TÜV Rheinland Nederland B.V.

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Date
08-01-2015

Project number
89204965

Report number
89204965.07br

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Article
Corkment

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

Report

Project number : 89204965
Report number : 89204965.07br

Received:
A sample of floorcovering marked as: **"Corkment"**
TÜV-reference MT14-38835.07
The samples have been received on 20-11-2014.

Product specifications received from the applicant:

Commercial name	: Corkment
Product type	: Linoleum
Total thickness (mm)	: 2.0
Total mass per unit area (g/m^2)	: 1300
Batch number	: 51779
Used adhesive	: Eurocol Eurosafe Cork 530
Date of fixation	: 5-11-2014

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

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

Test method:

Ignitability	: EN ISO 11925-2:2010
Reaction to fire (radiant panel)	: EN ISO 9239-1:2010

Results:
See page two and three.

Appendix:
See page four up to and including eleven.

TEST RESULTS

➢ *Ignitability EN ISO 11925-2:2010*

Date of testing : 01-12-2014
Conditioning time, climate : ≥ 7 days, 23 ± 2 °C and 50 ± 5 % R.H.
Description of substrate : Fibre cement board, 8±2 mm, 1800±200 kg/m^3
Flame application : Surface
Application time : 15 seconds

Direction:	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)	68	61	58	58	60	61
Extent of damaged area, width (mm)	14	14	13	13	15	15
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 Including a flame application time of 15 seconds with surface impingement.
2 Shrinks away from flame without being ignited.
3 The time at which it occurs and its duration.

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

Date of testing : 2-12-2014 and 9-12-2014
Conditioning time, climate : ≥ 7 days, 23 ± 2 °C and 50 ± 5 % R.H.
Description of substrate : Wooden substrate, received from applicant
Sampling procedure : By applicant
Description of cleaning used : None
Fixing method : Fixed by applicant with Eurocol Eurosafe Cork 530 on 5-11-2014

Test specimen, orientation	Flame spread (cm)	CRF (kW/m^2)	Peak light attenuation (%)	Smoke production (%.min)
1, ↑	60.0	2.6	14.7	121
2, ⊥	64.0	2.3	18.1	167
3, ⊥	64.0	2.4	19.0	163
4, ⊥	64.0	2.4	47.0	200
Mean$_{2-4}$	**64.0**	**2.4**	**28.0**	**167**

Remarks: Flashing, transitory- or sustained flaming observed.
All four tested specimen were extinguished manually after the end of the test.

CONCLUSION

According to EN 13501-1:2007+ A1:2009 the tested sample of the aforementioned quality **"Corkment"**, in relation to its reaction to fire behaviour is classified: $\mathbf{E_{fl}}$.
The additional classification in relation to smoke production is: **s1.**

The aforementioned quality meets the requirement of reaction to fire classification: $\mathbf{E_{fl} - s1}$

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.

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.

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

Author:
Mr. J. de Wolff

Review:
Mr. R. Boerboom

APPENDIX I: Flooring Radiant Panel Single Specimen Report

Flooring Radiant Panel Single Specimen Report

Standard	: EN ISO 9239-1:2002
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: Forbo Flooring 89204965
Date of test	: Dec. 02 2014
Specimen description	: Corkment MT14-38835.07
Test name	: Prod #1
File name	: D:\FRPFILES\14120011.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT\CALIB\FLX14018.CSV
Thickness (mm)	:
Density (kg/m³)	:
Test duration	: 30 minutes (1800 s)
Substrate used?	: Yes
Substrate	: Particle board
Fixing method	: none
Conditioned?	: Yes
Conditioning temp. (°C)	: 23
Conditioning RH (%)	: 50

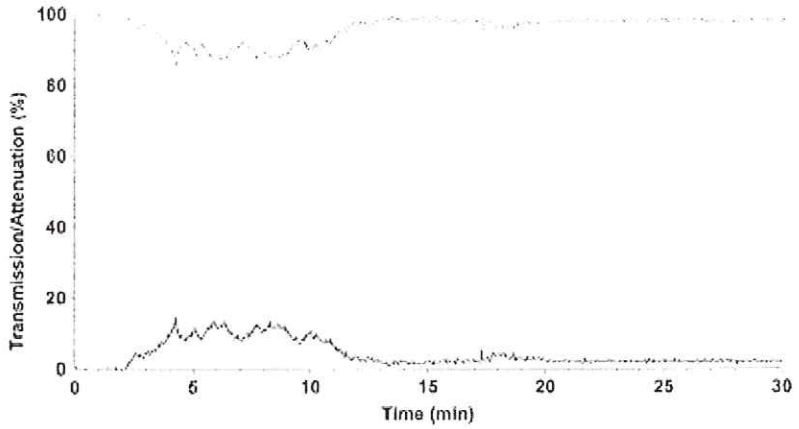
Test Results

Time to ignition	: 2 minutes 01 seconds (121 s)
Time to flameout	: 30 minutes (1800 s)
Extent of burning (mm)	: 600
Critical flux at extinguishment (kW/m²)	: 2.62
HF-10 (kW/m²)	: 6.53
HF-20 (kW/m²)	: 3.45
HF-30 (kW/m²)	: 2.62
Flame spread at 10 minutes (mm)	: 340
Flame spread at 20 minutes (mm)	: 520
Flame spread at 30 minutes (mm)	: 600
Peak light attenuation (%)	: 14.74
Time to peak light attenuation	: 4 minutes 17 seconds (257 s)
Total integrated smoke (%.min)	: 121.49
Potential classification	**: E(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

Smoke Graph



Test name : Prod #1
File name : D:\FRPFILES\14120011.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	181	11.3	1.903	510	1161	3.6	3.470
110	240	10.5	2.368	560	1421	3.0	3.595
160	304	9.9	2.766	610	-	2.5	-
210	370	9.1	2.992	660	-	2.1	-
260	447	8.1	3.189	710	-	1.8	-
310	545	7.1	3.339	760	-	1.5	-
360	651	6.1	3.383	810	-	1.3	-
410	798	5.2	3.442	860	-	1.2	-
460	946	4.3	3.376	910	-	1.1	-

Comments

Specimen was extinguished manually after end of test.

APPENDIX I: Flooring Radiant Panel Single Specimen Report

Flooring Radiant Panel Single Specimen Report

Standard	: EN ISO 9239-1:2002
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: Forbo Flooring 89204965
Date of test	: Dec. 02 2014
Specimen description	: Corkment MT14-38835.07
Test name	: Cross #1
File name	: D:\FRPFILES\14120012.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT\CALIB\FLX14018.CSV
Thickness (mm)	:
Density (kg/m³)	:
Test duration	: 30 minutes (1800 s)
Substrate used?	: Yes
Substrate	: Particle board
Fixing method	: none
Conditioned?	: Yes
Conditioning temp. (°C)	: 23
Conditioning RH (%)	: 50

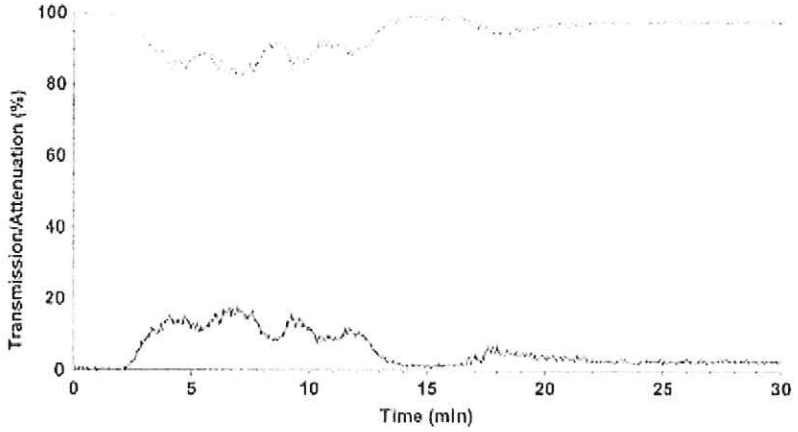
Test Results

Time to ignition	: 2 minutes 01 seconds (121 s)
Time to flameout	: 30 minutes (1800 s)
Extent of burning (mm)	: 640
Critical flux at extinguishment (kW/m²)	: 2.29
HF-10 (kW/m²)	: 6.33
HF-20 (kW/m²)	: 3.34
HF-30 (kW/m²)	: 2.29
Flame spread at 10 minutes (mm)	: 350
Flame spread at 20 minutes (mm)	: 530
Flame spread at 30 minutes (mm)	: 640
Peak light attenuation (%)	: 18.11
Time to peak light attenuation	: 6 minutes 54 seconds (414 s)
Total integrated smoke (%.min)	: 167.07
Potential classification	**: E(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

Smoke Graph



Test name : Cross #1
File name : D:\FRPFILES\14120012.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	172	11.3	1.808	510	1110	3.6	3.318
110	223	10.5	2.200	560	1334	3.0	3.375
160	277	9.9	2.520	610	1618	2.5	3.459
210	341	9.1	2.757	660	-	2.1	-
260	420	8.1	2.996	710	-	1.8	-
310	515	7.1	3.155	760	-	1.5	-
360	613	6.1	3.186	810	-	1.3	-
410	743	5.2	3.205	860	-	1.2	-
460	904	4.3	3.226	910	-	1.1	-

Comments

Specimen was extinguished manually after end of test.

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Flooring Radiant Panel Single Specimen Report

Standard	: BN ISO 9239-1:2002
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: Forbo Flooring 89204965 TLC
Date of test	: Dec. 09 2014
Specimen description	: Corkment MT14-38835.07
Test name	: Cross #2
File name	: D:\FRPFILES\14120049.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT\CALIB\FLX14019.CSV
Thickness (mm)	:
Density (kg/m³)	:
Test duration	: 30 minutes (1800 s)
Substrate used?	: Yes
Substrate	: Particle board
Fixing method	: adhesive
Conditioned?	: Yes
Conditioning temp. (°C)	: 23
Conditioning RH (%)	: 50

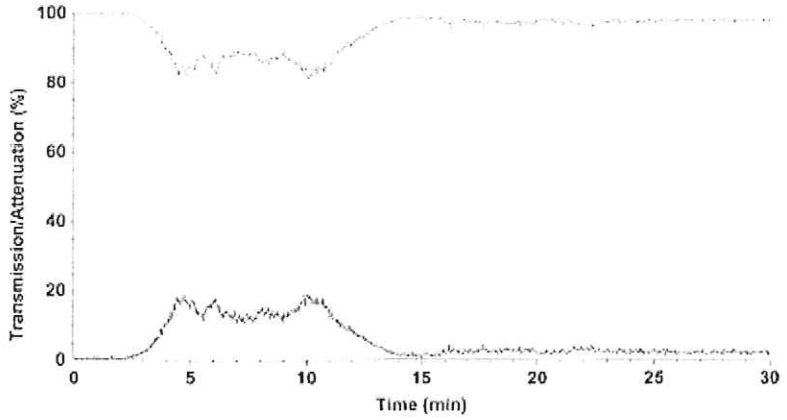
Test Results

Time to ignition	: 2 minutes 01 seconds (121 s)
Time to flameout	: 30 minutes (1800 s)
Extent of burning (mm)	: 640
Critical flux at extinguishment (kW/m²)	: 2.41
HF-10 (kW/m²)	: 6.31
HF-20 (kW/m²)	: 3.43
HF-30 (kW/m²)	: 2.41
Flame spread at 10 minutes (mm)	: 350
Flame spread at 20 minutes (mm)	: 530
Flame spread at 30 minutes (mm)	: 640
Peak light attenuation (%)	: 18.98
Time to peak light attenuation	: 9 minutes 54 seconds (594 s)
Total integrated smoke (%.min)	: 162.56
Potential classification	**: E(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

Smoke Graph



Test name : Cross #2
File name : D:\FRPFILES\14120049.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	185	11.5	1.962	510	1107	3.7	3.418
110	241	10.6	2.367	560	1344	3.1	3.539
160	291	9.8	2.594	610	1606	2.6	3.626
210	365	8.9	2.911	660	-	2.3	-
260	430	8.0	3.050	710	-	1.9	-
310	525	7.1	3.212	760	-	1.7	-
360	632	6.1	3.302	810	-	1.5	-
410	755	5.2	3.302	860	-	1.4	-
460	917	4.4	3.359	910	-	1.3	-

Comments

Specimen was extinguished manually after end of test.

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Flooring Radiant Panel Single Specimen Report

Standard	: EN ISO 9239-1:2002
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: Forbo Flooring 89204965 TLC
Date of test	: Dec. 09 2014
Specimen description	: Corkment MT14-38835.07
Test name	: Cross #3
File name	: D:\FRPFILES\14120050.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT\CALIB\FLX14019.CSV
Thickness (mm)	:
Density (kg/m³)	:
Test duration	: 30 minutes (1800 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	: 30 minutes (1800 s)
Extent of burning (mm)	: 640
Critical flux at extinguishment (kW/m²)	: 2.41
HF-10 (kW/m²)	: 5.58
HF-20 (kW/m²)	: 3.09
HF-30 (kW/m²)	: 2.41
Flame spread at 10 minutes (mm)	: 390
Flame spread at 20 minutes (mm)	: 560
Flame spread at 30 minutes (mm)	: 640
Peak light attenuation (%)	: 46.97
Time to peak light attenuation	: 4 minutes 15 seconds (255 s)
Total integrated smoke (%.min)	: 199.89
Potential classification	**: E(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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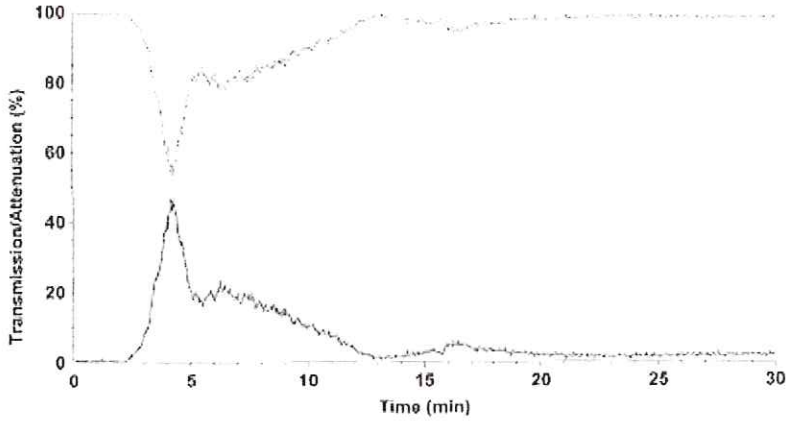
Smoke Graph



Test name : Cross #3
File name : D:\FRPFILES\14120050.CSV

Rake Results

Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)	Position (mm)	Time (s)	Flux (kW/m²)	Qsb (MJ/m²)
60	170	11.5	1.803	510	1010	3.7	3.119
110	211	10.6	2.072	560	1184	3.1	3.117
160	240	9.8	2.139	610	1479	2.6	3.340
210	284	8.9	2.265	660	-	2.3	-
260	337	8.0	2.390	710	-	1.9	-
310	430	7.1	2.631	760	-	1.7	-
360	527	6.1	2.753	810	-	1.5	-
410	646	5.2	2.826	860	-	1.4	-
460	800	4.4	2.930	910	-	1.3	-

Comments

Specimen was extinguished manually after end of test.