

LABORATORY OF FLAMMABILITY TESTING
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TEST CERTIFICATE ON THE REACTION TO FIRE TESTS FOR FLOORINGS

No 153 / BP / 15

Test method:

1. PN-EN ISO 9239-1:2010 Reaction to fire tests for floorings.
Part 1: Determination of the burning behaviour using a radiant heat source.
2. PN-EN ISO 11925-2:2010 Reaction to fire tests. Ignitability of building products subjected to direct impingement of flame.
Part 2: Single-flame source test.

Orderer:

Tarkett DOO
Industrijska zona 14
21400 Bačka Palanka, Republic of Serbia

Subject of testing:

Elastic heterogeneous vinyl floor covering named SPARK
Overall nominal weight: 2,20 kg/m²
Overall nominal thickness: 2,00 mm
Testing sample and its characteristic supplied by the Orderer.

INSTYTUT WŁÓKIENICTWA
ul. Gdańska 118
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Results of testing: Samples glued with glue named UZIN KE 418 to non-flammable substrate (cement-fibre plate).

1. Flame spread testing and measurement of smoke emission according to PN-EN ISO 9239-1:2010

Critical heat flux CHF	8,8 [kW/m ²]
Maximum light beam weakness	92 [%]
Total smoke emission	186 [%·min]

The uncertainty of the measurement for the critical heat flux is $\pm 0,3 \text{ kW/m}^2$

2. Ignitability testing under the direct impingement of flame according to PN-EN ISO 11925-2:2010

During 20 s test (flame acting - 15 s):

- samples tested on surface exposure charred and melted in the flame acting area,
- samples tested on edge exposure charred and melted in the flame acting area,
- the top of flame hasn't reached 150 mm above its contact point for each tested samples.

The above results refer to testing conditions specified by the standard, they shouldn't be taken into consideration to real fire conditions.

Tests performed by:

Agnieszka Hulewicz, MSc. Eng.

Andrzej Kubacki

Sample received on: 08.05.2015
Test performed on: 27-28.05.2015

Test Certificate authorized by:

Laboratorium Badań Państwowej Wyrobów
KIEROWNIK

mgr inż. Małgorzata Szejna
28.05.2015

NOTES:

1. The Testing results refer only to the tested sample.
2. Test Certificate consists of 7 pages.
3. Test Certificate must not be reproduced in another way, than as a whole without a prior written consent of the Testing Laboratory.
4. The Orderer using this Test Certificate is responsible for the conformity between the product and sample submitted for testing.

The Testing Laboratory accredited by the Polish Centre for Accreditation (PCA), No AB 029.

DETAILED TESTING RESULTS

1. Flame spread testing and measurement of smoke emission according to PN-EN ISO 9239-1:2010

Climate conditions: temperature $(23 \pm 2) ^\circ\text{C}$; humidity $(50 \pm 5) \%$

Testing conditions: temperature $20 ^\circ\text{C}$; humidity 44%

Samples glued with glue named UZIN KE 418 to non-flammable substrate cement-fibre plate - thickness $(8 \pm 1)\text{mm}$, density $(1800 \pm 200)\text{ kg/m}^3$

a) Results of basic testing

Flame spread testing

Pilot burner flame acting time : 10 min

Tested value	Unit	Number of specimen			
		1	2	3	4
		Direction			
		crosswise	lengthswise		
Extinguish time of specimen	[s]	302	356	371	364
Flame spread distance after 10min	[mm]	230	240	230	220
Flame spread distance after 20min	[mm]	230	240	230	220
Flame spread distance after 30min	[mm]	-	-	-	-
Maximum flame spread distance	[mm]	230	240	230	220
Melting (charing) range	[mm]	505	495	480	470
Heat Flux after 10min - HF-10	[kW/m ²]	8,8	8,6	8,8	9,0
Heat Flux after 20min - HF-20	[kW/m ²]	8,8	8,6	8,8	9,0
Critical Heat Flux - CHF	[kW/m ²]	8,8	8,6	8,8	9,0
Critical Heat Flux - average value - CHF _{av}	[kW/m ²]	-	8,8		



Time of flame front crossing reaching zones and the corresponding intensity of the heat flux

Zone No	Number of specimen			
	1	2	3	4
	Direction			
	crosswise	lengthwise		
1	128 s (>11 kW/m ²)	127 s (>11 kW/m ²)	126 s (>11 kW/m ²)	124 s (>11 kW/m ²)
2	141 s (10,9 kW/m ²)	139 s (10,9 kW/m ²)	143 s (10,9 kW/m ²)	132 s (10,9 kW/m ²)
3	151 s (10,1 kW/m ²)	154 s (10,1 kW/m ²)	162 s (10,1 kW/m ²)	148 s (10,1 kW/m ²)
4	181 s (9,2 kW/m ²)	175 s (9,2 kW/m ²)	194 s (9,2 kW/m ²)	185 s (9,2 kW/m ²)
5	-	-	-	-
6	-	-	-	-
7	-	-	-	-

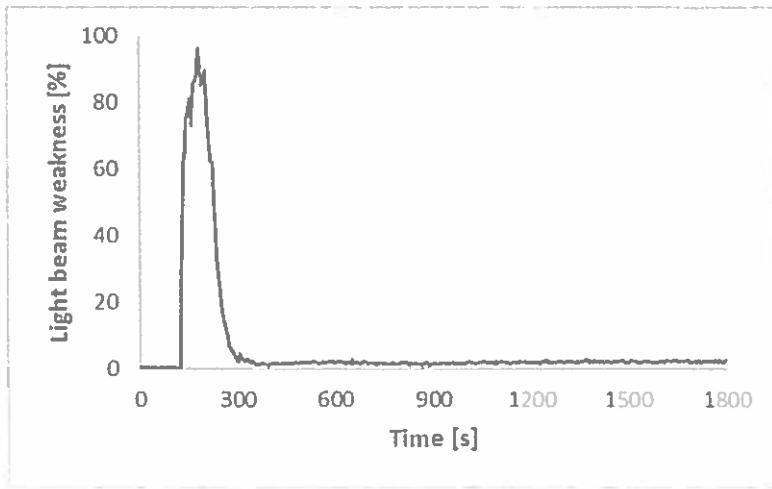
b) Results of additional testing

Measurement of smoke emission

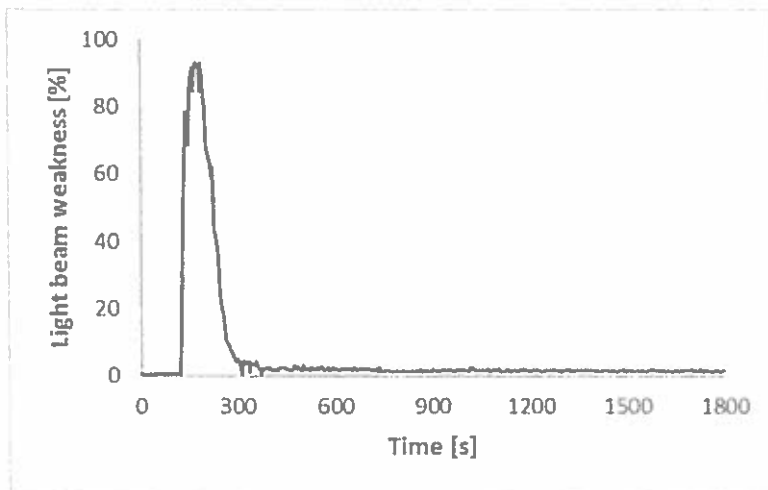
Tested parameters	Unit	Number of specimen			
		1	2	3	4
		Direction			
		crosswise	lengthwise		
Maximum light beam weakness	[%]	86,9	96,4	93,1	87,7
Maximum light beam weakness - average value	[%]	-	92,4		
Total smoke emission	[%·min]	173,3	196,3	190,3	169,9
Total smoke emission - average value	[%·min]	-	185,5		

W

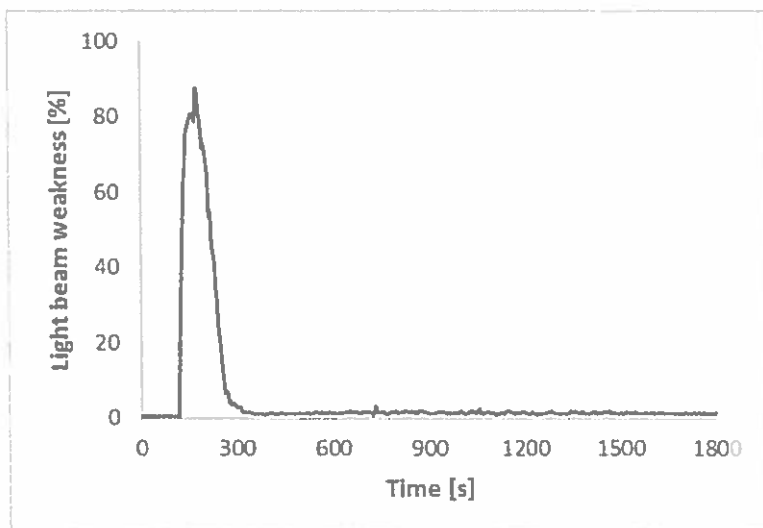
Graph: relationship between light beam weakness and time
Sample No 2



Sample No 3



Sample No 4



2. Ignitability testing under the direct impingement of flame according to PN-EN ISO 11925-2:2010

Climate conditions: temperature (23 ± 2) °C; humidity (50 ± 5) %
 Testing conditions: temperature 19 °C; humidity 38 %

Samples glued with glue named UZIN KE 418 to non-flammable substrate cement-fibre plate - thickness (8±1)mm, density (1800±200) kg/m³

Flame acting time: 15 s
 Test time: 20 s

a) Lengthwise direction

Surface exposure

Sample no	Did sample ignition appear?	Did the top of flame reach 150 mm above its contact point within 20 s of testing?	The time of reaching 150 mm above its contact point within 20 s by flame top [s]	Did filter paper ignition appear?
1	NO	NO	-	NO
2	NO	NO	-	NO
3	NO	NO	-	NO

Remarks:

Under the flame acting surface at the samples charred and melted in the flame acting area.

Edge exposure

Sample no	Did sample ignition appear?	Did the top of flame reach 150 mm above its contact point within 20 s of testing?	The time of reaching 150 mm above its contact point within 20 s by flame top [s]	Did filter paper ignition appear?
1	NO	NO	-	NO
2	NO	NO	-	NO
3	NO	NO	-	NO

Remarks:

Under the flame acting surface at the samples charred and melted in the flame acting area.

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b) Crosswise direction

Surface exposure

Sample no	Did sample ignition appear?	Did the top of flame reach 150 mm above its contact point within 20 s of testing?	The time of reaching 150 mm above its contact point within 20 s by flame top [s]	Did filter paper ignition appear?
1	NO	NO	-	NO
2	NO	NO	-	NO
3	NO	NO	-	NO

Remarks:

Under the flame acting surface at the samples charred and melted in the flame acting area.

Edge exposure

Sample no	Did sample ignition appear?	Did the top of flame reach 150 mm above its contact point within 20 s of testing?	The time of reaching 150 mm above its contact point within 20 s by flame top [s]	Did filter paper ignition appear?
1	NO	NO	-	NO
2	NO	NO	-	NO
3	NO	NO	-	NO

Remarks:

Under the flame acting surface at the samples charred and melted in the flame acting area.

TESTS RESULTS COMMENT

Classification:

according to PN-EN 13501-1+A1:2010 *Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests.*

Based on results of the tests performed according to:

1. PN-EN ISO 9239-1:2010

- critical heat flux CHF = $(8,8 \pm 0,3)$ kW/m²
- total smoke emission = 186 %-min

2. PN-EN ISO 11925-2:2010

- the top of flame hasn't reached 150 mm above its contact point for each tested samples within 20 s, samples of tested elastic heterogeneous vinyl floor covering named **SPARK**, were classified to **B₁ s1** class according to PN-EN 13501-1+A1:2010 classification standard - *Table 2*¹⁾.

¹⁾ *Table 2. Classes of reaction to fire performance for floorings – classification criteria for class B₁ s1:*


1. PN-EN ISO 9239-1:2010

- critical heat flux $\geq 8,0$ kW/m²
- s1 = total smoke emission ≤ 750 %-min

2. PN-EN ISO 11925-2:2010

- Fs ≤ 150 mm within 20 s

Laboratorium Badań Palności Wyrobów
K I E R O W N I K


mgr inż. Malgorzata Szejna

Lódź, 29.05.2015

END OF THE TEST CERTIFICATE

