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Precisely Right.

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Date
08-07-2011

Project number
T11-32653

Report number
T11-32653.01br

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Your reference
4500464247

Article
Novilon LVT 0.4

Appendix
1 - Flooring Radiant Panel Single Specimen Reports, 8 pages

Report

Project number: T11-32653
Report number: T11.32653.01br

Received:
A vinyl floor covering, marked as: Novilon LVT 0.4.
TÜV reference: MT11-32653.01.

The floor covering has been received and tested in tile and sheet dimension.
It is the same product, there is no significant difference found in the total thickness and mass. Also in the results of the fire behavior there is no significant difference.
This report is valid for the product Novilon LVT 0.4, in sheet and in tile dimensions.

Request:
Classification of burning behaviour according to EN 13501:2007.

Test method:

Determination of overall thickness	: EN 428
Determination of mass per unit area	: EN 430
Ignitability (direct impingement of flame)	: EN ISO 11925-2
Reaction to fire (radiant panel)	: EN ISO 9239-1

Results:
See page two up to, and including three.

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Date
08-07-2011

Project number
T11-32653

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T11-32653.01br

Article
Novilon LVT 0.4

TEST RESULTS

➢ *Sample description*

Type of manufacture		: heterogeneous PVC floor covering*
Total mass per unit area, EN 430	kg/m^2	: 2.8
Total thickness, EN428	mm	: 2.0
Thick of the top layer	mm	: 0.40*
Backing		: black coloured compact layer*

* = manufacturer's declaration

➢ *Ignitability EN-ISO 11925-2:2010*

Conditioning time, climate	: 5 days, 23 ± 2 °C and 50 ± 5 %
Date of testing	: 01-07-2011
Description of substrate	: 6 mm. Fibre cement board, 1800 kg/m^3.
Flame application	: Surface.
Application time	: 15 seconds.

Direction:	In production			across production		
Total burning time[1](15 s)	15	15	15	15	15	15
Flame tip reaches 150 mm (s)	no	no	no	no	no	no
Extent of damaged area, length (mm)	57	63	67	63	67	63
Extent of damaged area, width (mm)	9	9	10	10	11	10
Material melts (yes/no)	yes	yes	yes	yes	yes	yes
Shrinks away[2] (yes/no)	no	no	no	no	no	no
Glowing[3](sec)	no	no	no	no	no	no
Flaming debris (yes/no)	no	no	no	no	no	no
Ignition of filter paper (yes/no)	no	no	no	no	no	no

1 Inclusive a flame application time of 15 or 30 seconds with surface or edge impingement
2 Shrinks away from flame without being ignited
3 The time at which it occurs and its duration

TEST RESULTS - continuation

➢ *Radiant Panel test EN ISO 9239-1:2010*

Conditioning time, climate	: 5 days, 23 ± 2 °C and 50 ± 5 %
Date of testing	: 01-07-2011
Description of substrate	: Fibre cement board, 6±1 mm ,1800±200 kg/m^3 conforming to EN 13238
Sampling procedure	: by contractor.
Description of cleaning used	: none.
Fixing method	: Eurocol 540, on 27-06-2011.

Test specimen, orientation	Flame spread (cm)	CRF (kW/m^2)	peak light attenuation (%)	Smoke production (%.min)
1 ↑*	20,0	9,5	66,6	141
2 ⊥*	17,0	9,9	36,7	110
3 ↑*	16,0	10,0	45,1	128
4 ⊥*	17,0	9,9	40,2	125
Mean	**16,7**	**9,9**	**40,7**	**121**

Remarks: no flashing, transitory- or sustained flaming,
* specimen extinguished naturally
Specimen 1 and 2 = sheet, 3 and 4 = tiles.

Conclusion:
According to EN 13501:2007 the tested sample of the aforementioned quality **Novilon LVT 0.4** meets the requirements of **Class B_{FL} - s1**.

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.
This test report has a validity of five years after date of issue.

Author:
Mrs. I. Pierik

Visa:
Mr. H. Fokkenrood

Flooring Radiant Panel Single Specimen Report

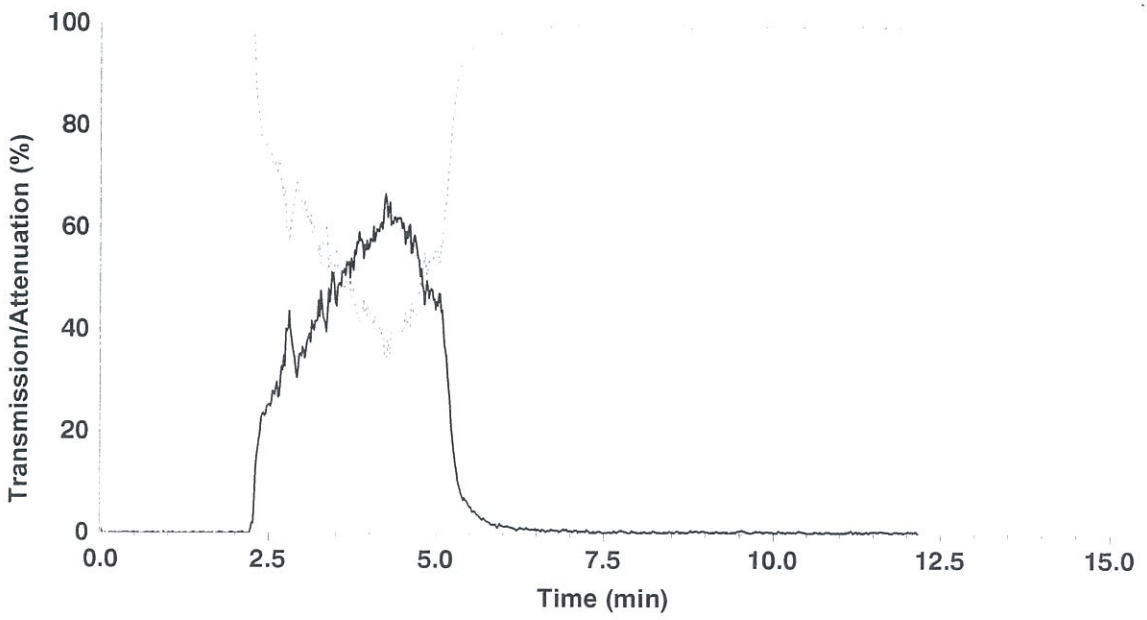
Standard	: EN ISO 9239-1:2002
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: Forbo - Novilon - T11-32653
Date of test	: Jul. 01 2011
Specimen description	: MT11.32653.01 - sheet
Test name	: Prod #1
File name	: D:\FRPFILES\11070013.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT\CALIB\FLX11001.CSV
Thickness (mm)	:
Density (kg/m^3)	:
Test duration	: 12 minutes 10 seconds (730 s)
Substrate used?	: Yes
Substrate	: Calcium silicate
Fixing method	: adhesive
Conditioned?	: Yes
Conditioning temp. (°C)	: 23
Conditioning RH (%)	: 50

Test Results

Time to ignition	: 2 minutes 09 seconds (129 s)
Time to flameout	: 12 minutes 06 seconds (726 s)
Extent of burning (mm)	: 200
Critical flux at extinguishment (kW/m^2)	: 9.45
HF-10 (kW/m^2)	: 9.45
HF-20 (kW/m^2)	: >= 10.9
HF-30 (kW/m^2)	: >= 10.9
Flame spread at 10 minutes (mm)	: 200
Flame spread at 20 minutes (mm)	: -1
Flame spread at 30 minutes (mm)	: -1
Peak light attenuation (%)	: 66.57
Time to peak light attenuation	: 4 minutes 14 seconds (254 s)
Total integrated smoke (%.min)	: 140.67
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.

Smoke Graph



Test name : Prod #1
File name : D:\FRPFILES\11070013.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	160	11.2	1.690	510	-	3.7	-
110	192	10.6	1.920	560	-	3.0	-
160	226	10.0	2.105	610	-	2.5	-
210	-	9.3	-	660	-	2.2	-
260	-	8.3	-	710	-	1.9	-
310	-	7.3	-	760	-	1.6	-
360	-	6.2	-	810	-	1.4	-
410	-	5.2	-	860	-	1.2	-
460	-	4.4	-	910	-	1.1	-

Comments

Specimen extinguished naturally.

Flooring Radiant Panel Single Specimen Report

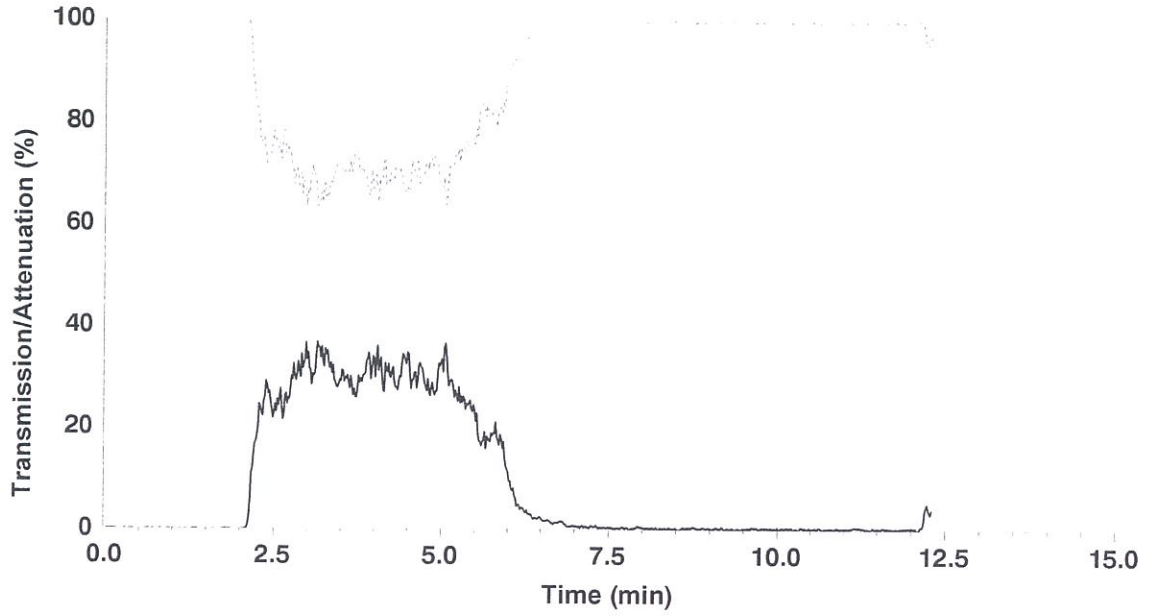
Standard	: EN ISO 9239-1:2002
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: Forbo - Novilon - T11-32653
Date of test	: Jul. 01 2011
Specimen description	: MT11-32653.01
Test name	: Cross Prod #1
File name	: D:\FRPFILES\11070014.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT\CALIB\FLX11001.CSV
Thickness (mm)	:
Density (kg/m^3)	:
Test duration	: 12 minutes 18 seconds (738 s)
Substrate used?	: Yes
Substrate	: Calcium silicate
Fixing method	: adhesive
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 16 seconds (736 s)
Extent of burning (mm)	: 170
Critical flux at extinguishment (kW/m^2)	: 9.86
HF-10 (kW/m^2)	: 9.86
HF-20 (kW/m^2)	: >= 10.9
HF-30 (kW/m^2)	: >= 10.9
Flame spread at 10 minutes (mm)	: 170
Flame spread at 20 minutes (mm)	: -1
Flame spread at 30 minutes (mm)	: -1
Peak light attenuation (%)	: 36.72
Time to peak light attenuation	: 3 minutes 09 seconds (189 s)
Total integrated smoke (%.min)	: 110.35
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.

Smoke Graph



Test name : Cross Prod #1
File name : D:\FRPFILES\11070014.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	178	11.2	1.880	510	-	3.7	-
110	237	10.6	2.370	560	-	3.0	-
160	339	10.0	3.157	610	-	2.5	-
210	-	9.3	-	660	-	2.2	-
260	-	8.3	-	710	-	1.9	-
310	-	7.3	-	760	-	1.6	-
360	-	6.2	-	810	-	1.4	-
410	-	5.2	-	860	-	1.2	-
460	-	4.4	-	910	-	1.1	-

Comments

Specimen extinguished naturally.

Flooring Radiant Panel Single Specimen Report

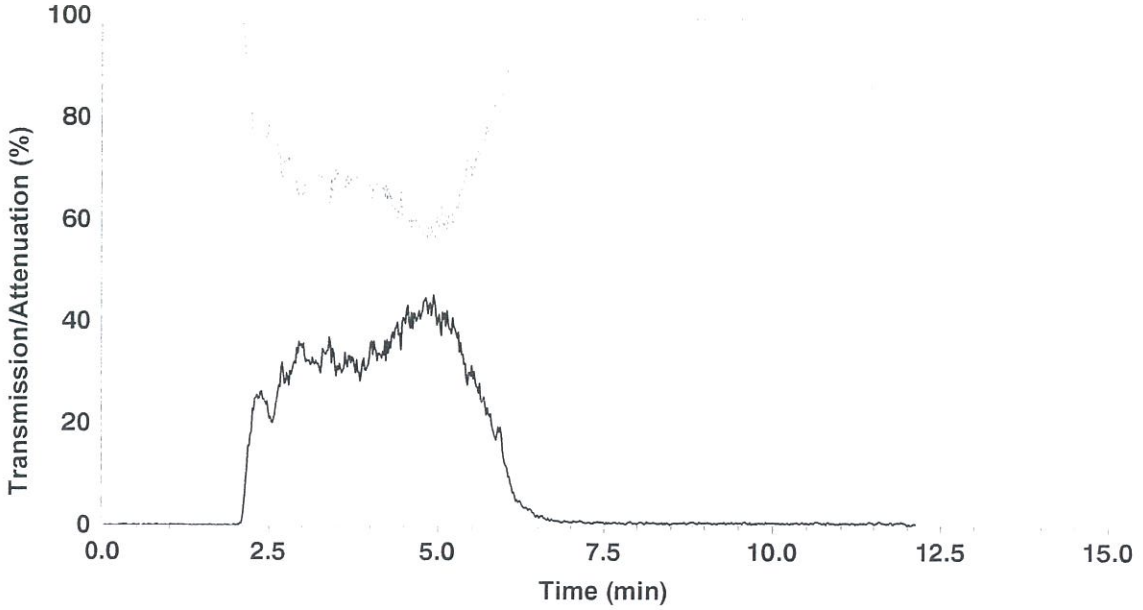
Standard	: EN ISO 9239-1:2002
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: Forbo -Novilon - T11-32653
Date of test	: Jul. 05 2011
Specimen description	: MT11-32653.02- tiles
Test name	: Prod #1
File name	: D:\FRPFILES\11070015.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT\CALIB\FLX11001.CSV
Thickness (mm)	:
Density (kg/m^3)	:
Test duration	: 12 minutes 07 seconds (727 s)
Substrate used?	: Yes
Substrate	: Calcium silicate
Fixing method	: adhesive
Conditioned?	: Yes
Conditioning temp. (°C)	: 23
Conditioning RH (%)	: 50

Test Results

Time to ignition	: 2 minutes (120 s)
Time to flameout	: 12 minutes 06 seconds (726 s)
Extent of burning (mm)	: 160
Critical flux at extinguishment (kW/m^2)	: 10
HF-10 (kW/m^2)	: 10
HF-20 (kW/m^2)	: >= 10.9
HF-30 (kW/m^2)	: >= 10.9
Flame spread at 10 minutes (mm)	: 160
Flame spread at 20 minutes (mm)	: -1
Flame spread at 30 minutes (mm)	: -1
Peak light attenuation (%)	: 45.14
Time to peak light attenuation	: 4 minutes 56 seconds (296 s)
Total integrated smoke (%.min)	: 128.49
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.

Smoke Graph



Test name : Prod #1
File name : D:\FRPFILES\11070015.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	207	11.2	2.187	510	-	3.7	-
110	253	10.6	2.529	560	-	3.0	-
160	420	10.0	3.911	610	-	2.5	-
210	-	9.3	-	660	-	2.2	-
260	-	8.3	-	710	-	1.9	-
310	-	7.3	-	760	-	1.6	-
360	-	6.2	-	810	-	1.4	-
410	-	5.2	-	860	-	1.2	-
460	-	4.4	-	910	-	1.1	-

Comments

Specimen extinguished naturally.

Flooring Radiant Panel Single Specimen Report

Standard	: EN ISO 9239-1:2002
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: Forbo -Novilon - T11-32653
Date of test	: Jul. 05 2011
Specimen description	: MT11-32653.02 - tiles
Test name	: Cross Prod #1
File name	: D:\FRPFILES\11070016.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT\CALIB\FLX11001.CSV
Thickness (mm)	:
Density (kg/m³)	:
Test duration	: 12 minutes 03 seconds (723 s)
Substrate used?	: Yes
Substrate	: Calcium silicate
Fixing method	: adhesive
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 02 seconds (722 s)
Extent of burning (mm)	: 170
Critical flux at extinguishment (kW/m²)	: 9.86
HF-10 (kW/m²)	: 9.86
HF-20 (kW/m²)	: >= 10.9
HF-30 (kW/m²)	: >= 10.9
Flame spread at 10 minutes (mm)	: 170
Flame spread at 20 minutes (mm)	: -1
Flame spread at 30 minutes (mm)	: -1
Peak light attenuation (%)	: 40.15
Time to peak light attenuation	: 4 minutes 33 seconds (273 s)
Total integrated smoke (%.min)	: 124.74
Potential classification	**: A2(fl)/B(fl)**
Smoke production classification	**: s1**

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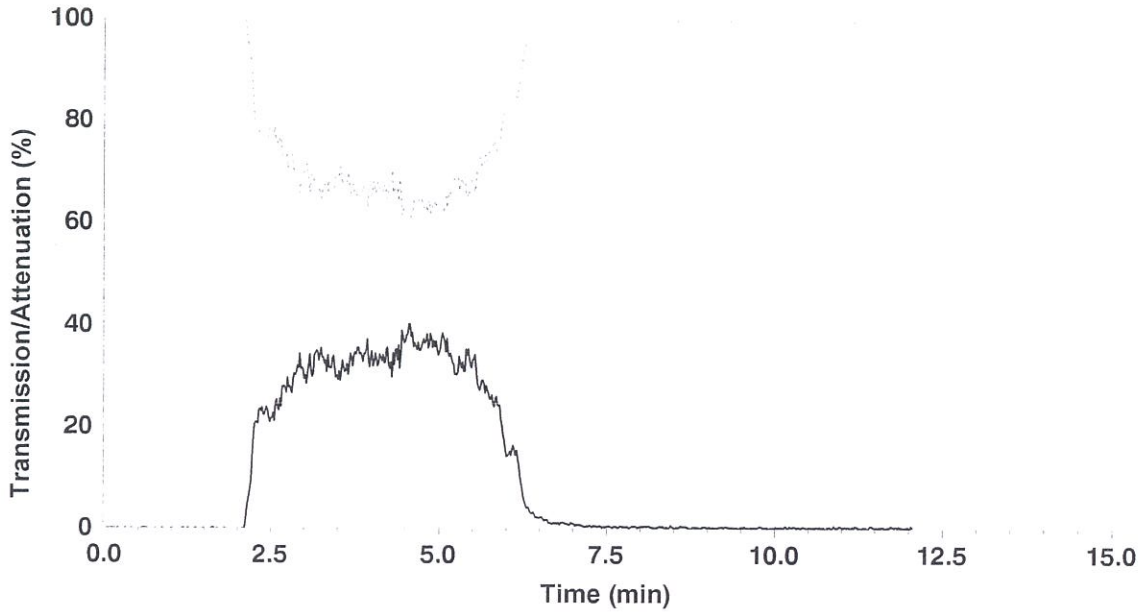
Smoke Graph



Test name : Cross Prod #1
File name : D:\FRPFILES\11070016.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	240	11.2	2.535	510	-	3.7	-
110	258	10.6	2.579	560	-	3.0	-
160	353	10.0	3.287	610	-	2.5	-
210	-	9.3	-	660	-	2.2	-
260	-	8.3	-	710	-	1.9	-
310	-	7.3	-	760	-	1.6	-
360	-	6.2	-	810	-	1.4	-
410	-	5.2	-	860	-	1.2	-
460	-	4.4	-	910	-	1.1	-

Comments

Specimen extinguished naturally.