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KROMMENIE
The Netherlands

Report

Project number : 89201816
Report number : 89201816.01br

Received:

A linoleum floor covering sample, marked as: **Marmoleum Real FR, 63048 2.5mm**
glued onto a wooden base; TÜV sample reference: MT12-35597.01.
Glued by contractor on 15th of May 2012, with Eurocol 411.

Information as received from the applicant:

Production order : 46363
Date of production : 13-04-12
Fixed on 15-05-2012
Used adhesive: Eurocol 411

Request:

Classification of burning behaviour according to EN 13501-1:2007.

Test method:

- EN ISO 11925-2 Reaction to fire tests for building products, Part 2: Ignitability when subjected to direct impingement of flame (ISO 11925-2:2010).
- EN ISO 9239-1 Reaction to fire tests for floor coverings, Part 1: Determination of the burning behaviour using a radiant heat source (ISO 9239-1:2010).

Results:

See page two up to and including three.

Appendix:

See page four up to and including eleven.

TÜV Rheinland Nederland B.V.
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Date
8th of June, 2012

Project number
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Report number
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Appendix
I : Flooring Radiant Panel Single
Specimen Report – 8 pages

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.

TEST RESULTS

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Ignitability EN-ISO 11925-2:2010

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

Radiant Panel test EN ISO 9239-1:2010

Date of testing : 05-06-2012
 Conditioning time, climate : 7 days, 23 ± 2 °C and 50 ± 5 %
 Description of substrate : Wooden board, from contractor
 Sampling procedure : By contractor.
 Description of cleaning used : None.
 Fixing method : Glue by contractor 15-05-2012, with Eurocol 411.
 Use of a fire retardant : Yes

Test specimen, orientation	Flame spread (cm)	CRF / (kW/m ²)	Peak light attenuation (%)	Smoke production (%.min)
1, ↑	11.0	10.8	10.3	47
2, ⊥	12.0	10.6	12.4	51
3, ⊥	10.0	≥10.9	11.3	42
4, ⊥	13.0	10.5	11.9	56
Mean	11.5	≥10.7	11.5	49

Remarks: * the specimens extinguished naturally.

No flashing, transitory- or sustained flaming.

CONCLUSION

According to EN 13501-1:2007 the tested sample of the aforementioned quality **Marmoleum Real FR, 2.5 mm** meets the requirements of **Class B_{fl} - s1**.

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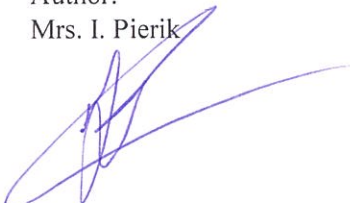
Statements:

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.

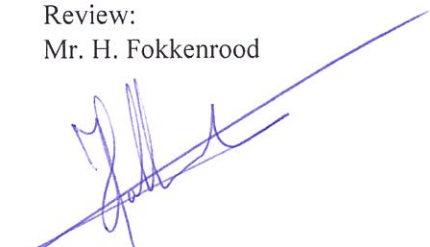
Author:

Mrs. I. Pierik



Review:

Mr. H. Fokkenrood



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APPENDIX I: Flooring Radiant Panel Single Specimen Report

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Report produced with the Fire Testing Technology FRPSoft software

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Flooring Radiant Panel Single Specimen Report

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Standard : EN ISO 9239-1:2002
Laboratory : TÜV Rheinland Nederland B.V.
Sponsor : Forbo 89201816
Date of test : Jun. 05 2012

Specimen description : Marmoleum Real FR MT12-35597.01
Test name : Prod #1
File name : D:\FRPFILES\12060016.CSV
Test number in series : 4

Flux calibration file name : CAFRPSOFT\CALIB\FLX12006.CSV

Thickness (mm) :
Density (kg/m³) :

Test duration : 14 minutes 23 seconds (863 s)
Substrate used? : Yes
Substrate : Particle board
Fixing method : ~~none~~ adhesive
Conditioned? : Yes
Conditioning temp. (°C) : 23
Conditioning RH (%) : 50

Test Results

Time to ignition : 2 minutes 02 seconds (122 s)
Time to flameout : 14 minutes 18 seconds (858 s)
Extent of burning (mm) : 110
Critical flux at extinguishment (kW/m²) : 10.75
HF-10 (kW/m²) : >= 10.9
HF-20 (kW/m²) : >= 10.9
HF-30 (kW/m²) : >= 10.9
Flame spread at 10 minutes (mm) : 90
Flame spread at 20 minutes (mm) : -1
Flame spread at 30 minutes (mm) : -1
Peak light attenuation (%) : 10.3
Time to peak light attenuation : 8 minutes 53 seconds (533 s)
Total integrated smoke (%.min) : 46.69

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.

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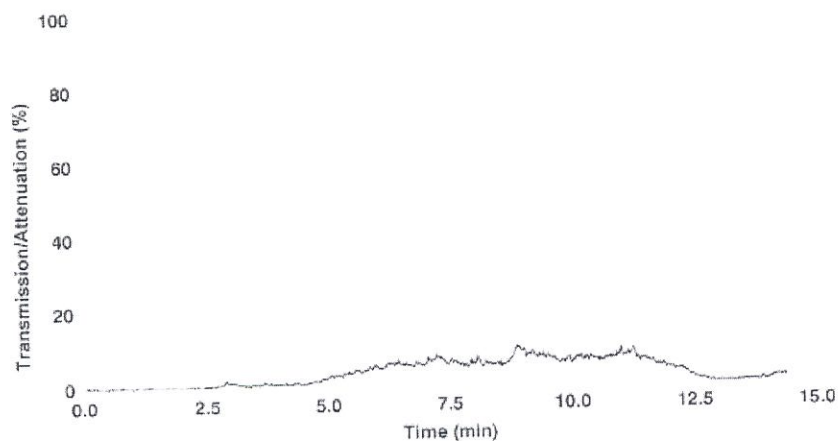
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Smoke Graph



Test name : Prod #1
File name : D:\FRPFILES\12060016.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	373	11.5	4.010	510	-	3.7	-
110	798	10.8	8.077	560	-	3.0	-
160	-	10.1	-	610	-	2.5	-
210	-	9.4	-	660	-	2.2	-
260	-	8.3	-	710	-	1.8	-
310	-	7.2	-	760	-	1.6	-
360	-	6.2	-	810	-	1.4	-
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.

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Standard : EN ISO 9239-1:2002
Laboratory : TÜV Rheinland Nederland B.V.
Sponsor : Forbo 89201816
Date of test : Jun. 05 2012

Specimen description : Marmoleum Real Fr MT12-35597.01
Test name : Cross #1
File name : D:\FRPFILES\12060018.CSV
Test number in series : 4

Flux calibration file name : C:\FRPSOFT\CALIB\FLX12006.CSV

Thickness (mm) :
Density (kg/m³) :

Test duration : 14 minutes 28 seconds (868 s)
Substrate used? : Yes
Substrate : Particle board
Fixing method : ~~none~~ adhesive
Conditioned? : Yes
Conditioning temp. (°C) : 23
Conditioning RH (%) : 50

Test Results

Time to ignition : 2 minutes 01 seconds (121 s)
Time to flameout : 14 minutes 26 seconds (866 s)
Extent of burning (mm) : 120
Critical flux at extinguishment (kW/m²) : 10.63
HF-10 (kW/m²) : 10.63
HF-20 (kW/m²) : >= 10.9
HF-30 (kW/m²) : >= 10.9
Flame spread at 10 minutes (mm) : 120
Flame spread at 20 minutes (mm) : -1
Flame spread at 30 minutes (mm) : -1
Peak light attenuation (%) : 12.38
Time to peak light attenuation : 8 minutes 24 seconds (504 s)
Total integrated smoke (%.min) : 50.61

Potential classification : A2(Π)/B(Π)
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.

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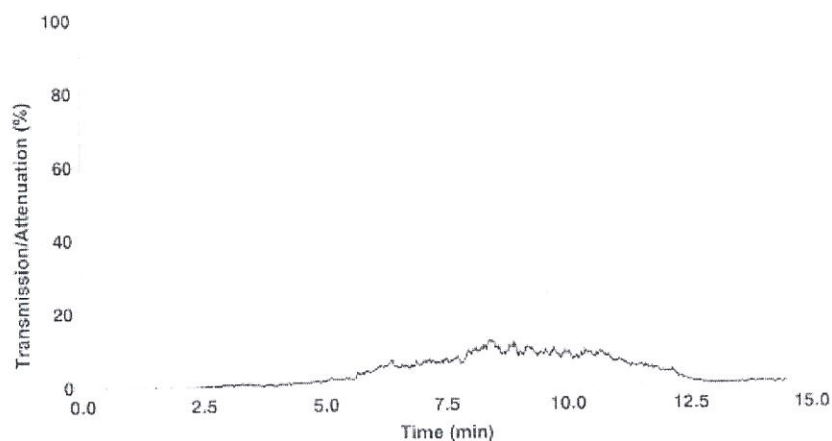
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Smoke Graph



Test name : Cross #1
File name : D:\FRPFILES\12060018.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	296	11.5	3.183	510	-	3.7	-
110	516	10.8	5.222	560	-	3.0	-
160	-	10.1	-	610	-	2.5	-
210	-	9.4	-	660	-	2.2	-
260	-	8.3	-	710	-	1.8	-
310	-	7.2	-	760	-	1.6	-
360	-	6.2	-	810	-	1.4	-
410	-	5.3	-	860	-	1.2	-
460	-	4.4	-	910	-	1.1	-

Comments

Specimen extinguished naturally.

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Standard : EN ISO 9239-1:2002
Laboratory : TÜV Rheinland Nederland B.V.
Sponsor : Forbo 89201816
Date of test : Jun. 05 2012

Specimen description : Marmoleum Real Fr MT12-35597.01
Test name : Cross #2
File name : D:\FRPFILES\12060019.CSV
Test number in series : 4

Flux calibration file name : C:\FRPSOFT\CALIB\FLX12006.CSV

Thickness (mm) :
Density (kg/m³) :

Test duration : 14 minutes 47 seconds (887 s)
Substrate used? : Yes
Substrate : Particle board
Fixing method : adhesive
Conditioned? : Yes
Conditioning temp. (°C) : 23
Conditioning RH (%) : 50

Test Results

Time to ignition : 2 minutes 01 seconds (121 s)
Time to flameout : 14 minutes 40 seconds (880 s)
Extent of burning (mm) : 100
Critical flux at extinguishment (kW/m²) : ≥ 10.9
HF-10 (kW/m²) : ≥ 10.9
HF-20 (kW/m²) : ≥ 10.9
HF-30 (kW/m²) : ≥ 10.9
Flame spread at 10 minutes (mm) : 80
Flame spread at 20 minutes (mm) : -1
Flame spread at 30 minutes (mm) : -1
Peak light attenuation (%) : 11.31
Time to peak light attenuation : 7 minutes 31 seconds (451 s)
Total integrated smoke (%.min) : 42.13

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

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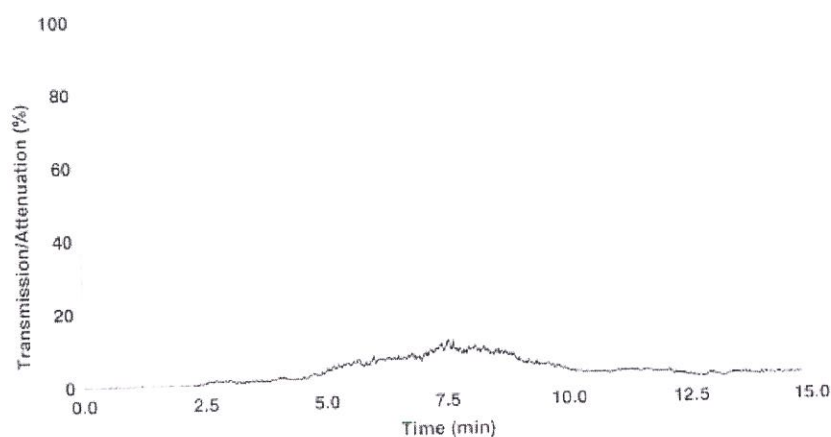
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Smoke Graph



Test name : Cross #2
File name : D:\FRPFILES\12060019.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsh (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsh (MJ/m²)
60	318	11.5	3.419	510	-	3.7	-
110	-	10.8	-	560	-	3.0	-
160	-	10.1	-	610	-	2.5	-
210	-	9.4	-	660	-	2.2	-
260	-	8.3	-	710	-	1.8	-
310	-	7.2	-	760	-	1.6	-
360	-	6.2	-	810	-	1.4	-
410	-	5.3	-	860	-	1.2	-
460	-	4.4	-	910	-	1.1	-

Comments

Specimen extinguished naturally.

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Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2002
 Laboratory : TÜV Rheinland Nederland B.V.
 Sponsor : Forbo 89201816
 Date of test : Jun. 05 2012

 Specimen description : Marmoleum Real Fr MT12-35597.01
 Test name : Cross #3
 File name : D:\FRPFILES\12060020.CSV
 Test number in series : 4

 Flux calibration file name : C:\FRPSOFT\CALIB\FLX12006.CSV

 Thickness (mm) :
 Density (kg/m³) :

 Test duration : 13 minutes 53 seconds (833 s)
 Substrate used? : Yes
 Substrate : Particle board
 Fixing method : adhesive
 Conditioned? : Yes
 Conditioning temp. (°C) : 23
 Conditioning RH (%) : 50

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Test Results

Time to ignition : 2 minutes 03 seconds (123 s)
 Time to flameout : 13 minutes 49 seconds (829 s)
 Extent of burning (mm) : 130
 Critical flux at extinguishment (kW/m²) : 10.5
 HF-10 (kW/m²) : 10.5
 HF-20 (kW/m²) : >= 10.9
 HF-30 (kW/m²) : >= 10.9
 Flame spread at 10 minutes (mm) : 130
 Flame spread at 20 minutes (mm) : -1
 Flame spread at 30 minutes (mm) : -1
 Peak light attenuation (%) : 11.93
 Time to peak light attenuation : 10 minutes 31 seconds (631 s)
 Total integrated smoke (%.min) : 55.91

Potential classification : A2(f1)/B(f1)
Smoke production classification : s1

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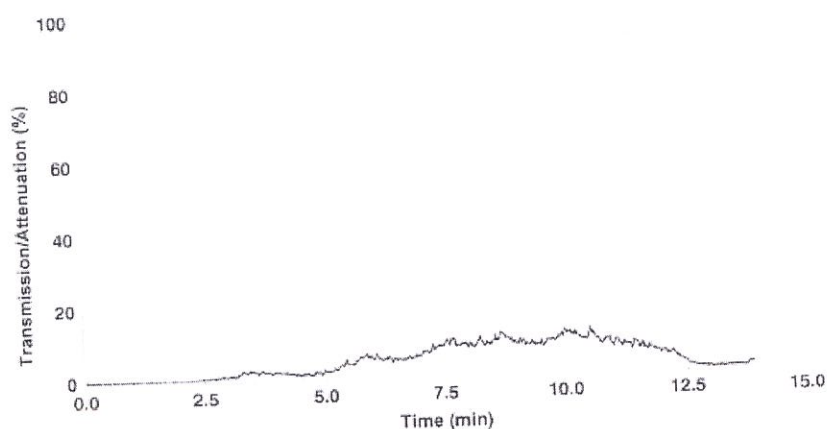
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Smoke Graph



Test name : Cross #3
File name : D:\FRPFILES\12060020.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	371	11.5	3.989	510	-	3.7	-
110	562	10.8	5.688	560	-	3.0	-
160	-	10.1	-	610	-	2.5	-
210	-	9.4	-	660	-	2.2	-
260	-	8.3	-	710	-	1.8	-
310	-	7.2	-	760	-	1.6	-
360	-	6.2	-	810	-	1.4	-
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.