test a load was applied on the floor to obtain a maximal bending moment corresponding to 60 % of the plastic moment of the steel supporting beams.

Test report No. 13-U-202 gives the description and the results of a fire resistance test carried out according to the European Standards EN 1363-1:2012 and prCEN/TS 13381-1:2005 on a loadbearing floor (dimensions: 5400 x 3100 mm), composed of aerated concrete slabs (thickness: 125 mm), placed on steel supporting beams (IPE 160; c/c distance: 600 mm; span: 5100 mm), protected from below by a suspended ceiling (dimensions: 4800 x 3100 mm). The suspended ceiling was composed of a metal framework of the **Quick Lock Clip-On** type (c/c distance main supporting profiles: 600 mm; c/c distance transversal profiles: 600 mm) and self-supporting straight ceiling tiles of the **Eurocoustic Tonga A** type (thickness: 22 mm; modular dimensions: 600 x 600 mm; density: approx. 105 kg/m³). At the ceiling tiles, anti-lift clips, composed of pins, were applied. During the test a load was applied on the floor to obtain a maximal bending moment corresponding to 60 % of the plastic moment of the steel supporting beams.

2. RESULTS

The results obtained during the above-mentioned tests are given in the table below:

Test report No.	16007A & B	307589/3551FR	12-U-348	13-U-202
Type of Quick Lock framework	Hook-On	Clip-On	Hook-On	Clip-On
C/c distance main supporting profiles	1200 mm	1200 mm	600 mm	600 mm
Thickness of the ceiling tiles	22 mm	22 mm	22 mm	22 mm
Dimensions of the ceiling tiles	1200 x 600 mm	600 x 600 mm	600 x 600 mm	600 x 600 mm
Stone wool insulation	-	-	160 mm	-
Floor composition	aerated concrete	gravel concrete	aerated concrete	aerated concrete
Plenum height	378 mm	300 mm	300 mm	300 mm
Characteristic temperature in the plenum after 30 minutes	approx. 285 °C	not measured	approx. 145 °C	approx. 310 °C
Characteristic temperature in the plenum after 60 minutes	-	not measured	approx. 225 °C	-
Characteristic temperature in the plenum after 120 minutes	-	not measured	approx. 385 °C	-
Criteria	Time in minutes			
Suspended ceiling (according to the criteria in the reference documents stated in § 3)				
Falling of the 1 st ceiling element	≥ 30	≥ 186	18 (*)	44
Stability of the ceiling	COMPLIANT	COMPLIANT	COMPLIANT	COMPLIANT
Floor/ceiling construction (according to the criteria of the European Standard EN 13501-2:2016)				
Thermal insulation (I)	≥ 30	≥ 186	159	≥ 55
Integrity (E)	≥ 30	≥ 186	159	≥ 55
Loadbearing capacity (R)	≥ 30	≥ 186	159	≥ 55
Test duration	30	186	159	55
(*) The dimensions (and the surface weight) of the falling pieces are inferior to the allowed dimensions (and 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

The present technical assessment contains only an overview of the examined test reports.

The field of application based on these test reports is described in the classification report and/or the technical assessments with the same reference number as the present technical assessment.

5. CONDITIONS FOR THE USE OF THE PRESENT CLASSIFICATION REPORT

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

The sponsor has the right to use the above-referenced tests reports.

This document is the original version of this technical assessment and is issued in English.

This technical assessment may be used only literally and completely for publications. For publications of certain texts, in which this classification report is mentioned, the permission of ISIB must be obtained in advance.

The present technical assessment contains 5 pages.

End date of validity: 7 June 2026

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