

<b>Test report no.:</b> <i>Testrapport nr.:</i>	<b>89223770 031</b>	<b>Order No.:</b> <i>Opdracht nr.:</i>	223770	Page 1 of 14 <i>Pagina 1 van 14</i>
<b>Client Reference No.:</b> <i>Klantreferentie nr.:</i>	4501326615	<b>Order date:</b> <i>Opdrachtdatum:</i>	12.02.2024	
<b>Client:</b> <i>Klant:</i>	Forbo Flooring B.V., PO Box 13, 1560 AA Krommenie, The Netherlands			
<b>Test item:</b> <i>Testvoorwerp:</i>	Resilient floor covering			
<b>Identification/ Type No.:</b> <i>Benaming / Type nr.:</i>	Marmoleum Sport 3.2 mm - Batch 29811			
<b>Order content:</b> <i>Inhoud opdracht:</i>	Assessment against EN ISO 9239-1 and EN ISO 11925-2 in accordance with harmonized standard EN 14041:2004/AC:2006 § 4.1 and Regulation (EU) 305/2011.			
<b>Test specification:</b> <i>Testomschrijving:</i>	EN 13501-1:2018 <sup>a</sup> Classification of burning behaviour			
<b>Date of sample receipt:</b> <i>Ontvangstdatum monster:</i>	13.02.2024			
<b>Test sample No.:</b> <i>Testproefstuk nr.:</i>	MT24-223770.19			
<b>Testing period:</b> <i>Testperiode:</i>	13.02.2024 - 20.03.2024			
<b>Place of testing:</b> <i>Testlocatie:</i>	Westervoortsedijk 73, 6827 AV Arnhem			
<b>Testing laboratory:</b> <i>Testlaboratorium:</i>	TÜV Rheinland Nederland B.V. (NB 0336)			
<b>Test result*:</b> <i>Testresultaat*:</i>	See clause 4 on page 5.			
<b>tested by:</b> <i>getest door:</i>	<input checked="" type="checkbox"/>			
<b>Date:</b> 11.04.2024 <i>Datum:</i>	Signed by: Michiel van de Vlekkert	<b>Issue Date:</b> 11.04.2024 <i>Datum uitgave:</i>	Ondertekend door: Tim Zandvliet	
<b>Position / functie:</b>	Engineer	<b>Position / functie:</b>	LFM	
<b>Others /</b> <i>Andere:</i>	The classification assigned to the product in this report is appropriate to a declaration of conformity by the manufacturer within the context of system 3 of AVCP and CE marking under the Regulation 305/2011/EU of the European Parliament and of the Council of 9 March 2011 laying down harmonised conditions for the marketing of construction products.			
<b>Condition of the test item at delivery:</b> <i>Toestand van het test voorwerp bij ontvangst:</i>	Test item complete and undamaged			
* Legend:	P(ass) = passed a.m. test specification(s)	F(ail) = failed a.m. test specification(s)	N/A = not applicable	N/T = not tested
* Legenda:	P(ass) = voldoet aan test omschrijving	F(ail) = voldoet niet aan test omschrijving	N/A = niet van toepassing	N/T = niet getest
<p><b>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.</b></p> <p><i>Dit testrapport heeft alleen betrekking op het voorgenoemde test voorwerp. Zonder toestemming van het testcentrum mag dit testrapport niet in delen worden vermenigvuldigd. Dit keuringsrapport geeft geen recht op het dragen van enig keurmerk.</i></p>				

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**Remarks**  
*Opmerkingen*

1	<p>The equipment used during the specified testing period was calibrated according to our test laboratory calibration program. The equipment fulfils the requirements included in the relevant standards. The traceability of the test equipment used is ensured by compliance with the regulations of our management system. The decision rule for statements of conformity in this test report is based on the “Zero Guard Band Rule” and “Simple Acceptance” in accordance to and ILAC-G8:09/2019 and IEC Guide 115:2021, unless otherwise specified in the applied standard mentioned on Page 1 of this report or requested by the customer. This means that measurement uncertainty is not taken in account.</p> <p><i>De apparatuur die tijdens de gespecificeerde testperiode is gebruikt, is gekalibreerd volgens ons testlaboratoriumkalibratieprogramma. De apparatuur voldoet aan de eisen die zijn opgenomen in de relevante normen. De traceerbaarheid van de gebruikte testapparatuur wordt gewaarborgd door naleving van de voorschriften van ons managementsysteem. De beslisregel voor conformiteitsverklaringen in dit testrapport is gebaseerd op de “Zero Guard Band Rule” en “Simple Acceptance” in overeenstemming met en ILAC - G8:09/2019 en IEC Guide 115:2021, tenzij anders aangegeven in de toegepaste norm vermeld op pagina 1 van dit rapport of aangevraagd door de klant. Dit betekent dat er geen rekening wordt gehouden met de meetonzekerheid.</i></p>
2	<p>As contractually agreed, this document has been signed digitally only. TÜV Rheinland has not verified and unable to verify which legal or other pertaining requirements are applicable for this document. Such verification is within the responsibility of the user of this document. Upon request by its client, TÜV Rheinland can confirm the validity of the digital signature by a separate document. Such request shall be addressed to our Sales department. An environmental fee for such additional service will be charged.</p> <p><i>Zoals contractueel overeengekomen is dit document enkel digitaal ondertekend. TÜV Rheinland heeft niet geverifieerd en kan niet verifiëren welke wettelijke of andere vereisten van toepassing zijn op dit document. Een dergelijke verificatie valt onder de verantwoordelijkheid van de gebruiker van het document. Op verzoek van de opdrachtgever kan TÜV Rheinland de geldigheid van de digitale handtekening bevestigen door een apart document. Een dergelijk verzoek moet worden gericht aan onze verkoopafdeling. Voor een dergelijke extra service zal een milieutoeslag in rekening worden gebracht.</i></p>
3	<p>Test clauses with remark of * are subcontracted to qualified subcontractors and described under the respective test clause in the report. Tests clauses marked with <sup>a</sup> are performed under ISO 17025 accreditation. Deviations of testing specification(s), test locations or customer requirements are listed in specific test clause in the report. This report is only to be read as a whole. No opinions or interpretation are included in this report. This test report consists of multiple pages and is only to be read as a whole. The number of pages can be seen in the header on the top right of each page, the report ends when the last page is reached. TÜV Rheinland Nederland B.V. is solely responsible for the content.</p> <p><i>Test onderdelen welke met * zijn gemarkeerd zijn uitbesteed aan gekwalificeerde onderaannemers en zijn beschreven in het respectievelijke test onderdeel van dit rapport. Test onderdelen welke met <sup>a</sup> zijn gemarkeerd zijn onder ISO 17025 accreditatie uitgevoerd. Afwijkingen van testspecificatie(s), testlocaties of klant eisen zijn vermeld in het van toepassing zijnde onderdeel in het rapport. Het rapport dient als geheel te worden gelezen. Er zijn geen opinies en interpretaties opgenomen binnen het rapport. Dit rapport bestaat uit meerdere pagina's en dient al geheel gelezen te worden. Het aantal pagina's is rechtsboven in de koptekst van dit rapport vermeld en eindigt wanneer de laatste pagina is bereikt. TÜV Rheinland Nederland is als enige verantwoordelijk voor de inhoud van het rapport.</i></p>
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**Product description**  
*Product omschrijving*

1	<b>Product details:</b> <i>Product details:</i>	Product identity: Marmoleum Sport 3.2 mm – Batch 29811 Dessin: 83020 Product type: Resilient floor covering
2	<b>Other:</b> <i>Andere:</i>	Test sample(s), as well sample information, description, product details and intended usage was provided by customer.
3	<b>Test sample obtaining:</b> <i>Selectie van het proefstuk:</i>	<input checked="" type="checkbox"/> Sending by customer <input type="checkbox"/> Sampling by TÜV Rheinland Group <input type="checkbox"/> others:

Figure 1: Picture of the received sample (surface)

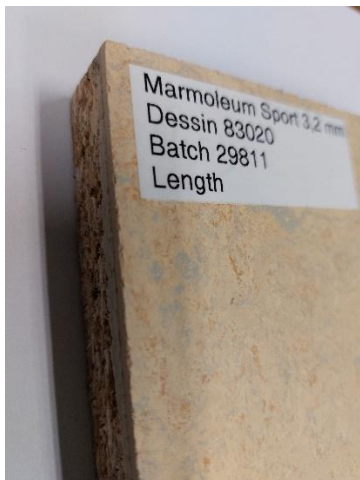


Figure 2: Picture of the received sample (back)



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Clause Deel	Requirements - Tests / Vereisten - Tests	Measuring results – Remarks Meetresultaten – Opmerkingen	Result Resultaat
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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)	21.4	
	Total mass (g/m <sup>2</sup> )	15754	
	Density (kg/m <sup>3</sup> )	736	
	<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 11925-2:2020 <sup>a</sup>						
	Date of testing	11.03.2024					
	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 13238:2018					
	Flame application	Surface					
	Flame application time (s)	15					
	Requirements according EN 13501-1	See clause 5 of this report					
	<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	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>	<b>No</b>
	Duration after application when the flame tip reached the 150 mm above the application point (s)	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>
	Extent of damaged area, length (mm)	10	9	10	9	11	9
	Extent of damaged area, width (mm)	10	10	10	10	10	10
	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	<b>Determination of the burning behaviour using a radiant heat source</b> EN ISO 9239-1:2010 <sup>a</sup>					
	Date of testing	20.03.2024				
	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 13238:2018				
	Fixing method	The samples are glued to the substrate with Eurocol 611.				
	Precision of the test method	The measurement uncertainty for this test strongly depends on the products that are tested, based on that influence a measurement uncertainty for the method can't be determined. Information on the influence of the different products can be found in ISO 9239-1:2010 Annex B.				
	Requirements according EN 13501-1	See clause 5 of this report				
	<b>Test result(s)</b>					
	Test sample	1	2	3	4	Mean
	Orientation (Length: ↑, Width: T)	↑	T	↑	↑	↑
	Flame spread (cm)	31	28	30	34	<b>32</b>
	CHF / HF-30 (kW/m <sup>2</sup> )	7.1	7.7	7.3	6.5	<b>7.0</b>
	Maximum light attenuation (%)	22.0	30.2	23.3	28.4	<b>24.6</b>
Smoke production (%.min)	121	128	81	120	<b>107</b>	
Observed significant phenomena during the test: Specimen 1, 2, 3 and 4: Melting / Blistering / Sustained Flaming. Specimen 1: Extinguished manually after the end of the test duration. Specimen 2, 3 and 4: Extinguished naturally before the end of the test duration.						

4	<b>Classification of burning behaviour</b> EN 13501-1:2018 <sup>a</sup>	
	The product, <b>Marmoleum Sport 3.2 mm – Batch 29811</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 611.</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 13501-1:2018 <sup>a</sup>			
	Class	Test method(s)	Classification criteria	Additional classifications
	A1 <sub>fl</sub>	EN ISO 1182 <sup>a2</sup> and	$\Delta T \leq 30 \text{ }^\circ\text{C}$ ; and $\Delta m \leq 50 \%$ ; and $t_f = 0$ (i.e. no sustained flaming)	-
		EN ISO 1716	$PCS \leq 2.0 \text{ MJ/kg}$ <sup>a2</sup> and $PCS \leq 2.0 \text{ MJ/m}^2$ <sup>b</sup> and $PCS \leq 1.4 \text{ MJ/m}^2$ <sup>c</sup> and $PCS \leq 2.0 \text{ MJ/kg}$ <sup>d</sup>	-
	A2 <sub>fl</sub>	EN ISO 1182 <sup>a2</sup> or	$\Delta T \leq 50 \text{ }^\circ\text{C}$ and $\Delta m \leq 50 \%$ and $t_f \leq 20 \text{ s}$	-
		EN ISO 1716 and	$PCS \leq 3.0 \text{ MJ/kg}$ <sup>a2</sup> and $PCS \leq 4.0 \text{ MJ/m}^2$ <sup>b</sup> and $PCS \leq 4.0 \text{ MJ/m}^2$ <sup>c</sup> and $PCS \leq 3.0 \text{ MJ/kg}$ <sup>d</sup>	-
		EN ISO 9239-1 <sup>e</sup>	$CHF \geq 8.0 \text{ kW/m}^2$	Smoke production <sup>g</sup>
	B <sub>fl</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>fl</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>fl</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>fl</sub>	EN ISO 11925-2 <sup>h</sup> : Exposure = 15 s	$F_s \leq 150 \text{ mm}$ within 20 s	-	
F <sub>fl</sub>	EN ISO 11925-2 <sup>h</sup> : Exposure = 15 s	$F_s > 150 \text{ mm}$ within 20 s	-	
<sup>a2</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.				

## Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010  
Laboratory : TÜV Rheinland Nederland B.V.  
Sponsor : 89223770-21  
Date of test : Mar. 20 2024

Specimen description : MT24-223770.19  
Test name : # Prod 1  
File name : D:\FRPFILES\24030029.CSV  
Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX23006.CSV

Thickness (mm) : 21.4  
Density (kg/m<sup>3</sup>) : 736

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

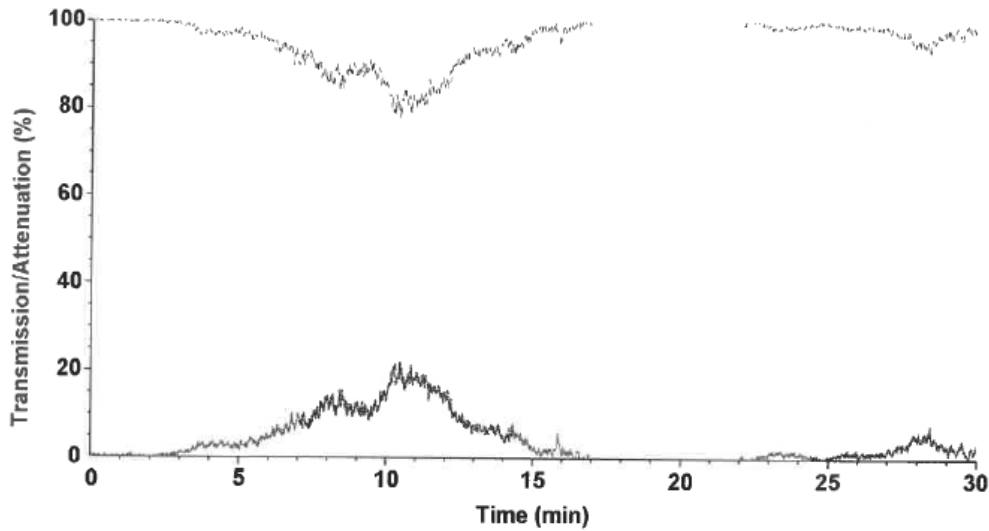
Time to ignition : 2 minutes 05 seconds (125 s)  
Time to flameout : 30 minutes (1800 s)  
Extent of burning (mm) : 310  
Critical flux at extinguishment (kW/m<sup>2</sup>) : 7.07  
HF-10 (kW/m<sup>2</sup>) : 10.09  
HF-20 (kW/m<sup>2</sup>) : 8.29  
HF-30 (kW/m<sup>2</sup>) : 7.07  
Flame spread at 10 minutes (mm) : 150  
Flame spread at 20 minutes (mm) : 250  
Flame spread at 30 minutes (mm) : 310  
Peak light attenuation (%) : 21.97  
Time to peak light attenuation : 10 minutes 26 seconds (626 s)  
Total integrated smoke (%.min) : 120.57

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

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### Smoke Graph



Test name : # Prod 1  
File name : D:\FRPFILES\24030029.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	317	11.4	3.622	510	-	3.6	-
110	457	10.6	4.859	560	-	3.0	-
160	627	9.9	6.238	610	-	2.6	-
210	837	9.1	7.655	660	-	2.2	-
260	1320	8.1	10.659	710	-	1.9	-
310	1727	7.1	12.201	760	-	1.6	-
360	-	6.0	-	810	-	1.4	-
410	-	5.1	-	860	-	1.3	-
460	-	4.3	-	910	-	1.2	-

### 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.

## Flooring Radiant Panel Single Specimen Report

Standard	: EN ISO 9239-1:2010
Laboratory	: TÜV Rheinland Nederland B.V.
Sponsor	: 89223770-21
Date of test	: Mar. 20 2024
Specimen description	: MT24-223770.19
Test name	: # Cross 2
File name	: D:\FRPFILES\24030030.CSV
Test number in series	: 4
Flux calibration file name	: C:\FRPSOFT2.9A\CALIB\FLX23006.CSV
Thickness (mm)	: 21.4
Density (kg/m <sup>3</sup> )	: 736
Test duration	: 28 minutes 20 seconds (1700 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 06 seconds (126 s)
Time to flameout	: 28 minutes 17 seconds (1697 s)
Extent of burning (mm)	: 280
Critical flux at extinguishment (kW/m <sup>2</sup> )	: 7.67
HF-10 (kW/m <sup>2</sup> )	: 9.31
HF-20 (kW/m <sup>2</sup> )	: 7.67
HF-30 (kW/m <sup>2</sup> )	: Not calculated (test duration < 30 minutes)
Flame spread at 10 minutes (mm)	: 200
Flame spread at 20 minutes (mm)	: 280
Flame spread at 30 minutes (mm)	: Not measured
Peak light attenuation (%)	: 30.18
Time to peak light attenuation	: 10 minutes 24 seconds (624 s)
Total integrated smoke (%.min)	: 128.04

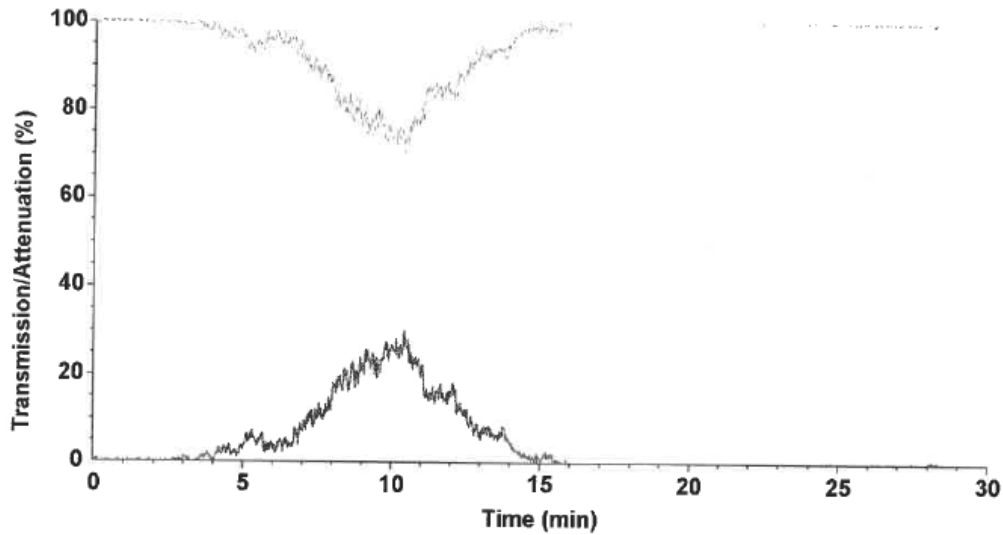
<b>Potential classification</b>	: <b>C(f)</b>
<b>Smoke production classification</b>	: <b>s1</b>

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 2  
File name : D:\FRPFILES\24030030.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	271	11.4	3.096	510	-	3.6	-
110	406	10.6	4.317	560	-	3.0	-
160	511	9.9	5.084	610	-	2.6	-
210	627	9.1	5.735	660	-	2.2	-
260	966	8.1	7.800	710	-	1.9	-
310	-	7.1	-	760	-	1.6	-
360	-	6.0	-	810	-	1.4	-
410	-	5.1	-	860	-	1.3	-
460	-	4.3	-	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.

## Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010  
Laboratory : TÜV Rheinland Nederland B. V.  
Sponsor : 89223770-21  
Date of test : Mar. 20 2024

Specimen description : MT24-223770.19  
Test name : # Prod 3  
File name : D:\FRPFILES\24030031.CSV  
Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9\CALIB\FLX23006.CSV

Thickness (mm) : 21.4  
Density (kg/m<sup>3</sup>) : 736

Test duration : 28 minutes 40 seconds (1720 s)  
Substrate used? : Yes  
Substrate : Particle board  
Fixing method : adhesive  
Conditioned? : Yes  
Conditioning temp. (°C) : 23  
Conditioning RH (%) : 50

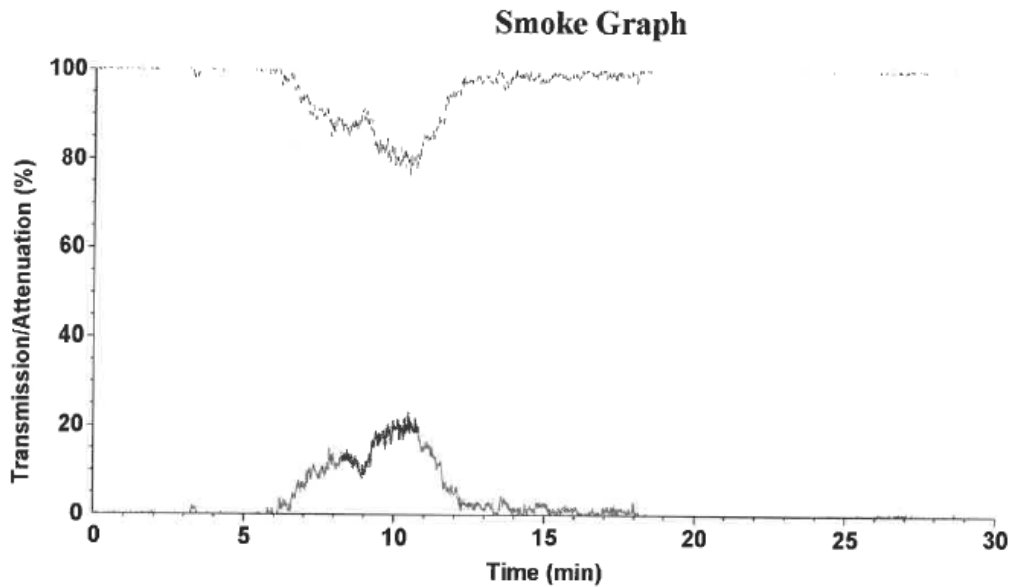
### Test Results

Time to ignition : 2 minutes 04 seconds (124 s)  
Time to flameout : 28 minutes 37 seconds (1717 s)  
Extent of burning (mm) : 300  
Critical flux at extinguishment (kW/m<sup>2</sup>) : 7.27  
HF-10 (kW/m<sup>2</sup>) : 9.63  
HF-20 (kW/m<sup>2</sup>) : 7.27  
HF-30 (kW/m<sup>2</sup>) : Not calculated (test duration < 30 minutes)  
Flame spread at 10 minutes (mm) : 180  
Flame spread at 20 minutes (mm) : 300  
Flame spread at 30 minutes (mm) : Not measured  
Peak light attenuation (%) : 23.28  
Time to peak light attenuation : 10 minutes 28 seconds (628 s)  
Total integrated smoke (%.min) : 80.65

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

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Test name : # Prod 3  
File name : D:\FRPFILES\24030031.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	260	11.4	2.971	510	-	3.6	-
110	438	10.6	4.657	560	-	3.0	-
160	557	9.9	5.542	610	-	2.6	-
210	670	9.1	6.128	660	-	2.2	-
260	837	8.1	6.759	710	-	1.9	-
310	-	7.1	-	760	-	1.6	-
360	-	6.0	-	810	-	1.4	-
410	-	5.1	-	860	-	1.3	-
460	-	4.3	-	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.

## Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010  
Laboratory : TÜV Rheinland Nederland B.V.  
Sponsor : 89223770-21  
Date of test : Mar. 20 2024

Specimen description : MT24-223770.19  
Test name : # Prod 4  
File name : D:\FRPFILES\24030032.CSV  
Test number in series : 4

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX23006.CSV

Thickness (mm) : 21.4  
Density (kg/m<sup>3</sup>) : 736

Test duration : 27 minutes 47 seconds (1667 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 : 27 minutes 44 seconds (1664 s)  
Extent of burning (mm) : 340  
Critical flux at extinguishment (kW/m<sup>2</sup>) : 6.45  
HF-10 (kW/m<sup>2</sup>) : 9.31  
HF-20 (kW/m<sup>2</sup>) : 7.07  
HF-30 (kW/m<sup>2</sup>) : Not calculated (test duration < 30 minutes)  
Flame spread at 10 minutes (mm) : 200  
Flame spread at 20 minutes (mm) : 310  
Flame spread at 30 minutes (mm) : Not measured  
Peak light attenuation (%) : 28.44  
Time to peak light attenuation : 10 minutes 30 seconds (630 s)  
Total integrated smoke (%.min) : 119.88

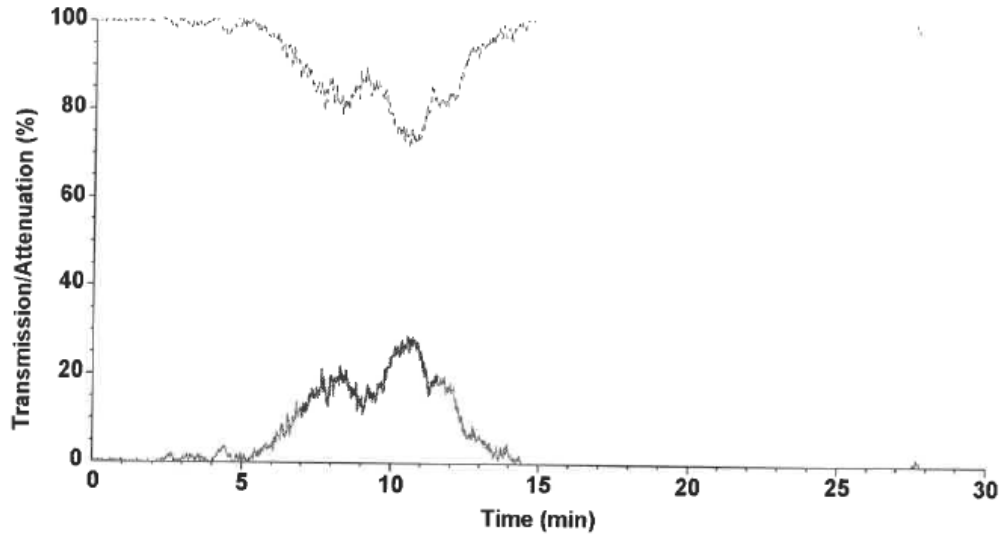
**Potential classification** : **C(fl)**  
**Smoke production classification** : **s1**

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.

Report produced with the Fire Testing Technology FRPSoft software

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### Smoke Graph



Test name : # Prod 4  
 File name : D:\FRPFILES\24030032.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	250	11.4	2.856	510	-	3.6	-
110	370	10.6	3.934	560	-	3.0	-
160	515	9.9	5.124	610	-	2.6	-
210	638	9.1	5.835	660	-	2.2	-
260	823	8.1	6.646	710	-	1.9	-
310	1218	7.1	8.605	760	-	1.6	-
360	-	6.0	-	810	-	1.4	-
410	-	5.1	-	860	-	1.3	-
460	-	4.3	-	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.