


<b>Prüfbericht-Nr.:</b> <i>Test Report No.:</i>	<b>89217016.04br</b>	<b>Auftrags-Nr.:</b> <i>Order No.:</i>	171244	Seite 1 von 14 <i>Page 1 of 14</i>	
<b>Kunden-Referenz-Nr.:</b> <i>Client Reference No.:</i>	4501106473	<b>Auftragsdatum:</b> <i>Order date:</i>	12.05.2020		
<b>Auftraggeber:</b> <i>Client:</i>	Forbo Flooring B.V., PO Box 13, 1560 AA Krommenie, The Netherlands				
<b>Prüfgegenstand:</b> <i>Test item:</i>	Resilient floor covering				
<b>Bezeichnung / Typ-Nr.:</b> <i>Identification / Type No.:</i>	Marmoleum Decibel - Graphite (Particle board)				
<b>Auftrags-Inhalt:</b> <i>Order content:</i>	Classification of burning behaviour				
<b>Prüfgrundlage:</b> <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>				
<b>Wareneingangsdatum:</b> <i>Date of receipt:</i>	14.05.2020				
<b>Prüfmuster-Nr.:</b> <i>Test sample No.:</i>	MT20-171244.01				
<b>Prüfzeitraum:</b> <i>Testing period:</i>	14.05.2020 - 19.05.2020				
<b>Ort der Prüfung:</b> <i>Place of testing:</i>	Westervoortsedijk 73, 6827 AV Arnhem, Netherlands				
<b>Prüflaboratorium:</b> <i>Testing laboratory:</i>	TÜV Rheinland Nederland B.V				
<b>Prüfergebnis*:</b> <i>Test result*:</i>	Siehe Sonstiges / See Other				
<b>geprüft von / tested by:</b>		<b>kontrolliert von / reviewed by:</b>			
27.05.2020	M.A. van de Vlekkert	27.05.2020	R. Boerboom		
<b>Datum</b> <i>Date</i>	<b>Name / Stellung</b> <i>Name / Position</i>	<b>Unterschrift</b> <i>Signature</i>	<b>Datum</b> <i>Date</i>	<b>Name / Stellung</b> <i>Name / Position</i>	<b>Unterschrift</b> <i>Signature</i>
<b>Sonstiges / Other:</b>		Test result: See clause 4 on page 5.			
<b>Zustand des Prüfgegenstandes bei Anlieferung:</b> <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
<p><b>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.</b>  <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></p>					

v04



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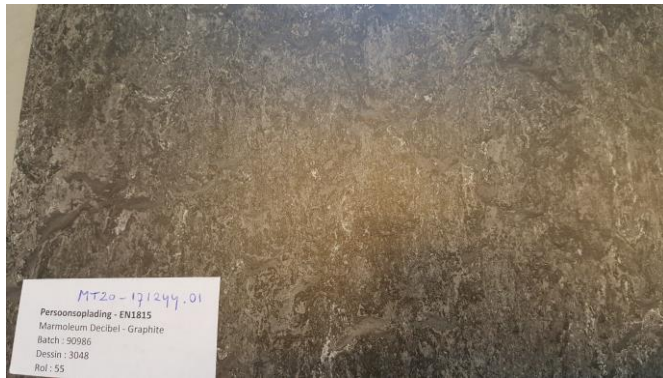
**Produktbeschreibung**  
**Product description**

Product identity	Marmoleum Decibel – Graphite (Particle board)*	Dessinnumber	3048*
Batchnumber	90986*	Roll	55*

\* applicants declaration

Figure 1, Picture of the received sample (surface)

Figure 2, Picture of the received sample (back)



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1	<b>Construction data (indicative) of the product obtained by the testlaboratory after pre-conditioning</b> 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)	21.5	
	Total mass (g/m <sup>2</sup> )	14774	
	Density (kg/m <sup>3</sup> )	689	
	<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	<b>Ignitability of products subjected to direct impingement of flame</b> EN ISO 11925-2:2010/C1:2011						
	Date of testing	19.05.2020					
	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 <sup>3</sup> conforming to EN 13238:2010					
	Flame application	Surface					
	Flame application time (s)	15					
	Requirements according EN 13501-1:2007+A1:2009	See clause 5					
	<b>Test result(s)</b>						
	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)	10	10	12	10	12	10
	Extent of damaged area, width (mm)	10	10	11	10	10	10
	Material melts	No	No	No	No	No	No
	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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<b>3</b>	<b>Determination of the burning behaviour using a radiant heat source</b> EN ISO 9239-1:2010					
	Date of testing	19.05.2020				
	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 <sup>3</sup> conforming to EN 13238:2010				
	Fixing method	The samples are glued to the substrate with Eurocol 640.				
	Requirements according EN 13501-1:2007+ A1:2009	See clause 5				
	<b>Test result(s)</b>					
	Test sample	1	2	3	4	Mean
	Orientation (Length: ↑, Width: T)	↑	T	↑	↑	↑
	Flame spread (cm)	42	42	43	42	<b>42</b>
	CHF / HF-30 (kW/m <sup>2</sup> )	5.1	5.1	4.9	5.1	<b>5.0</b>
	Maximum light attenuation (%)	89.8	90.7	92.8	91.8	<b>91.5</b>
	Smoke production (%.min)	310	258	305	274	<b>296</b>
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.						

<b>4</b>	<b>Classification of burning behaviour</b> EN 13501-1:2007+A1:2009	
	The product, <b>Marmoleum Decibel - Graphite (Particle board)</b> in relation to its reaction to fire behaviour is classified:	<b>C<sub>fl</sub></b>
	The additional classification in relation to smoke production is:	<b>s1</b>
	<b>Reaction to fire classification : C<sub>fl</sub> – s1</b>	
	Field of application <ul style="list-style-type: none"> <li>- As a floor covering in accordance with the nominal product parameters given on page 3.</li> <li>- On end use substrates of wood and of classes A1 and A2-s1,d0 according to EN 13238:2010.</li> <li>- Glued down with Eurocol 640.</li> </ul>	
Statements <ul style="list-style-type: none"> <li>- This document does not represent type approval or certification of the product.</li> <li>- 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.</li> <li>- The validity of this report will expire directly after alterations or modifications of the examined product (combination)(s) and/or the criteria.</li> </ul>		

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5	<b>Potential classes of reaction to fire performance for floorings</b>			
	EN 13501-1:2007+A1:2009			
	Class	Test method(s)	Classification criteria	
	A1 <sub>fi</sub>	EN ISO 1182 <sup>a</sup> 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 <sub>fi</sub>	EN ISO 1182 <sup>a</sup> 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 <sup>e</sup>	$CHF \geq 8.0 \text{ kW/m}^2$	Smoke production <sup>g</sup>
	B <sub>fi</sub>	EN ISO 9239-1 <sup>e</sup> and	$CHF \geq 8.0 \text{ kW/m}^2$	Smoke production <sup>g</sup>
		EN ISO 11925-2 <sup>h</sup> : Exposure = 15 s	$F_s \leq 150 \text{ mm}$ within 20 s	-
	C <sub>fi</sub>	EN ISO 9239-1 <sup>e</sup> and	$CHF \geq 4.5 \text{ kW/m}^2$	Smoke production <sup>g</sup>
		EN ISO 11925-2 <sup>h</sup> : Exposure = 15 s	$F_s \leq 150 \text{ mm}$ within 20 s	-
	D <sub>fi</sub>	EN ISO 9239-1 <sup>e</sup> and	$CHF \geq 3.0 \text{ kW/m}^2$	Smoke production <sup>g</sup>
EN ISO 11925-2 <sup>h</sup> : Exposure = 15 s		$F_s \leq 150 \text{ mm}$ within 20 s	-	
E <sub>fi</sub>	EN ISO 11925-2 <sup>h</sup> : Exposure = 15 s	$F_s \leq 150 \text{ mm}$ within 20 s	-	
F <sub>fi</sub>	No performance determined			
<sup>a</sup>	For homogeneous products and substantial components of non-homogeneous products.			
<sup>b</sup>	For any external non-substantial component of non-homogeneous products.			
<sup>c</sup>	For any internal non-substantial component of non-homogeneous products.			
<sup>d</sup>	For the product as a whole.			
<sup>e</sup>	Test duration = 30 min.			
<sup>f</sup>	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).			
<sup>g</sup>	s1 = Smoke $\leq 750 \%$ minutes; s2 = not s1.			
<sup>h</sup>	Under conditions of surface flame attack and, if appropriate to the end use application of the product, edge flame attack.			

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page 1

## Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010  
 Laboratory : TÜV Rheinland Nederland B.V.  
 Sponsor : Forbo 89217016  
 Date of test : May 19 2020

Specimen description : Marmoleum Decibel - Graphite MT20-171244.01  
 Test name : # prod 1  
 File name : D:\FRPFILES\20050004.CSV  
 Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX19003.CSV

Thickness (mm) : 21.5  
 Density (kg/m<sup>3</sup>) : 689

Test duration : 19 minutes 59 seconds (1199 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 04 seconds (124 s)  
 Time to flameout : 19 minutes 56 seconds (1196 s)  
 Extent of burning (mm) : 420  
 Critical flux at extinguishment (kW/m<sup>2</sup>) : 5.07  
 HF-10 (kW/m<sup>2</sup>) : 5.07  
 HF-20 (kW/m<sup>2</sup>) : Not calculated (test duration < 20 minutes)  
 HF-30 (kW/m<sup>2</sup>) : Not calculated (test duration < 30 minutes)  
 Flame spread at 10 minutes (mm) : 420  
 Flame spread at 20 minutes (mm) : Not measured  
 Flame spread at 30 minutes (mm) : Not measured  
 Peak light attenuation (%) : 89.83  
 Time to peak light attenuation : 4 minutes 37 seconds (277 s)  
 Total integrated smoke (%.min) : 310.13

**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.

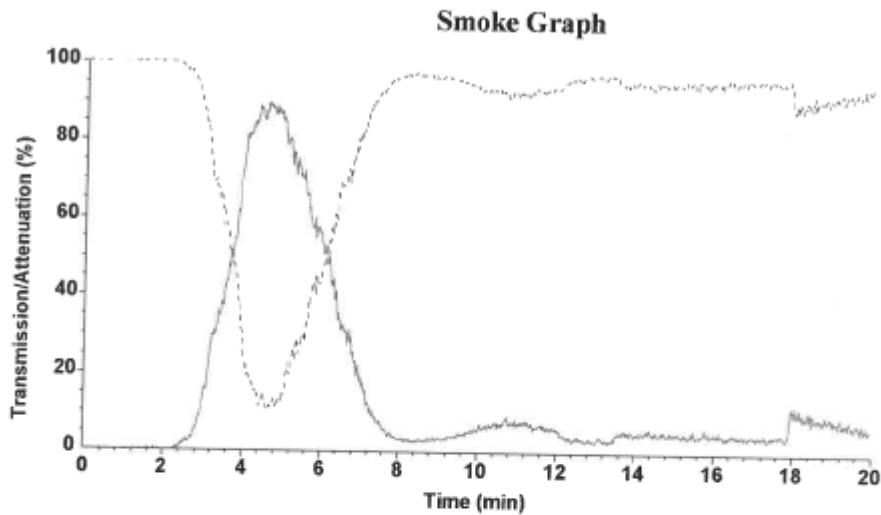
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Test name : # prod 1  
File name : D:\FRPFILES\20050004.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	178	11.1	1.973	510	-	3.7	-
110	193	10.5	2.019	560	-	3.1	-
160	209	9.9	2.078	610	-	2.7	-
210	226	9.3	2.103	660	-	2.3	-
260	241	8.3	1.995	710	-	2.0	-
310	268	7.3	1.958	760	-	1.7	-
360	296	6.2	1.844	810	-	1.5	-
410	343	5.2	1.796	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 89217016  
 Date of test : May 19 2020

Specimen description : Marmoleum Decibel - Graphite MT20-171244.01  
 Test name : # cross 2  
 File name : D:\FRPFILES\20050005.CSV  
 Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX19003.CSV

Thickness (mm) : 21.5  
 Density (kg/m<sup>3</sup>) : 689

Test duration : 17 minutes 44 seconds (1064 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 04 seconds (124 s)  
 Time to flameout : 17 minutes 41 seconds (1061 s)  
 Extent of burning (mm) : 420  
 Critical flux at extinguishment (kW/m<sup>2</sup>) : 5.07  
 HF-10 (kW/m<sup>2</sup>) : 5.07  
 HF-20 (kW/m<sup>2</sup>) : Not calculated (test duration < 20 minutes)  
 HF-30 (kW/m<sup>2</sup>) : Not calculated (test duration < 30 minutes)  
 Flame spread at 10 minutes (mm) : 420  
 Flame spread at 20 minutes (mm) : Not measured  
 Flame spread at 30 minutes (mm) : Not measured  
 Peak light attenuation (%) : 90.65  
 Time to peak light attenuation : 4 minutes 30 seconds (270 s)  
 Total integrated smoke (%.min) : 257.98

**Potential classification** : C(f)  
**Smoke production classification** : s1

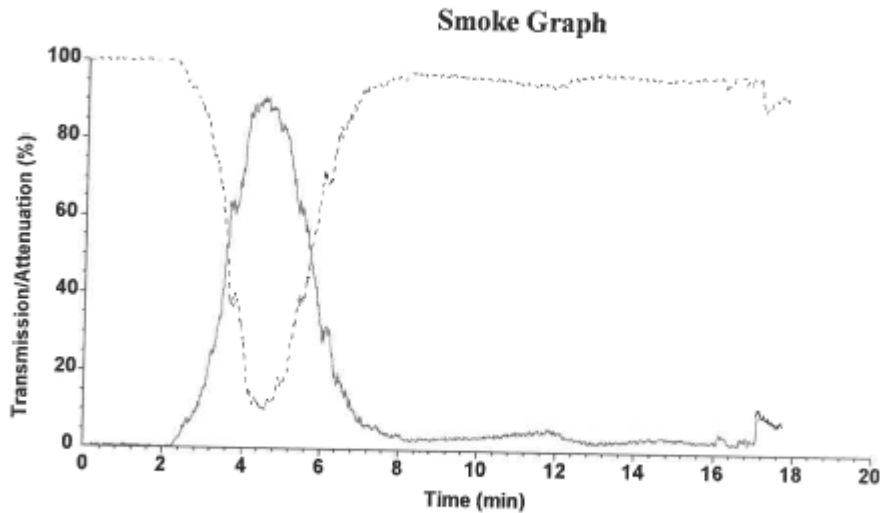
These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

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Test name : # cross 2  
File name : D:\FRPFILES\20050005.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	162	11.1	1.796	510	-	3.7	-
110	190	10.5	1.987	560	-	3.1	-
160	203	9.9	2.018	610	-	2.7	-
210	229	9.3	2.131	660	-	2.3	-
260	240	8.3	1.986	710	-	2.0	-
310	257	7.3	1.878	760	-	1.7	-
360	320	6.2	1.994	810	-	1.5	-
410	369	5.2	1.932	860	-	1.3	-
460	-	4.4	-	910	-	1.2	-

### Comments

Specimen extinguished naturally.

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## Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010  
 Laboratory : TÜV Rheinland Nederland B.V.  
 Sponsor : Forbo 89217016  
 Date of test : May 19 2020

Specimen description : Marmoleum Decibel - Graphite MT20-171244.01  
 Test name : # prod 3  
 File name : D:\FRPFILES\20050006.CSV  
 Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX19003.CSV

Thickness (mm) : 21,5  
 Density (kg/m<sup>3</sup>) : 689

Test duration : 17 minutes 24 seconds (1044 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 04 seconds (124 s)  
 Time to flameout : 17 minutes 23 seconds (1043 s)  
 Extent of burning (mm) : 430  
 Critical flux at extinguishment (kW/m<sup>2</sup>) : 4.90  
 HF-10 (kW/m<sup>2</sup>) : 4.90  
 HF-20 (kW/m<sup>2</sup>) : Not calculated (test duration < 20 minutes)  
 HF-30 (kW/m<sup>2</sup>) : Not calculated (test duration < 30 minutes)  
 Flame spread at 10 minutes (mm) : 430  
 Flame spread at 20 minutes (mm) : Not measured  
 Flame spread at 30 minutes (mm) : Not measured  
 Peak light attenuation (%) : 92.77  
 Time to peak light attenuation : 4 minutes 32 seconds (272 s)  
 Total integrated smoke (%.min) : 305.24

**Potential classification** : C(n)  
**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.

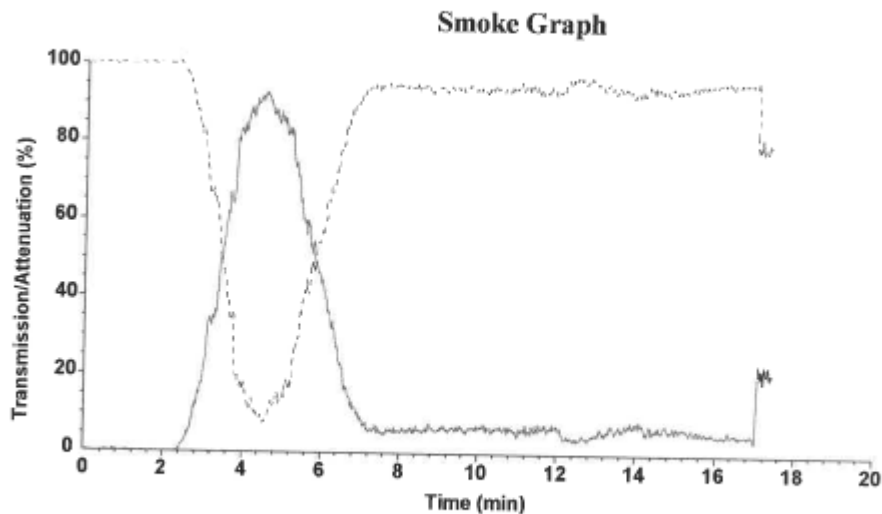
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Test name : # prod 3  
File name : D:\FRPFILES\20050006.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	161	11.1	1.785	510	-	3.7	-
110	190	10.5	1.987	560	-	3.1	-
160	202	9.9	2.008	610	-	2.7	-
210	215	9.3	2.001	660	-	2.3	-
260	232	8.3	1.920	710	-	2.0	-
310	250	7.3	1.827	760	-	1.7	-
360	270	6.2	1.682	810	-	1.5	-
410	302	5.2	1.581	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 89217016  
 Date of test : May 19 2020

Specimen description : Marmoleum Decibel - Graphite MT20-171244.01  
 Test name : # prod 4  
 File name : D:\FRPFILES\20050007.CSV  
 Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9\CALIB\FLX19003.CSV

Thickness (mm) : 21.5  
 Density (kg/m<sup>3</sup>) : 689

Test duration : 15 minutes 33 seconds (933 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 04 seconds (124 s)  
 Time to flameout : 15 minutes 31 seconds (931 s)  
 Extent of burning (mm) : 420  
 Critical flux at extinguishment (kW/m<sup>2</sup>) : 5.07  
 HF-10 (kW/m<sup>2</sup>) : 5.07  
 HF-20 (kW/m<sup>2</sup>) : Not calculated (test duration < 20 minutes)  
 HF-30 (kW/m<sup>2</sup>) : Not calculated (test duration < 30 minutes)  
 Flame spread at 10 minutes (mm) : 420  
 Flame spread at 20 minutes (mm) : Not measured  
 Flame spread at 30 minutes (mm) : Not measured  
 Peak light attenuation (%) : 91.76  
 Time to peak light attenuation : 4 minutes 33 seconds (273 s)  
 Total integrated smoke (%.min) : 273.69

**Potential classification** : C(f)  
**Smoke production classification** : s1

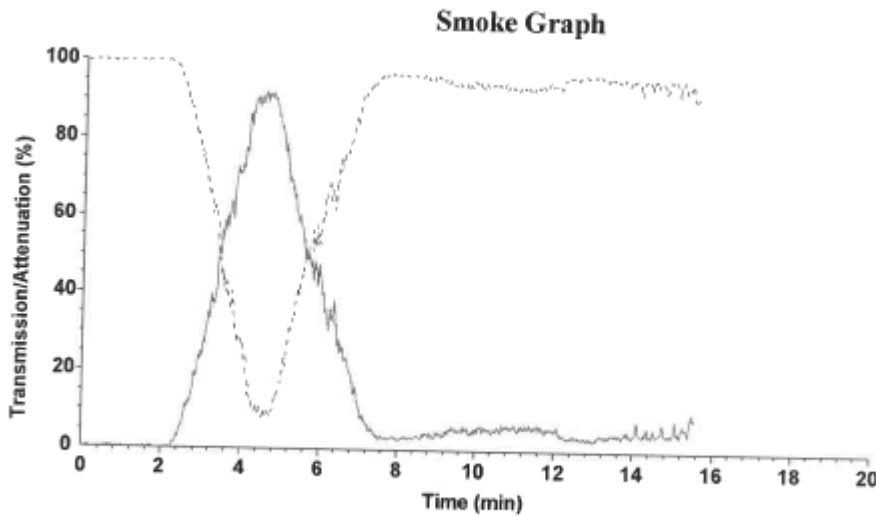
These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Prüfbericht-Nr.: 89217016.04br  
Test Report No.:

Absatz	EN 13501-1:2007+ A1:2009	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation

Report produced with the Fire Testing Technology FRPSoft software

page 2



Test name : # prod 4  
File name : D:\FRPFILES\20050007.CSV

### Rake Results

Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )	Position (mm)	Time (s)	Flux (kW/m <sup>2</sup> )	Qsb (MJ/m <sup>2</sup> )
60	154	11.1	1.707	510	-	3.7	-
110	171	10.5	1.788	560	-	3.1	-
160	193	9.9	1.919	610	-	2.7	-
210	205	9.3	1.908	660	-	2.3	-
260	226	8.3	1.871	710	-	2.0	-
310	258	7.3	1.885	760	-	1.7	-
360	275	6.2	1.714	810	-	1.5	-
410	328	5.2	1.717	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.