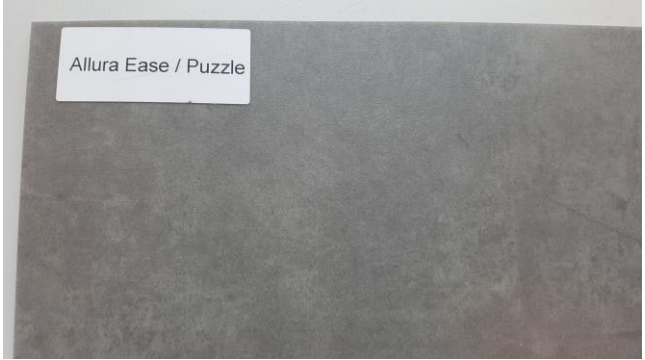
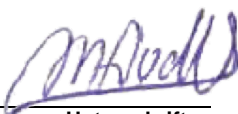



Prüfbericht-Nr.: <i>Test Report No.:</i>	89215785.03br	Auftrags-Nr.: <i>Order No.:</i>	43328	Seite 1 von 12 <i>Page 1 of 12</i>	
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	4501064354	Auftragsdatum: <i>Order date:</i>	03.09.2019		
Auftraggeber: <i>Client:</i>	Forbo-Novilon B.V., De Holwert 12, 7741 KC COEVORDEN, The Netherlands				
Prüfgegenstand: <i>Test item:</i>	Resilient floor covering				
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	Allura Ease / Puzzle				
Auftrags-Inhalt: <i>Order content:</i>	Determination 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>	04.09.2019				
Prüfmuster-Nr.: <i>Test sample No.:</i>	MT19-43328.03				
Prüfzeitraum: <i>Testing period:</i>	04.09.2019 – 07.10.2019				
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:				
09.10.2019 M.A. van de Vlekkert		09.10.2019 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
<p>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></p>					

v04

Prüfbericht-Nr.: 89215785.03br
Test Report No.:

Seite 3 von 12
Page 3 of 12

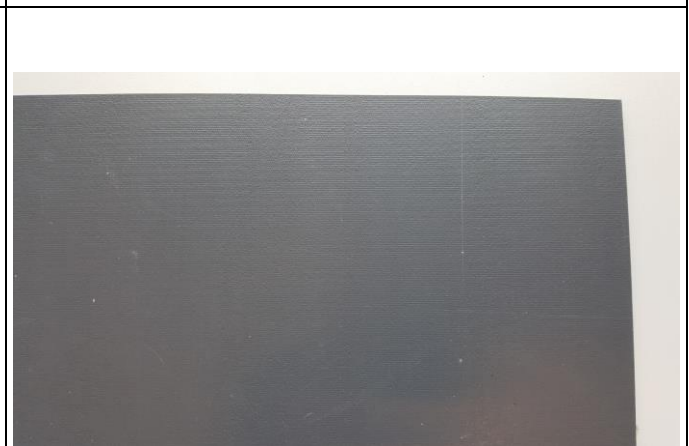
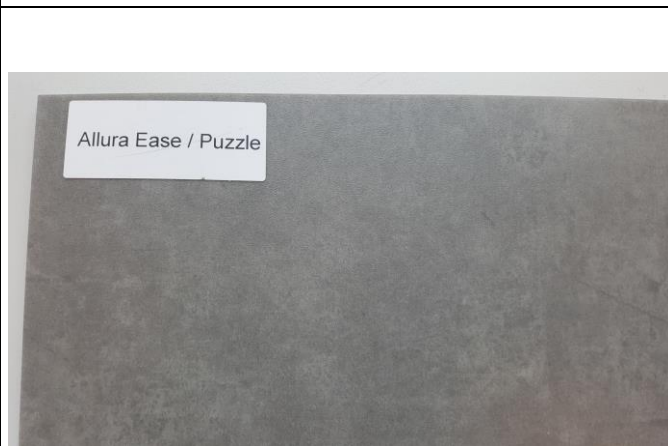
Produktbeschreibung
Product description

Product identity	Allura Ease / Puzzle*	Backing	Black coloured calendared backing*
Product type	Heterogeneous PVC floor covering*	Total thickness (mm)	5.00*
Base of product	Impregnated glass fleece web*	Top layer (mm)	0.70*

* applicants declaration

Figure 1, Picture of the received sample (surface)

Figure 2, Picture of the received sample (back)



Prüfbericht-Nr.: 89215785.03br			
Test Report No.:			
Absatz	EN 13501-1:2007+ A1:2009	Messergebnisse - Bemerkungen	Bewertung
Clause	Anforderungen - Prüfungen / Requirements - Tests	Measuring results - Remarks	Evaluation
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)	5.0	
	Total mass (g/m ²)	7685	
	Density (kg/m ³)	1534	
	<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	30.09.2019		
	Pre-conditioning, climate	23 ± 2°C and 50 ± 4% relative humidity		
	Pre-conditioning, duration	≥ 48 h & until constant mass is achieved		
	Description of substrate	Fibre cement board, thickness 8 ± 2 mm, density 1800 ± 200 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*	N/A		
	Test sample	1	2	3
	Ignition of the sample	Yes	Yes	Yes
	Flame tip reached 150 mm above the application point	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
	Extent of damaged area, length (mm)	27	27	28
	Extent of damaged area, width (mm)	13	12	12
	Material melts	Yes	Yes	Yes
	Shrinks away from flame without being ignited	No	No	No
	After glowing	No	No	No
	Flaming droplets/particles which caused ignition of filter paper	No	No	No
	<i>* No length or width direction applicable.</i>			

Prüfbericht-Nr.: 89215785.03br
Test Report No.:

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

3	Determination of the burning behaviour using a radiant heat source <i>EN ISO 9239-1:2010</i>				
	Date of testing	07.10.2019			
	Pre-conditioning, climate	23 ± 2°C and 50 ± 4% relative humidity			
	Pre-conditioning, duration	≥ 48 h & until constant mass is achieved			
	Description of substrate	Fibre cement board, thickness 8 ± 2 mm, density 1800 ± 200 kg/m ³ conforming to EN 13238:2010			
	Fixing method	None, samples are tested loose laid on the substrate			
	Requirements according EN 13501-1:2007+ A1:2009	See clause 5			
	Test result(s)				
	Test sample	1	2	3	Mean
	Orientation*	N/A	N/A	N/A	N/A
	Flame spread (cm)	23	23	23	23
	CHF / HF-30 (kW/m ²)	8.8	8.8	8.8	8.8
	Maximum light attenuation (%)	38.7	46.6	43.3	42.9
	Smoke production (%.min)	257	235	261	251
* No length or width direction applicable. Observations: Specimen 1, 2, and 3: Flashing, transitory- or sustained flaming are observed. Specimen 1, 2, and 3: Extinguished naturally before the end of the test duration.					

4	Classification of burning behaviour <i>EN 13501-1:2007+A1:2009</i>	
	The product, Allura Ease / Puzzle in relation to its reaction to fire behaviour is classified:	B_{fl}
	The additional classification in relation to smoke production is:	s1
	Reaction to fire classification : B_{fl} – s1	
	Field of application - As a floor covering in accordance with the nominal product parameters given on page 3. - On end use substrates of classes A1 and A2-s1,d0 according to EN 13238:2010.	
Statements - 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.		

Prüfbericht-Nr.: 89215785.03br
Test Report No.:

Seite 6 von 12
Page 6 of 12

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

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.			

Prüfbericht-Nr.: 89215785.03br
Test Report No.:

Seite 7 von 12
Page 7 of 12

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

6 Flooring Radiant Panel Single Specimen Report

Report produced with the Fire Testing Technology FRPSoft software

page 1

Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010
 Laboratory : TÜV Rheinland Nederland B.V.
 Sponsor : Forbo Flooring 89215785
 Date of test : Oct. 07 2019

Specimen description : Allura Ease / Puzzle MT19-43328.03
 Test name : #Prod 1
 File name : D:\FRPFILES\19100013.CSV
 Test number in series : 3

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX19002.CSV

Thickness (mm) : 5
 Density (kg/m³) : 1534

Test duration : 12 minutes 36 seconds (756 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 : 12 minutes 34 seconds (754 s)
 Extent of burning (mm) : 230
 Critical flux at extinguishment (kW/m²) : 8.84
 HF-10 (kW/m²) : 9.50
 HF-20 (kW/m²) : Not calculated (test duration < 20 minutes)
 HF-30 (kW/m²) : Not calculated (test duration < 30 minutes)
 Flame spread at 10 minutes (mm) : 190
 Flame spread at 20 minutes (mm) : Not measured
 Flame spread at 30 minutes (mm) : Not measured
 Peak light attenuation (%) : 38.66
 Time to peak light attenuation : 9 minutes 31 seconds (571 s)
 Total integrated smoke (%.min) : 256.62

Potential classification : A2(II)/B(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.

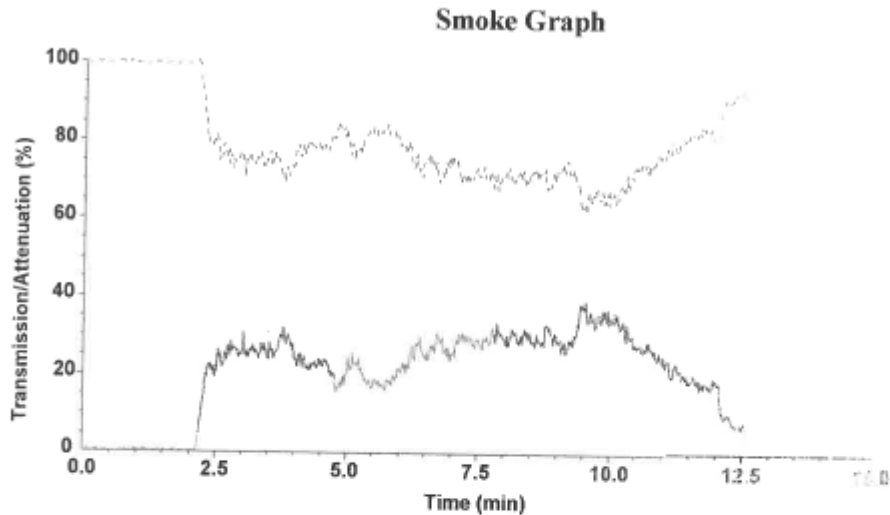
Prüfbericht-Nr.: 89215785.03br
Test Report No.:

Seite 8 von 12
Page 8 of 12

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 1
File name : D:\FRPFILES\19100013.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	198	11.1	2.199	510	-	3.6	-
110	385	10.4	4.023	560	-	3.0	-
160	528	9.9	5.229	610	-	2.5	-
210	679	9.2	6.271	660	-	2.1	-
260	-	8.2	-	710	-	1.8	-
310	-	7.3	-	760	-	1.6	-
360	-	6.1	-	810	-	1.4	-
410	-	5.1	-	860	-	1.2	-
460	-	4.2	-	910	-	1.0	-

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.

Prüfbericht-Nr.: 89215785.03br
Test Report No.:

Seite 9 von 12
Page 9 of 12

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 1

Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010
 Laboratory : TÜV Rheinland Nederland B.V.
 Sponsor : Forbo Flooring 89215785
 Date of test : Oct. 07 2019

Specimen description : Allura Ease / Puzzle MT19-43328.03
 Test name : #Prod 2
 File name : D:\FRPFILES\19100014.CSV
 Test number in series : 3

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX19002.CSV

Thickness (mm) : 5
 Density (kg/m³) : 1534

Test duration : 12 minutes 41 seconds (761 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 : 12 minutes 39 seconds (759 s)
 Extent of burning (mm) : 230
 Critical flux at extinguishment (kW/m²) : 8.84
 HF-10 (kW/m²) : 9.50
 HF-20 (kW/m²) : Not calculated (test duration < 20 minutes)
 HF-30 (kW/m²) : Not calculated (test duration < 30 minutes)
 Flame spread at 10 minutes (mm) : 190
 Flame spread at 20 minutes (mm) : Not measured
 Flame spread at 30 minutes (mm) : Not measured
 Peak light attenuation (%) : 46.58
 Time to peak light attenuation : 7 minutes 21 seconds (441 s)
 Total integrated smoke (%.min) : 234.78

Potential classification : A2(0)/B(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.

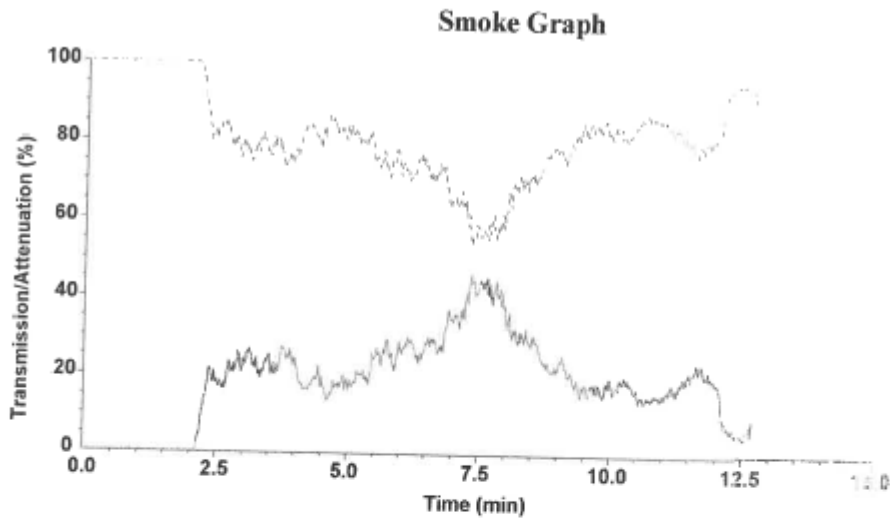
Prüfbericht-Nr.: 89215785.03br
Test Report No.:

Seite 10 von 12
Page 10 of 12

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 2
File name : D:\FRPFILES\19100014.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	11.1	2.644	510	-	3.6	-
110	407	10.4	4.253	560	-	3.0	-
160	505	9.9	5.001	610	-	2.5	-
210	643	9.2	5.939	660	-	2.1	-
260	-	8.2	-	710	-	1.8	-
310	-	7.3	-	760	-	1.6	-
360	-	6.1	-	810	-	1.4	-
410	-	5.1	-	860	-	1.2	-
460	-	4.2	-	910	-	1.0	-

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.

Prüfbericht-Nr.: 89215785.03br
Test Report No.:

Seite 11 von 12
Page 11 of 12

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 1

Flooring Radiant Panel Single Specimen Report

Standard : EN ISO 9239-1:2010
 Laboratory : TÜV Rheinland Nederland B.V.
 Sponsor : Forbo Flooring 89215785
 Date of test : Oct. 07 2019

Specimen description : Allura Ease / Puzzle MT19-43328.03
 Test name : #Prod 3
 File name : D:\FRPFILES\19100015.CSV
 Test number in series : 3

Flux calibration file name : C:\FRPSOFT2.9A\CALIB\FLX19002.CSV

Thickness (mm) : 5
 Density (kg/m³) : 1534

Test duration : 12 minutes 38 seconds (758 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 : 12 minutes 34 seconds (754 s)
 Extent of burning (mm) : 230
 Critical flux at extinguishment (kW/m²) : 8.84
 HF-10 (kW/m²) : 9.37
 HF-20 (kW/m²) : Not calculated (test duration < 20 minutes)
 HF-30 (kW/m²) : Not calculated (test duration < 30 minutes)
 Flame spread at 10 minutes (mm) : 200
 Flame spread at 20 minutes (mm) : Not measured
 Flame spread at 30 minutes (mm) : Not measured
 Peak light attenuation (%) : 43.26
 Time to peak light attenuation : 6 minutes 52 seconds (412 s)
 Total integrated smoke (%.min) : 261.2

Potential classification : A2(II)/B(f)
Smoke production classification : s1

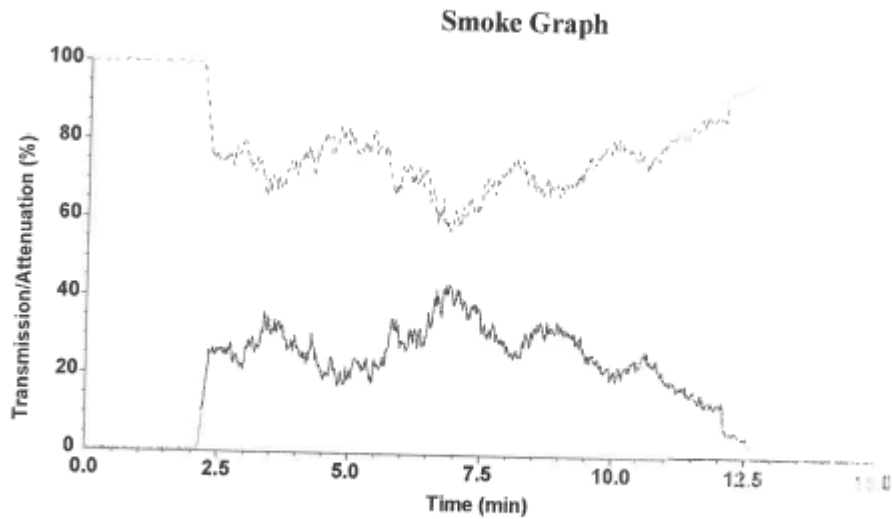
These results relate only to the behaviour of the specimens of the product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Prüfbericht-Nr.: 89215785.03br
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 3
File name : D:\FRPFILES\19100015.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	204	11.1	2.266	510	-	3.6	-
110	341	10.4	3.563	560	-	3.0	-
160	498	9.9	4.932	610	-	2.5	-
210	642	9.2	5.930	660	-	2.1	-
260	-	8.2	-	710	-	1.8	-
310	-	7.3	-	760	-	1.6	-
360	-	6.1	-	810	-	1.4	-
410	-	5.1	-	860	-	1.2	-
460	-	4.2	-	910	-	1.0	-

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.