

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

Forbo Flooring B.V.
Att. Mr. K. Brocke
Industrieweg 12
1566 JP
Assendelft
The Netherlands

TÜV Rheinland Nederland B.V.
The Netherlands

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

Parking and delivery:
Josink Esweg 10
7545 PN Enschede

www.tuv.com/nl

T +31 88 888 7888

Jaring.de.Wolff@nl.tuv.com

Report

Project number: 89208969
Report number: 89208969.01br

Date
11/12/2015

Received:
A linoleum floor covering tile, marked as: "Marmoleum Click";
TÜV-reference: MT15-84437.01

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Sampling procedure:
The samples are selected by the applicant. The test house has had no influence on the sampling procedure.

Phone number client
+31 (0) 75 6477 604

The samples have been received on 24/11/2015.

Fax number client
+31 (0) 75 6477 711

Order:
Classification of burning behavior according to EN 13501-1:2007+ A1:2009.

Article
Marmoleum click

Test methods: Ignitability of products subjected to direct impingement of flame (ISO 11925-2:2010/C1:2011) and determination of the burning behavior using a radiant heat source (ISO 9239-1:2010)

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

Results:
See page three and four.

Appendix:
See page five up to and including twelve.

PRODUCT IDENTIFICATION

Applicant : Forbo Flooring B.V.
Name : Marmoleum Click*
Type of colouring/patterning : plain
Type of product : linoleum tile with corkment backing
Batch number : 763363*
Dessin number : 2725*
Production date : 30/09/2015*
Total thickness (mm) : 9.8*
Total weight (gr/m²) : 9111**
Size tiles (mm x mm) : 300 x 300

* Applicant's declaration

** Indicative measurement by the testhouse

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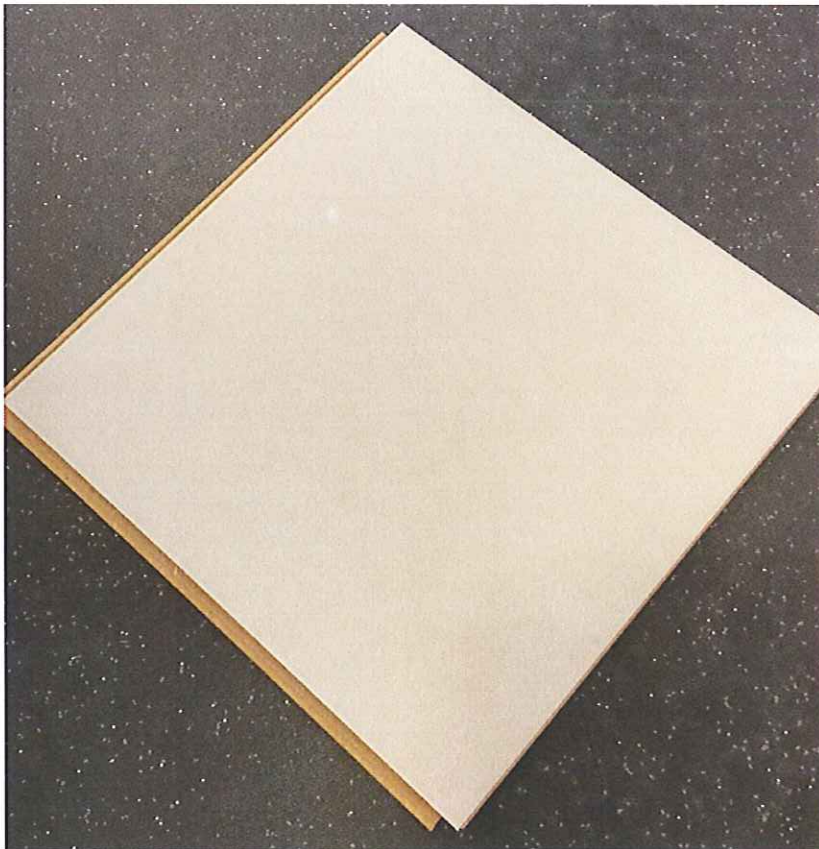


Figure 1. Picture of the received sample

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TEST RESULTS

Ignitability of products subjected to direct impingement of flame

Method EN ISO 11925-2 :2010/C1:2011

Date of testing : 30/11/2015

Conditioning time, climate : ≥ 5 days, 23 ± 2 °C and 50 ± 5 %

Description of substrate : Fibre cement board, 8 ± 2 mm, 1800 ± 200 kg/m³ conforming to EN 13238.

Flame application : Surface.

Flame application time : 15 seconds.

Orientation:	Length			Width		
Total burning time ¹	15	15	15	15	15	15
Flame tip reaches 150 mm (s)	No	No	No	No	No	No
Extent of damaged area, length (mm)	40	46	42	38	42	43
Extent of damaged area, width (mm)	9	10	9	10	9	10
Material melts (yes/no)	No	No	No	No	No	No
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

Determination of the burning behavior using a radiant heat source

Method EN ISO 9239-1:2010

Date of testing : 30/11/2015 and 01/12/2015

Conditioning time, climate : ≥ 5 days, 23 ± 2 °C and 50 ± 5 %

Description of substrate : Fibre cement board, 8 ± 2 mm, 1800 ± 200 kg/m³ conforming to EN 13238.

Sampling procedure : By contractor.

Description of cleaning used : None.

Fixing method : None, sample is tested loose laid on the substrate.

Test specimen, orientation	Flame spread (cm)	CRF (kW/m ²)	Peak light attenuation (%)	Smoke production (%.min)
1, Length	38.0	5.8	39.0	251
2, Width	33.0	6.8	39.5	234
3, Length	38.0	5.8	40.9	245
4, Length	36.0	6.1	42.8	236
Mean, Length	37.3	5.9	40.9	244

Specimen 1, 2, 3 and 4: No flashing, transitory- or sustained flaming are observed.

Specimen 2 & 4: Extinguished naturally before the end of the test duration

Specimen 1 & 3: Extinguished manually after the end of the test duration

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CONCLUSION

According to EN 13501-1:2007+ A1:2009 the tested sample of the aforementioned quality "Marmoleum Click", in relation to its reaction to fire behaviour is classified: C_n.

The additional classification in relation to smoke production is: s1.

The aforementioned quality meets the requirement of reaction to fire classification: C _n – s1

The classification is valid for the following end use applications:

- End use substrates of classes A1 and A2-s1,d0 , for example fibre cement board.
- Any way of fixation, glued down or loose laid.

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 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.

This document does not represent type approval or certification of the product.

Author:
Mr. J. de Wolff



Review:
Mr. R. Boerboom



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(End of report)

APPENDIX I: Flooring Radiant Panel Single Specimen Report

Report produced with the Fire Testing Technology FRPSoft software

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Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010
Laboratory : TÜV Rheinland Nederland B.V.
Sponsor : Forbo Flooring BV 89208969
Date of test : Dec. 01 2015

Specimen description : Marmoleum Click MT15-84437.01
Test name : Prod #1
File name : D:\FRPFILES\15120001.CSV
Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX15013.CSV

Thickness (mm) :
Density (kg/m³) :

Test duration : 30 minutes (1800 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 04 seconds (124 s)
Time to flameout : 30 minutes (1800 s)
Extent of burning (mm) : 380
Critical flux at extinguishment (kW/m²) : 5.76
HF-10 (kW/m²) : 7.95
HF-20 (kW/m²) : 6.75
HF-30 (kW/m²) : 5.76
Flame spread at 10 minutes (mm) : 260
Flame spread at 20 minutes (mm) : 330
Flame spread at 30 minutes (mm) : 380
Peak light attenuation (%) : 39.03
Time to peak light attenuation : 7 minutes 58 seconds (478 s)
Total integrated smoke (%.min) : 251.25

Potential classification : C(0)
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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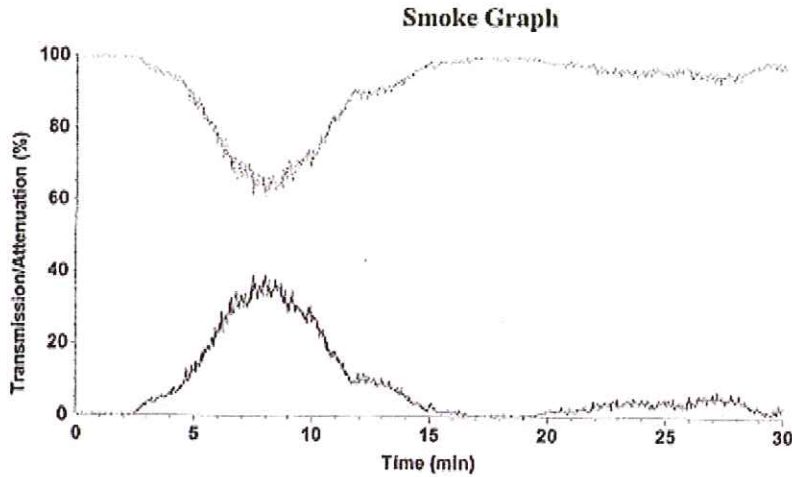
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Test name : Prod #1
File name : D:\FRPFILES\15120001.CSV

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	245	11.3	2.776	510	-	3.5	-
110	341	10.5	3.564	560	-	3.0	-
160	410	9.7	3.970	610	-	2.5	-
210	486	8.8	4.275	660	-	2.2	-
260	596	7.9	4.736	710	-	1.9	-
310	788	7.2	5.639	760	-	1.5	-
360	1612	6.1	9.891	810	-	1.2	-
410	-	5.2	-	860	-	1.2	-
460	-	4.3	-	910	-	1.1	-

Comments

Specimen was extinguished manually after end of test.

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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Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010
 Laboratory : TÜV Rheinland Nederland B.V.
 Sponsor : Forbo Flooring BV 89208969
 Date of test : Dec. 01 2015

Specimen description : Marmoleum Click MT15-84437.01
 Test name : Prod #3
 File name : D:\FRPFILES\M15120003.CSV
 Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX15013.CSV

Thickness (mm) :
 Density (kg/m³) :

Test duration : 30 minutes (1800 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 03 seconds (123 s)
 Time to flameout : 30 minutes (1800 s)
 Extent of burning (mm) : 380
 Critical flux at extinguishment (kW/m²) : 5.76
 HF-10 (kW/m²) : 7.79
 HF-20 (kW/m²) : 6.34
 HF-30 (kW/m²) : 5.76
 Flame spread at 10 minutes (mm) : 270
 Flame spread at 20 minutes (mm) : 350
 Flame spread at 30 minutes (mm) : 380
 Peak light attenuation (%) : 40.91
 Time to peak light attenuation : 7 minutes 36 seconds (456 s)
 Total integrated smoke (%.min) : 244.52

Potential classification : C(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.

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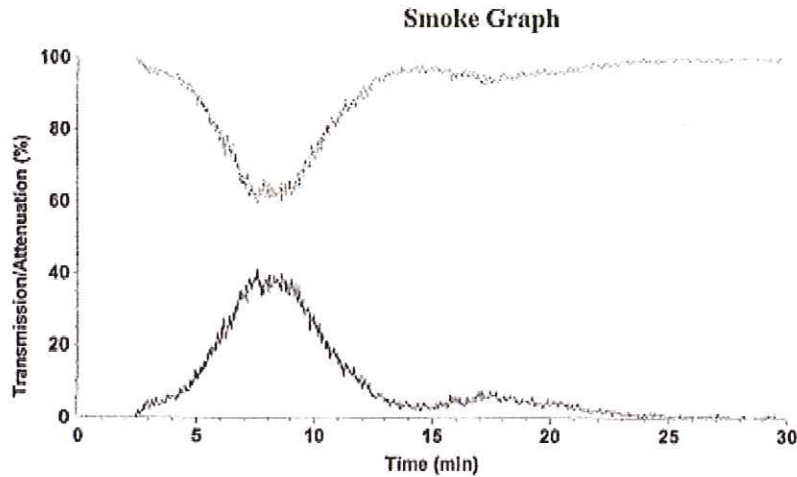
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Test name : Prod #3
File name : D:\FRPFILES\15120003.CSV

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	270	11.3	3.059	510	-	3.5	-
110	348	10.5	3.637	560	-	3.0	-
160	426	9.7	4.125	610	-	2.5	-
210	475	8.8	4.179	660	-	2.2	-
260	581	7.9	4.617	710	-	1.9	-
310	807	7.2	5.775	760	-	1.5	-
360	1349	6.1	8.277	810	-	1.2	-
410	-	5.2	-	860	-	1.2	-
460	-	4.3	-	910	-	1.1	-

Comments

Specimen was extinguished manually after end of test.

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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Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010
Laboratory : TÜV Rheinland Nederland B.V.
Sponsor : Forbo Flooring BV 89208969
Date of test : Dec. 01 2015

Specimen description : Forbo Flooring MT15-84437.01
Test name : Prod #4
File name : D:\FRPFILES\15120004.CSV
Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9\CALIB\FLX15013.CSV

Thickness (mm) :
Density (kg/m³) :

Test duration : 29 minutes 22 seconds (1762 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 03 seconds (123 s)
Time to flameout : 29 minutes 18 seconds (1758 s)
Extent of burning (mm) : 360
Critical flux at extinguishment (kW/m²) : 6.14
HF-10 (kW/m²) : 7.63
HF-20 (kW/m²) : 6.34
HF-30 (kW/m²) : Not calculated (test duration < 30 minutes)
Flame spread at 10 minutes (mm) : 280
Flame spread at 20 minutes (mm) : 350
Flame spread at 30 minutes (mm) : Not measured
Peak light attenuation (%) : 42.8
Time to peak light attenuation : 8 minutes 15 seconds (495 s)
Total integrated smoke (%.min) : 235.45
Potential classification : C(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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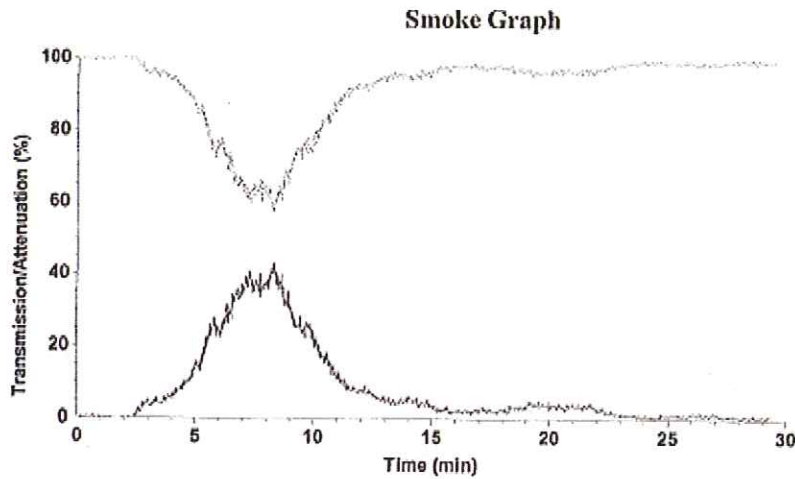
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Test name : Prod #4
File name : D:\FRPFILES\15120004.CSV

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	238	11.3	2.696	510	-	3.5	-
110	367	10.5	3.836	560	-	3.0	-
160	402	9.7	3.893	610	-	2.5	-
210	469	8.8	4.126	660	-	2.2	-
260	541	7.9	4.299	710	-	1.9	-
310	742	7.2	5.310	760	-	1.5	-
360	1679	6.1	10.302	810	-	1.2	-
410	-	5.2	-	860	-	1.2	-
460	-	4.3	-	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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Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010
Laboratory : TÜV Rheinland Nederland B.V.
Sponsor : Forbo Flooring BV 89208969
Date of test : Dec. 01 2015

Specimen description : Marmoleum Click MT15-84437.01
Test name : Cross #2
File name : D:\FRPFILES\15120002.CSV
Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX15013.CSV

Thickness (mm) :
Density (kg/m³) :

Test duration : 21 minutes 56 seconds (1316 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 05 seconds (125 s)
Time to flameout : 21 minutes 52 seconds (1312 s)
Extent of burning (mm) : 330
Critical flux at extinguishment (kW/m²) : 6.75
HF-10 (kW/m²) : 7.79
HF-20 (kW/m²) : 6.75
HF-30 (kW/m²) : Not calculated (test duration < 30 minutes)
Flame spread at 10 minutes (mm) : 270
Flame spread at 20 minutes (mm) : 330
Flame spread at 30 minutes (mm) : Not measured
Peak light attenuation (%) : 39.49
Time to peak light attenuation : 7 minutes 53 seconds (473 s)
Total integrated smoke (%.min) : 233.76

Potential classification : C(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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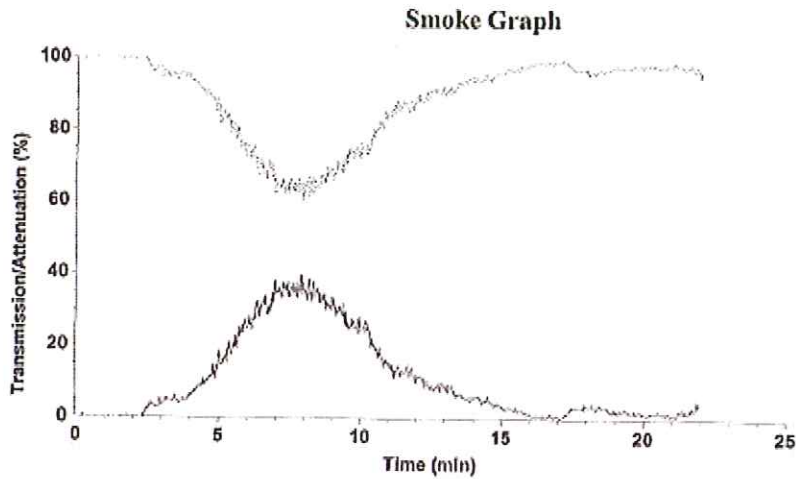
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Test name : Cross #2
File name : D:\FRPFILES\15120002.CSV

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	251	11.3	2.844	510	-	3.5	-
110	332	10.5	3.470	560	-	3.0	-
160	402	9.7	3.893	610	-	2.5	-
210	476	8.8	4.187	660	-	2.2	-
260	570	7.9	4.530	710	-	1.9	-
310	730	7.2	5.224	760	-	1.5	-
360	-	6.1	-	810	-	1.2	-
410	-	5.2	-	860	-	1.2	-
460	-	4.3	-	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.