




Prüfbericht-Nr.: <i>Test Report No.:</i>	89214772.01br	Auftrags-Nr.: <i>Order No.:</i>	227351	Seite 1 von 14 <i>Page 1 of 14</i>	
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	4501030560	Auftragsdatum: <i>Order date:</i>	08.02.2019		
Auftraggeber: <i>Client:</i>	Forbo Flooring B.V., PO Box 13, 1560 AA Krommenie, The Netherlands				
Prüfgegenstand: <i>Test item:</i>	Resilient floor covering				
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	Marmoleum on Corkment				
Auftrags-Inhalt: <i>Order content:</i>	Classification of burning behaviour				
Prüfgrundlage: <i>Test specification:</i>	EN 13501-1:2007+ A1:2009 Classification of burning behaviour <i>Test methods: Ignitability of products subjected to direct impingement of flame (EN ISO 11925-2:2010/C1:2011) and determination of the burning behaviour using a radiant heat source (EN ISO 9239-1:2010)</i>				
Wareneingangsdatum: <i>Date of receipt:</i>	12.02.2019				
Prüfmuster-Nr.: <i>Test sample No.:</i>	MT19-227351.01				
Prüfzeitraum: <i>Testing period:</i>	12.02.2019 - 15.02.2019				
Ort der Prüfung: <i>Place of testing:</i>	Westervoortsedijk 73, 6827 AV Arnhem, Netherlands				
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland Nederland B.V				
Prüfergebnis*: <i>Test result*:</i>	Siehe Sonstiges / See Other				
geprüft von / tested by:	kontrolliert von / reviewed by:				
21.02.2019 M.A. van de Vlekkert 	21.02.2019 R. Boerboom 				
Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	
Sonstiges / Other:	Test result: See clause 4 on page 5.				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>	Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>				
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar	5 = mangelhaft N/T = nicht getestet
Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable	5 = poor N/T = not tested
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>					

v04

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Liste der verwendeten Prüfmittel
List of used test equipment

Prüfmittel <i>Test equipment</i>	Prüfmittel-Nr. / ID-Nr. <i>Equipment No. / ID-No.</i>	Nächste Kalibrierung <i>Next calibration</i>
Flooring Radiant Panel	A00929	11.12.2019
Anemometer	A01989	26.09.2020
Scales	A00769	14.09.2019
Thickness gauge	A00904	10.01.2020
Metal ruler 1	A01759	12.12.2019
Metal ruler 2	A01558	13.01.2020
Metal ruler 3	A01567	21.01.2020
Vertical ignitability test cabinet	A01576	N/A
Stopwatch	A01699	11.12.2020
Metal reference plate	A00813	12.12.2019

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Produktbeschreibung
Product description

Product identity	Marmoleum on Corkment*	Dessinnumber Marmoleum 2,5 mm	3232*
Batchnumber Marmoleum 2,5 mm	25007*	Dessinnumber Corkment 2,0 mm	1200*
Batchnumber Corkment 2,0 mm	25192*		

* applicants declaration

Figure 1, Picture of the received sample



Figure 2, Picture of the received sample (back)



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1	Construction data (indicative) of the product obtained by the testlaboratory after pre-conditioning 01-4.3-P.02-322-WI01		
	Test condition	23 ± 2°C and 50 ± 4% relative humidity	
	Pre conditioning, duration	≥ 48 h & until constant mass is achieved	
	Total thickness (mm)	22.6	
	Total mass (g/m ²)	16641	
	Density (kg/m ³)	735	
	<i>Note: the determined construction data are used for determination of constant mass, the used testmethod is not in accordance with the determination of construction data according the specification standard. Therefore the testresults should be handled as indicative.</i>		

2	Ignitability of products subjected to direct impingement of flame EN ISO 11925-2:2010/C1:2011						
	Date of testing	15.02.2019					
	Pre-conditioning, climate	23 ± 2°C and 50 ± 4% relative humidity					
	Pre-conditioning, duration	≥ 48 h & until constant mass is achieved					
	Description of substrate	Particle board, thickness 20 ± 2 mm, density 680 ± 50 kg/m ³ conforming to EN 13238:2010					
	Flame application	Surface					
	Flame application time (s)	15					
	Requirements according EN 13501-1:2007+A1:2009	See clause 5					
	Test result(s)						
	Orientation	Length			Width		
	Test sample	1	2	3	1	2	3
	Ignition of the sample	Yes	Yes	Yes	Yes	Yes	Yes
	Flame tip reached 150 mm above the application point	No	No	No	No	No	No
	Duration after application when the flame tip reached the 150 mm above the application point (s)	N/A	N/A	N/A	N/A	N/A	N/A
	Extent of damaged area, length (mm)	25	27	28	22	22	24
	Extent of damaged area, width (mm)	12	12	12	11	11	12
	Material melts	Yes	Yes	Yes	Yes	Yes	Yes
Shrinks away from flame without being ignited	No	No	No	No	No	No	
After glowing	No	No	No	No	No	No	
Flaming droplets/particles which caused ignition of filter paper	No	No	No	No	No	No	

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3	Determination of the burning behaviour using a radiant heat source <i>EN ISO 9239-1:2010</i>					
	Date of testing	15.02.2019				
	Pre-conditioning, climate	23 ± 2°C and 50 ± 4% relative humidity				
	Pre-conditioning, duration	≥ 48 h & until constant mass is achieved				
	Description of substrate	Particle board, thickness 20 ± 2 mm, density 680 ± 50 kg/m ³ conforming to EN 13238:2010				
	Fixing method	The samples are glued to the substrate with Eurocol 614.				
	Requirements according EN 13501-1:2007+ A1:2009	See clause 5				
	Test result(s)					
	Test sample	1	2	3	4	Mean
	Orientation (Length: ↑, Width: T)	↑	T	T	T	T
	Flame spread (cm)	38	40	38	37	38
	CHF / HF-30 (kW/m ²)	5.9	5.5	5.9	6.1	5.8
	Maximum light attenuation (%)	63.4	68.2	69.4	71.2	69.6
	Smoke production (%.min)	463	426	426	389	414
Observations: Specimen 1, 2, 3 and 4: No flashing, transitory- or sustained flaming are observed. Specimen 1, 2, 3 and 4: Extinguished naturally before the end of the test duration.						

4	Classification of burning behaviour <i>EN 13501-1:2007+A1:2009</i>	
	The product, Marmoleum on Corkment , in relation to its reaction to fire behaviour is classified:	C_{fl}
	The additional classification in relation to smoke production is:	s1
	Reaction to fire classification : C_{fl} – s1	
	Field of application <ul style="list-style-type: none"> - As a floor covering in accordance with the nominal product parameters given on page 3. - On end use substrates of wood and of classes A1 and A2-s1,d0 according to EN 13238:2010. - Glued down with Eurocol 614. 	
Statements <ul style="list-style-type: none"> - This document does not represent type approval or certification of the product. - 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 validity of this report will expire directly after alterations or modifications of the examined product (combination)(s) and/or the criteria. 		

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5	Potential classes of reaction to fire performance for floorings			
	EN 13501-1:2007+A1:2009			
	Class	Test method(s)	Classification criteria	
	A1 _{fi}	EN ISO 1182 ^a and	$\Delta T \leq 30 \text{ °C}$; and $\Delta m \leq 50 \%$; and $t_f = 0$ (i.e. no sustained flaming)	-
		EN ISO 1716	$PCS \leq 2.0 \text{ MJ/kg}^a$ and $PCS \leq 2.0 \text{ MJ/m}^2^b$ and $PCS \leq 1.4 \text{ MJ/m}^2^c$ and $PCS \leq 2.0 \text{ MJ/kg}^d$	-
	A2 _{fi}	EN ISO 1182 ^a or	$\Delta T \leq 50 \text{ °C}$ and $\Delta m \leq 50 \%$ and $t_f \leq 20 \text{ s}$	-
		EN ISO 1716 and	$PCS \leq 3.0 \text{ MJ/kg}^a$ and $PCS \leq 4.0 \text{ MJ/m}^2^b$ and $PCS \leq 4.0 \text{ MJ/m}^2^c$ and $PCS \leq 3.0 \text{ MJ/kg}^d$	-
		EN ISO 9239-1 ^e	$CHF \geq 8.0 \text{ kW/m}^2$	Smoke production ^g
	B _{fi}	EN ISO 9239-1 ^e and	$CHF \geq 8.0 \text{ kW/m}^2$	Smoke production ^g
		EN ISO 11925-2 ^h : Exposure = 15 s	$F_s \leq 150 \text{ mm}$ within 20 s	-
	C _{fi}	EN ISO 9239-1 ^e and	$CHF \geq 4.5 \text{ kW/m}^2$	Smoke production ^g
		EN ISO 11925-2 ^h : Exposure = 15 s	$F_s \leq 150 \text{ mm}$ within 20 s	-
	D _{fi}	EN ISO 9239-1 ^e and	$CHF \geq 3.0 \text{ kW/m}^2$	Smoke production ^g
		EN ISO 11925-2 ^h : Exposure = 15 s	$F_s \leq 150 \text{ mm}$ within 20 s	-
E _{fi}	EN ISO 11925-2 ^h : Exposure = 15 s	$F_s \leq 150 \text{ mm}$ within 20 s	-	
F _{fi}	No performance determined			
^a	For homogeneous products and substantial components of non-homogeneous products.			
^b	For any external non-substantial component of non-homogeneous products.			
^c	For any internal non-substantial component of non-homogeneous products.			
^d	For the product as a whole.			
^e	Test duration = 30 min.			
^f	Critical flux is defined as the radiant flux at which the flame extinguishes or the radiant flux after a test period of 30 min, whichever is the lower (i.e. the flux corresponding with the furthest extent of spread of flame).			
^g	s1 = Smoke $\leq 750 \%$ minutes; s2 = not s1.			
^h	Under conditions of surface flame attack and, if appropriate to the end use application of the product, edge flame attack.			

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Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010
 Laboratory : TÜV Rheinland Nederland B.V.
 Sponsor : Forbo
 Date of test : Feb. 15 2019

Specimen description : 89214772 Marmoleum on Corkment
 Test name : Prod 1 MT19-227351.01
 File name : D:\FRPFILES\19020019.CSV
 Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX18009.CSV

Thickness (mm) : 22.6
 Density (kg/m³) : 735

Test duration : 26 minutes 52 seconds (1612 s)
 Substrate used? : Yes
 Substrate : ~~Calcium silicate~~ Particle board
 Fixing method : ~~none~~ Glue
 Conditioned? : Yes
 Conditioning temp. (°C) : 23
 Conditioning RH (%) : 50

Test Results

Time to ignition : 2 minutes 04 seconds (124 s)
 Time to flameout : 26 minutes 50 seconds (1610 s)
 Extent of burning (mm) : 380
 Critical flux at extinguishment (kW/m²) : 5.88
 HF-10 (kW/m²) : 7.31
 HF-20 (kW/m²) : 5.88
 HF-30 (kW/m²) : Not calculated (test duration < 30 minutes)
 Flame spread at 10 minutes (mm) : 310
 Flame spread at 20 minutes (mm) : 380
 Flame spread at 30 minutes (mm) : Not measured
 Peak light attenuation (%) : 63.4
 Time to peak light attenuation : 7 minutes 32 seconds (452 s)
 Total integrated smoke (%.min) : 462.92

Potential classification : C(f)
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.

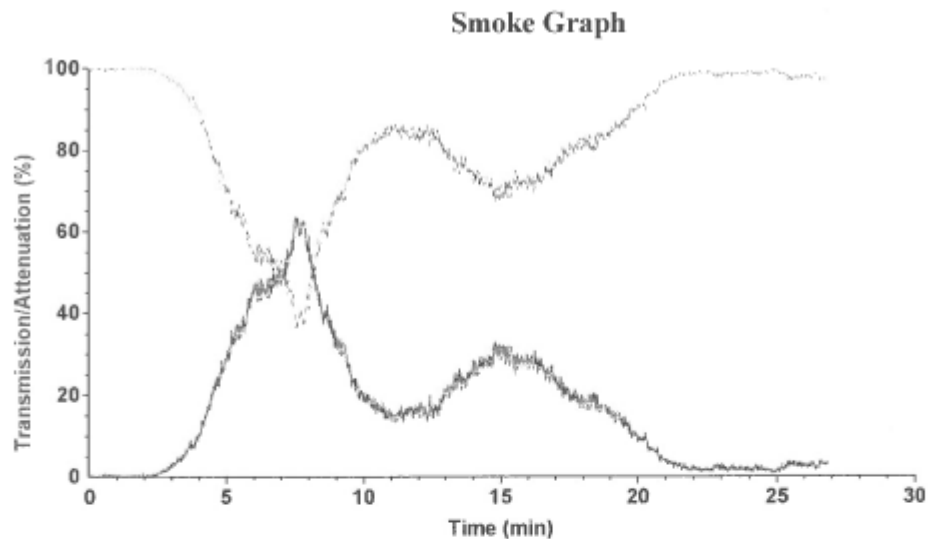
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Test name : Prod I MT19-227351.01
File name : D:\FRPFILES\19020019.CSV

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	240	11.2	2.694	510	-	3.7	-
110	289	10.5	3.039	560	-	3.1	-
160	360	9.9	3.570	610	-	2.7	-
210	420	9.2	3.864	660	-	2.3	-
260	476	8.2	3.914	710	-	2.0	-
310	582	7.3	4.252	760	-	1.6	-
360	1071	6.3	6.712	810	-	1.4	-
410	-	5.3	-	860	-	1.3	-
460	-	4.4	-	910	-	1.2	-

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
Date of test : Feb. 15 2019

Specimen description : 89214772 Marmoleum on Corkment
Test name : Cross 2 MT19-227351.01
File name : D:\FRPFILES\19020020.CSV
Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX18009.CSV

Thickness (mm) : 22.6
Density (kg/m³) : 735

Test duration : 26 minutes 47 seconds (1607 s)
Substrate used? : Yes
Substrate : ~~Calcium-silicate~~ Particle board
Fixing method : ~~none~~ Glued
Conditioned? : Yes
Conditioning temp. (°C) : 23
Conditioning RH (%) : 50

Test Results

Time to ignition : 2 minutes 04 seconds (124 s)
Time to flameout : 26 minutes 45 seconds (1605 s)
Extent of burning (mm) : 400
Critical flux at extinguishment (kW/m²) : 5.50
HF-10 (kW/m²) : 6.47
HF-20 (kW/m²) : 5.50
HF-30 (kW/m²) : Not calculated (test duration < 30 minutes)
Flame spread at 10 minutes (mm) : 350
Flame spread at 20 minutes (mm) : 400
Flame spread at 30 minutes (mm) : Not measured
Peak light attenuation (%) : 68.24
Time to peak light attenuation : 7 minutes 01 seconds (421 s)
Total integrated smoke (%.min) : 426.19
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.

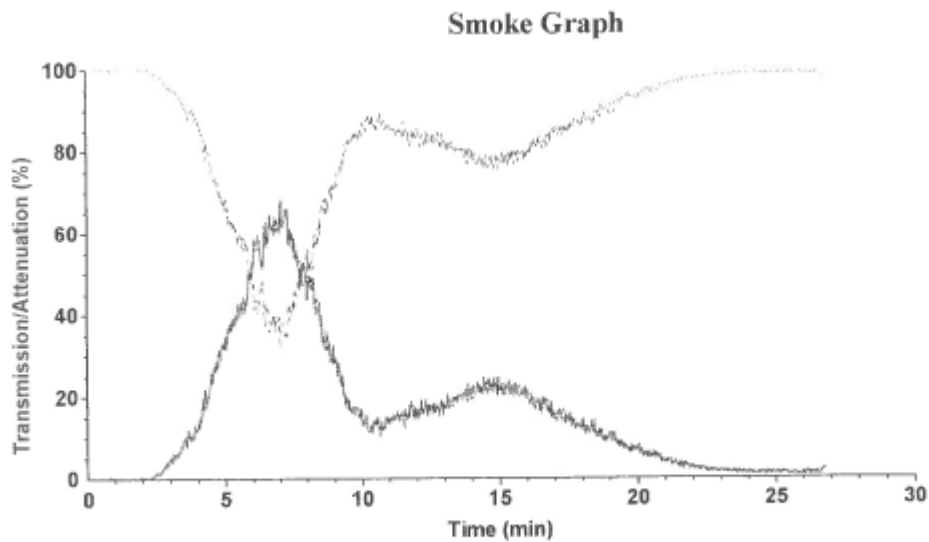
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Test name : Cross 2 MT19-227351.01
File name : D:\FRPFILES\19020020.CSV

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	221	11.2	2.481	510	-	3.7	-
110	295	10.5	3.102	560	-	3.1	-
160	344	9.9	3.411	610	-	2.7	-
210	371	9.2	3.413	660	-	2.3	-
260	411	8.2	3.379	710	-	2.0	-
310	480	7.3	3.507	760	-	1.6	-
360	623	6.3	3.904	810	-	1.4	-
410	-	5.3	-	860	-	1.3	-
460	-	4.4	-	910	-	1.2	-

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
 Date of test : Feb. 15 2019

Specimen description : 89214772 Marmoleum on Corkment
 Test name : Cross 3 MT19-227351.01
 File name : D:\FRPFILES\19020021.CSV
 Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX18009.CSV

Thickness (mm) : 22.6
 Density (kg/m³) : 735

Test duration : 23 minutes 31 seconds (1411 s)
 Substrate used? : Yes
 Substrate : ~~Calcium silicate~~ Particle board
 Fixing method : ~~none~~ Glued
 Conditioned? : Yes
 Conditioning temp. (°C) : 23
 Conditioning RH (%) : 50

Test Results

Time to ignition : 2 minutes 04 seconds (124 s)
 Time to flameout : 23 minutes 29 seconds (1409 s)
 Extent of burning (mm) : 380
 Critical flux at extinguishment (kW/m²) : 5.88
 HF-10 (kW/m²) : 6.68
 HF-20 (kW/m²) : 5.88
 HF-30 (kW/m²) : Not calculated (test duration < 30 minutes)
 Flame spread at 10 minutes (mm) : 340
 Flame spread at 20 minutes (mm) : 380
 Flame spread at 30 minutes (mm) : Not measured
 Peak light attenuation (%) : 69.35
 Time to peak light attenuation : 6 minutes 04 seconds (364 s)
 Total integrated smoke (%.min) : 426.07

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.

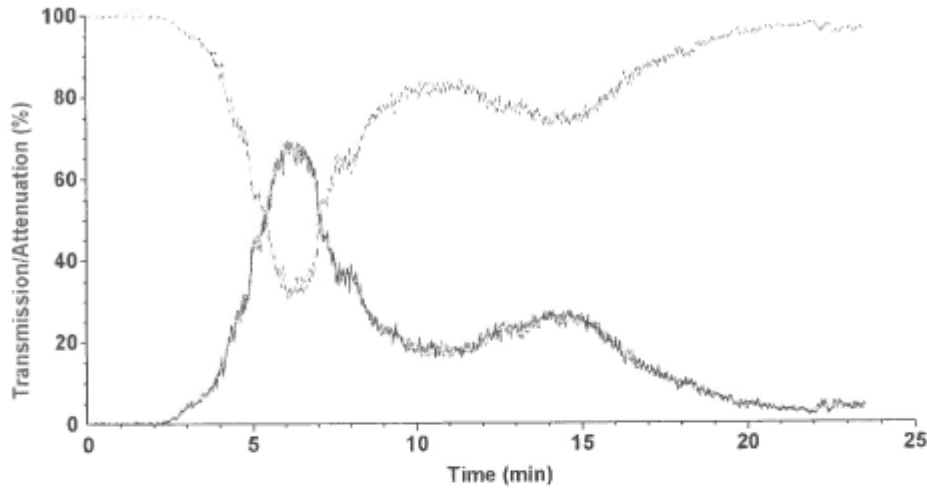
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Smoke Graph



Test name : Cross 3 MT19-227351.01
File name : D:\FRPFILES\19020021.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	228	11.2	2.559	510	-	3.7	-
110	274	10.5	2.881	560	-	3.1	-
160	313	9.9	3.104	610	-	2.7	-
210	347	9.2	3.192	660	-	2.3	-
260	395	8.2	3.248	710	-	2.0	-
310	473	7.3	3.456	760	-	1.6	-
360	723	6.3	4.531	810	-	1.4	-
410	-	5.3	-	860	-	1.3	-
460	-	4.4	-	910	-	1.2	-

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
 Date of test : Feb. 15 2019

Specimen description : 89214772 Marmoleum on Corkment
 Test name : Cross 4 MT19-227351.01
 File name : D:\FRPFILES\19020022.CSV
 Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX18009.CSV

Thickness (mm) : 22.6
 Density (kg/m³) : 735

Test duration : 23 minutes 04 seconds (1384 s)
 Substrate used? : Yes
 Substrate : ~~Calcium silicate~~ Particle board
 Fixing method : ~~none~~ Glued
 Conditioned? : Yes
 Conditioning temp. (°C) : 23
 Conditioning RH (%) : 50

Test Results

Time to ignition : 2 minutes 04 seconds (124 s)
 Time to flameout : 23 minutes 01 seconds (1381 s)
 Extent of burning (mm) : 370
 Critical flux at extinguishment (kW/m²) : 6.08
 HF-10 (kW/m²) : 6.89
 HF-20 (kW/m²) : 6.08
 HF-30 (kW/m²) : Not calculated (test duration < 30 minutes)
 Flame spread at 10 minutes (mm) : 330
 Flame spread at 20 minutes (mm) : 370
 Flame spread at 30 minutes (mm) : Not measured
 Peak light attenuation (%) : 71.19
 Time to peak light attenuation : 8 minutes 08 seconds (488 s)
 Total integrated smoke (%.min) : 389.23

Potential classification : C(f)
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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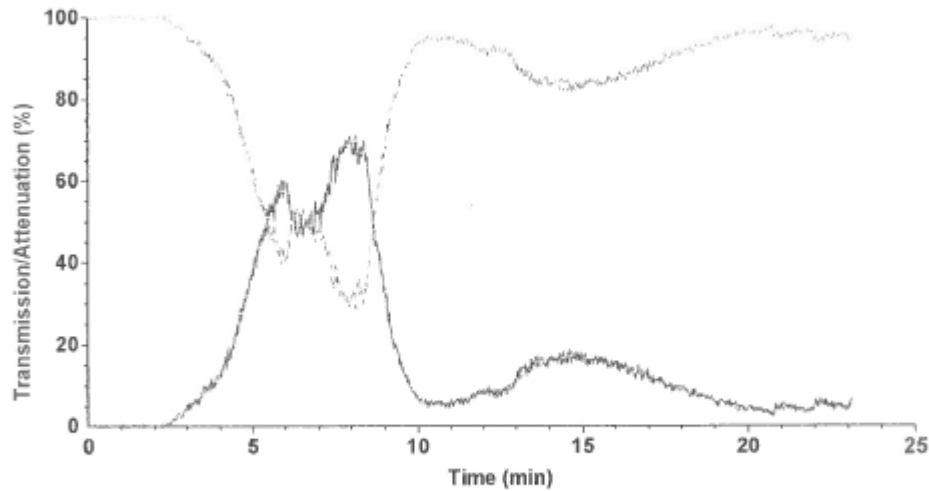
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Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation

Report produced with the Fire Testing Technology FRPSoft software

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Smoke Graph



Test name : Cross 4 MT19-227351.01
File name : D:\FRPFILES\19020022.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	224	11.2	2.514	510	-	3.7	-
110	270	10.5	2.839	560	-	3.1	-
160	322	9.9	3.193	610	-	2.7	-
210	369	9.2	3.394	660	-	2.3	-
260	411	8.2	3.379	710	-	2.0	-
310	536	7.3	3.916	760	-	1.6	-
360	1023	6.3	6.411	810	-	1.4	-
410	-	5.3	-	860	-	1.3	-
460	-	4.4	-	910	-	1.2	-

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.