



TEST REPORT OF THE RESULTS OF TEST FOR THE FLAME SPREAD ON FLOOR COVERINGS

IBR/Z-059-2017

Signature No: TZ/PN9239a/129/2017

Szczecin, 09-08-2017

Test methods:

1. Reaction to fire tests for floor coverings – Part 1. Determination of the burning behaviour using radiant heat source. Polish Standard: PN-EN ISO 9239-1:2010,
2. Reaction to fire tests for building products – Part 2. Ignitability when subjected to direct impingement of flame. Polish Standard: PN-EN ISO 11925-2:2010.

Sponsor:

Material: Floor coverings of type METRO Tp on non-combustible standard substrate (without glued)

Composition: The rubber mixture with mineral fillers, sulfur vulcanized

Manufacturer:**Final findings**

| | | | |
|--|-----|------------|-------------------|
| Critical flux at extinguishment | CHF | 10.9 ± 0.0 | kW/m ² |
| Maximum light attenuation | S | 35 ± 5 | % |
| Integrated smoke obscuration | Sc | 135 ± 38 | % · min |
| Maximum Flame spread distance according to PN-EN ISO 11925-2 | Fs | < 150 | mm |

The clauses of test report validity: Report applies only to the sample tested and is not necessarily indicative of the qualities of apparently identical or similar products.

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1. REACTION TO FIRE TESTS FOR FLOOR COVERINGS ACCORDING TO PN-EN ISO 9239-1

1.1. Basic test results

| Name of measured quantity | Unit | Direction of investigation | |
|-------------------------------------|-------------------|----------------------------|--------|
| | | along | across |
| Critical flux at extinguishment CHF | kW/m ² | - | - |

| Name of measured quantity | Unit | Specimen | | | Average | Standard deviation | Coefficient of variability % |
|-------------------------------------|-------------------|----------|------|------|---------|--------------------|------------------------------|
| | | 1 | 2 | 3 | | | |
| Ignition time | s | 128 | 126 | 139 | 131 | 6 | 4 |
| Extinguishment time | s | 734 | 717 | 666 | 705 | 29 | 4 |
| Flame spread distance after 10 min. | mm | 100 | 105 | 110 | 105 | 4 | 4 |
| Flame spread distance after 20 min. | mm | 100 | 105 | 110 | 105 | 4 | 4 |
| Maximum flame spread distance | mm | 100 | 105 | 110 | 105 | 4 | 4 |
| Critical flux at extinguishment CHF | kW/m ² | 11.0 | 10.9 | 10.9 | 10.9 | 0.0 | 0.4 |

1.2. Additional test results

1.2.1. Heat for sustained burning

| Distance from exposed of the specimen | Calibration flux levels at the specimen | Time of arrival of the flame front | | |
|---------------------------------------|---|------------------------------------|---|-----|
| | | s | | |
| | | Specimen | | |
| mm | kW/m ² | 1 | 2 | 3 |
| 110 | 10.9 | - | - | 276 |
| 160 | 10.1 | - | - | - |
| 210 | 9.3 | - | - | - |
| 260 | 8.1 | - | - | - |
| 310 | 7.0 | - | - | - |
| 360 | 6.0 | - | - | - |
| 410 | 5.0 | - | - | - |
| 460 | 4.2 | - | - | - |
| 510 | 3.6 | - | - | - |
| 560 | 2.9 | - | - | - |
| 610 | 2.6 | - | - | - |

1.2.2. Smoke generation of specimen

| Name of measured quantity | Unit | Specimen | | | Average | Standard deviation | Coefficient of variability % |
|------------------------------|---------|----------|-----|----|---------|--------------------|------------------------------|
| | | 1 | 2 | 3 | | | |
| Maximum light attenuation | % | 38 | 39 | 27 | 35 | 5 | 15 |
| Integrated smoke obscuration | % · min | 183 | 131 | 91 | 135 | 38 | 28 |

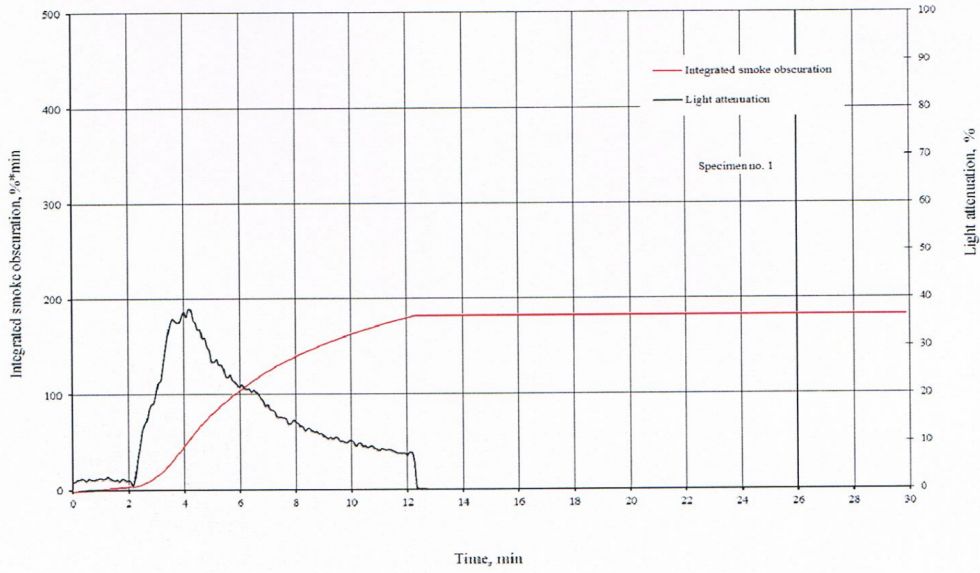


Figure 1. The relation smoke over time

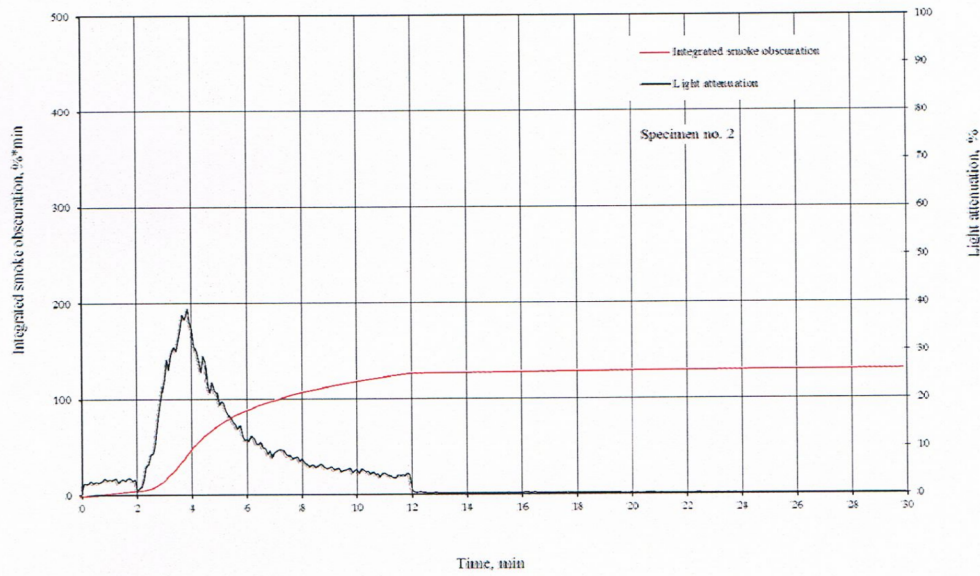


Figure 2. The relation smoke over time

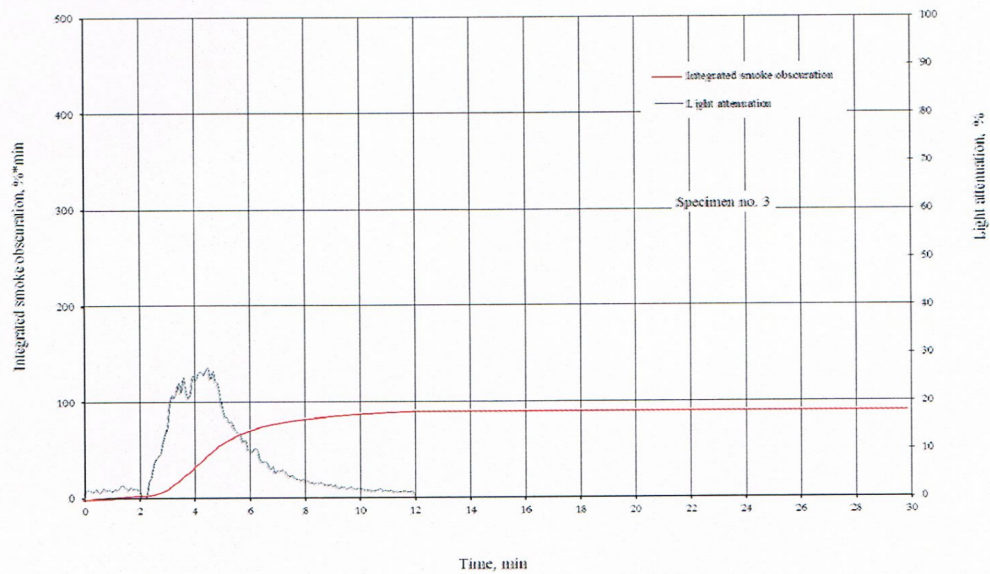


Figure 3. The relation smoke over time

1.3. Other relevant observations: nothing of importance

2. IGNITABILITY WHEN SUBJECTED TO DIRECT IMPINGEMENT OF FLAME ACCORDING TO PN-EN ISO 11925-2.

2.1. Surface ignition - exposure time of pilot burner flame - 15 s

| Name of measured quantity | Unit | Specimen | | | | | | Average |
|--|--------|----------|----|----|--------|---|---|---------|
| | | along | | | across | | | |
| | | 1 | 2 | 3 | 1 | 2 | 3 | |
| Ignition of specimen | Yes/No | No | No | No | - | - | - | |
| Ignition of paper | Yes/No | No | No | No | - | - | - | |
| Is the flame has reached the range of 150 mm | Yes/No | No | No | No | - | - | - | |
| Time of arrival of the flame front 150 mm | s | - | - | - | - | - | - | |

3. Norm required remaining information:

3.1. Sampling for testing: test samples obtained and delivered by the Employer

3.2. Date of delivering the material: 02-08-2017

3.3. The thickness: 3,2 mm, density of material: - kg/m², Red Colour,

3.4. Conditioning: conditioning the specimens according to PN-EN 13238:2011, point 4.2

4. Compliance with the requirements

Final findings

| | | |
|---|-------------------|-------------------|
| Critical flux at extinguishment CHF according to PN-EN ISO 9239-1 | 10.9 ± 0.0 | kW/m ² |
| Integrated smoke obscuration according to PN-EN ISO 9239-1 | 135 ± 38 | % · min |
| Maximum flame spread distance according to PN-EN ISO 11925-2 | < 150 | |

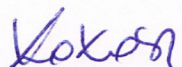
Method of determining the measurement uncertainty $Y = \bar{Y}_{str} \pm U(Y)$ - standard uncertainty

4.1. Compliance with the requirements acc. PN-EN 13501-1+A1:2010: the material meets the requirements for flooring materials class **Bfl - s1**

4.2. Material is considered to meet requirement for hardly ignitable in compliance with polish regulations (Dz.U. [Journal of Laws] from 2002, No. 75, item 690, as amended).

Declaring: The results of investigation treat to behaviour of samples to investigations of product in special conditions of investigation; they can not intended as a means of assessing the full potential the fire hazard of the materials or products in use.

Performer of tests:



Michał Kokosz

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An authorizer report:

KIEROWNIK LABORATORIUM

dr inż. Renata Dobrzyńska

Date and place of test - 07-08-08-2017, Szczecin