

Return address: P.O. box 337, 7500 AH Enschede, The Netherlands

Forbo-Novilon BV
Att. Mr. J. Jeuring
P.O. Box 148
NL-7740 AC
COEVORDEN
The Netherlands

Report

Project number: 89200922
Report number: 89200922.11br

Received:

Vinyl floor covering marked as: **Novilux Structura**, roll no. 75027, colour no. 19302;
TÜV-reference MT12-34631.11.

Request:

Screening of the reaction to fire with additional indicative classification of burning behaviour according to EN 13501-1:2007. Verification of the product's fire behaviour.

Classification criteria Family of Products, group 5: Fire Class B_{fl}-s1;

Contractor, manufacturer : Forbo Novilon BV
Family of products : Group 5
Fire Class : B_{fl}-s1; Critical flux (CRF) $\geq 8.00 \text{ kW.m}^2$.
Smoke production, Smoke $\leq 750 \text{ \%. Min}^{-1}$

Limits of the group 5

Type of floorcovering : Expanded (cushioned) PVC floor coverings
Product standard : EN 653
Type of backing : Grey coloured cushion
Total mass : $1500 - 3000 \text{ g/m}^2$
Total thickness : 1.8 – 3.5 mm
Fire class EN 13501-1 : B_{fl}-s1

Test methods:

EN ISO 11925-2 Reaction to fire tests for building products, Part 2: Ignitability when subjected to direct impingement of flame (ISO 11925-2:2002).

EN ISO 9239-1 Reaction to fire tests for floor coverings, Part 1: Determination of the burning behaviour using a radiant heat source (ISO 9239-1:2002).

Results:

On pages two up to and including three.

Appendix:

On page four up to and including seven.

TÜV Rheinland Nederland B.V.
Enschede

Postal address:
P.O. Box 337
7500 AH Enschede
The Netherlands

Parking and delivery:
Josink Esweg 10
7545 PN Enschede
The Netherlands

www.tuv.com/nl

T +31-88-8887888
F +31-88-8887859

Jan.brinks@nl.tuv.com
lise.pierik@nl.tuv.com

Date
30th of March, 2012

Project number
89200922

Report number
89200922.11br

Phone number client
+31 524 596868

Fax number client
+31 524 596888

Article
Novilux Structura

Appendix
I -Single specimen report

TRN applies General Terms & Conditions which are filed at the office of the Clerk for civil affairs at the Court in Zutphen (the Netherlands) under number 35/2010, dated November 17th 2010.

Date
30th of March, 2012

Project number
89200922

Report number
89200922.11br

Article
Novilux Structura

Page
2 of 7

TEST RESULTS

Ignitability EN-ISO 11925-2:2010

According to EN 14041 table 3, these floor coverings are classified as E_{fl} (classified without further testing).

Radiant Panel test EN ISO 9239-1:2010

Conditioning time, climate : 7 days, 23 ± 2°C and 50 ± 5% R.H.

Date of testing : 7th of February 2012

Description of substrate : Fibre cement board, 6±1 mm, 1800±200 kg/m³ conforming to EN 13238.

Sampling procedure : By contractor.

Description of cleaning used : None.

Fixing method : Fixed, glued with adhesive Eurocol Eurostar 540, on 30-01-2012

Test specimen,	Flame spread (cm)	CRF (kW/m ²)	peak light attenuation (%)	Smoke production (%.min)	Indicative classification ¹
1, ↑*	15	10.1	57.1	95	B _{fl} -s1
2, ↓*	15	10.1	57.6	97	B _{fl} -s1

Remarks: flashing observed, no transitory- or sustained flaming,

* specimen extinguished naturally

¹ the recorded CRF-value would imply this classification could be achieved, according to EN 13501-1. It is only based on one sample, while four samples are required for a final classification.

CONCLUSION

According to EN 13501-1:2007 the tested samples of the aforementioned quality **Novilux Structura** meets the requirements of **Class B_n-s1**; and therefore **meets** the requirements of Product Family group 5.

Statements:

The test results only relate to the behaviour of the test specimens of the examined product under the particular conditions of the test in laboratory conditions; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use. The method might not be suitable if the product is exposed to much larger flames or heat radiant sources.

The validity of this report will expire five years after its issue or directly after alterations or modifications of the examined product (combination)(s) and/or the criteria. This report shall not be reproduced, except in full, without the written approval of the testing laboratory.

Author:
Mrs. I. Pierik



Visa:
Mr. J. Brinks



All rights reserved.

No part of this report may be reproduced, provided to and/or examined by third parties, and/or published by print, photoprint, microfilm, in electronic form or any other means without the explicit previous written consent of TÜV Rheinland Nederland B.V.

In case this report was drafted within the context of an assignment to TÜV Rheinland Nederland B.V., the rights and obligations of contracting parties are subject to the General Terms & Conditions for Advisory, Research and Certification assignments to TÜV Rheinland Nederland B.V. and/or the relevant agreement concluded between the contracting parties.

© 2010 TÜV Rheinland Nederland B.V

Date
30th of March, 2012

Project number
89200922

Report number
89200922.11br

Article
Novilux Structura

Page
3 of 7

APPENDIX I - Flooring Radiant Panel Single Specimen Report

Report produced with the Fire Testing Technology FRPSoft software

Date
30th of March, 2012

Project number
89200922

page 1

Report number
89200922.11br

Flooring Radiant Panel Single Specimen Report

Article
Novilux Structura

Page
4 of 7

Standard : EN ISO 9239-1:2002
Laboratory : TÜV Rheinland Nederland B.V.
Sponsor : Forbo 89200922
Date of test : Feb. 07 2012

Specimen description : Structura MT12-34631.11
Test name : Prod #1
File name : D:\FRPFILES\12020021.CSV
Test number in series : 2

Flux calibration file name : C:\FRPSOFT\CALIB\FLX12001.CSV

Thickness (mm) :
Density (kg/m³) :

Test duration : 12 minutes 06 seconds (726 s)
Substrate used? : Yes
Substrate : Calcium silicate
Fixing method : none
Conditioned? : Yes
Conditioning temp. (°C) : 23
Conditioning RH (%) : 50

Test Results

Time to ignition : 2 minutes 02 seconds (122 s)
Time to flameout : 12 minutes 03 seconds (723 s)
Extent of burning (mm) : 150
Critical flux at extinguishment (kW/m²) : 10.06
HF-10 (kW/m²) : 10.06
HF-20 (kW/m²) : >= 10.9
HF-30 (kW/m²) : >= 10.9
Flame spread at 10 minutes (mm) : 150
Flame spread at 20 minutes (mm) : -1
Flame spread at 30 minutes (mm) : -1
Peak light attenuation (%) : 57.09
Time to peak light attenuation : 2 minutes 49 seconds (169 s)
Total integrated smoke (%.min) : 94.84

Potential classification : A2(II)/B(II)
Smoke production classification : s1

These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

APPENDIX I - Flooring Radiant Panel Single Specimen Report

Report produced with the Fire Testing Technology FRPSoft software

Date
30th of March, 2012

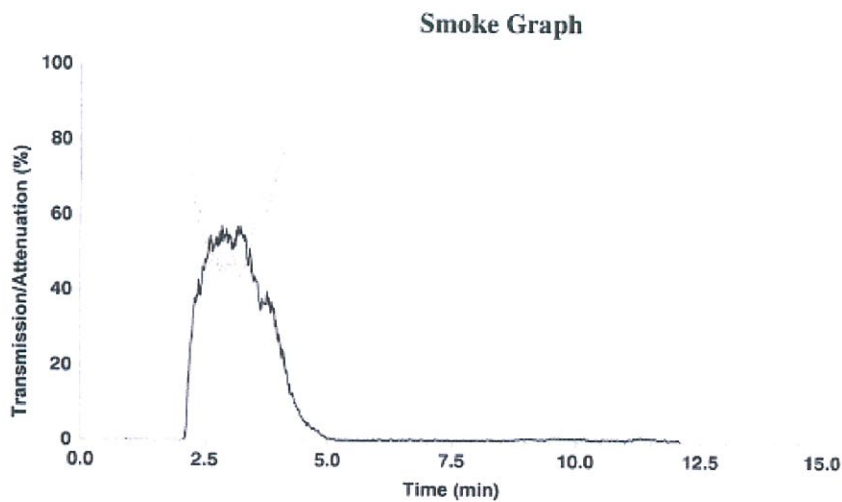
Project number
89200922

page 2

Report number
89200922.11br

Article
Novilux Structura

Page
5 of 7



Test name : Prod #1

File name : D:\FRPFILES\12020021.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m ²)	Qsb (MJ/m ²)	Position (mm)	Time (s)	Flux (kW/m ²)	Qsb (MJ/m ²)
60	140	11.2	1.473	510	-	3.6	-
110	179	10.5	1.780	560	-	3.0	-
160	-	9.9	-	610	-	2.5	-
210	-	9.3	-	660	-	2.1	-
260	-	8.2	-	710	-	1.8	-
310	-	7.2	-	760	-	1.5	-
360	-	6.2	-	810	-	1.3	-
410	-	5.3	-	860	-	1.2	-
460	-	4.4	-	910	-	1.1	-

Comments

Specimen extinguished naturally.

These results relate only to the behaviour of the specimens of the product under the particular conditions of the test: they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

APPENDIX I - Flooring Radiant Panel Single Specimen Report

Report produced with the Fire Testing Technology FRPSoft software

Date
30th of March, 2012

Project number
89200922

page 1

Report number
89200922.11br

Article
Novilux Structura

Page
6 of 7

Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2002
Laboratory : TÜV Rheinland Nederland B.V.
Sponsor : Forbo 89200922
Date of test : Feb. 07 2012

Specimen description : Structura MT12-34631.11
Test name : Cross #1
File name : D:\FRPFILES\12020022.CSV
Test number in series : 2

Flux calibration file name : C:\FRPSOFT\CALIB\FLX12001.CSV

Thickness (mm) :
Density (kg/m³) :

Test duration : 12 minutes 05 seconds (725 s)
Substrate used? : Yes
Substrate : Calcium silicate
Fixing method : none
Conditioned? : Yes
Conditioning temp. (°C) : 23
Conditioning RH (%) : 50

Test Results

Time to ignition : 2 minutes 01 seconds (121 s)
Time to flameout : 12 minutes 03 seconds (723 s)
Extent of burning (mm) : 150
Critical flux at extinguishment (kW/m²) : 10.06
HF-10 (kW/m²) : 10.06
HF-20 (kW/m²) : >= 10.9
HF-30 (kW/m²) : >= 10.9
Flame spread at 10 minutes (mm) : 150
Flame spread at 20 minutes (mm) : -1
Flame spread at 30 minutes (mm) : -1
Peak light attenuation (%) : 57.6
Time to peak light attenuation : 3 minutes 04 seconds (184 s)
Total integrated smoke (%.min) : 97.4

Potential classification : **A2(fl)/B(fl)**
Smoke production classification : **s1**

These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

APPENDIX I - Flooring Radiant Panel Single Specimen Report

Report produced with the Fire Testing Technology FRPSoft software

Date
30th of March, 2012

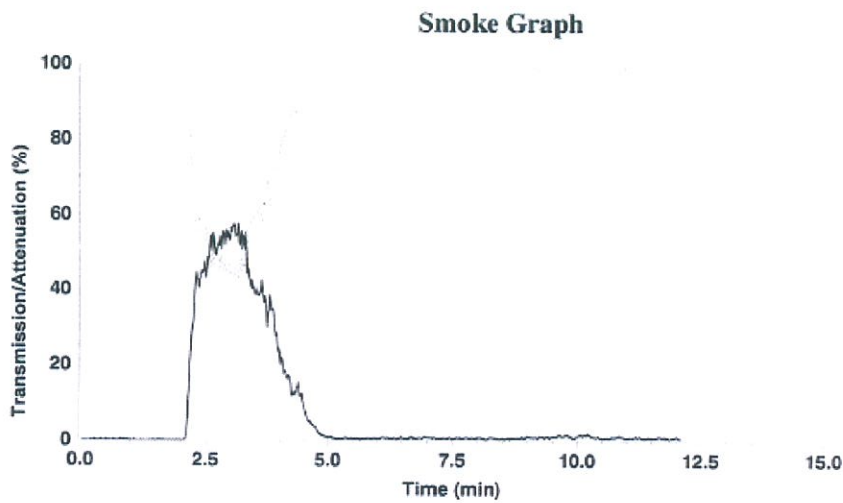
Project number
89200922

Page 2

Report number
89200922.11br

Article
Novilux Structura

Page
7 of 7



Test name : Cross #1
File name : D:\FRPFILES\12020022.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m ²)	Qsb (MJ/m ²)	Position (mm)	Time (s)	Flux (kW/m ²)	Qsb (MJ/m ²)
60	142	11.2	1.494	510	-	3.6	-
110	170	10.5	1.691	560	-	3.0	-
160	-	9.9	-	610	-	2.5	-
210	-	9.3	-	660	-	2.1	-
260	-	8.2	-	710	-	1.8	-
310	-	7.2	-	760	-	1.5	-
360	-	6.2	-	810	-	1.3	-
410	-	5.3	-	860	-	1.2	-
460	-	4.4	-	910	-	1.1	-

Comments

Specimen extinguished naturally.

These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.