

Test laboratory for the fire behavior of building materials, Dipl.-Ing. (FH) Andreas Hoch  
Testing, supervising and certifying body, authorized by the building supervision authority

# TEST REPORT PZ-Hoch-170135

for the proof of fire behaviour according to DIN 4102, part 1

Translation of the German test report – no guarantee for translation of technical terms

<b>company</b>	<b>Georg+Otto Friedrich GmbH</b> Waldstraße 73 D-64846 Groß-Zimmern
<b>description of samples</b>	white knitted polyester -fabric 1: area weight about 67 g/m <sup>2</sup> -fabric 2: area weight about 176 g/m <sup>2</sup>
<b>name of the material</b>	„ PES-Fahnenstoff mit INKTeX+® FL Ausrüstung “
<b>sampling</b>	by the company itself
<b>content of request</b>	Proof of flammability to classify building materials to class B1 (“schwerentflammbar”) according to DIN 4102, part 1
<b>validity of test report</b>	31.01.2022
<b>result</b>	<b>The examined product meets</b> <ul style="list-style-type: none"><li>• with an area weight range of 67g/m<sup>2</sup> until. 176 g/m<sup>2</sup></li><li>• suspended freely or with distance of &gt;40 mm to same or other plain materials</li></ul> <b>the requirements of class B1 for hardly flammable (“schwerentflammbare”) building materials according to DIN 4102, pt. 1 (May 1998).</b>

This test report includes 5 pages and 5 enclosures.

Remark: If the building material mentioned above is not used as a product according to MBO § 2, Abs. 9, Ziffer1, there is no need for a general building supervisory test report.

This test report is not valid if the examined building material is used as product as defined by State Building Prescriptions (MBO § 17, Abs. 3).

This test report does not replace an eventually necessary proof of applicability concerning building supervisory or building laws as defined by State Building Prescriptions. This has to be certified instead by:

- “allgemeine bauaufsichtliche Zulassung” (General Building Inspectorate Approval ) or by
- “allgemeines bauaufsichtliches Prüfzeugnis“ (General Building Inspectorate Certificate) or by
- “Zustimmung im Einzelfall” (Exceptional Approval)

This test report can underlie building supervisory procedures

- for regular building products for the prescribed proofs of conformity
- for irregular building products for the required proofs of applicability.

Without written consent of the test laboratory, this test report may only be published or duplicated during its denoted period of validity, providing that no changes to appearance or content are made.

## 1. Description of test material in condition as delivered

**PN 24817 “PES-Fahnenstoff mit INKTeX+® FL Ausrüstung” -light fabric-**

-white knitted fabric-

There is no difference between side A and side B.

characteristic values determined by the test laboratory:

area weight: about 67 g/m<sup>2</sup>      thickness: about 0,18 mm

**PN 24818 “PES-Fahnenstoff mit INKTeX+® FL Ausrüstung” -heavy fabric-**

-white knitted fabric-

There is no difference between side A and side B.

characteristic values determined by the test laboratory:

area weight: about 176 g/m<sup>2</sup>      thickness: about 0,38 mm

The testing laboratory is not provided with further details concerning composition of the tested building materials. Samples are deposited.

## 2. Preparation of samples

Samples with a size of 1000 mm height and 190 mm width where cut from the material for fire testing.

The samples were kept in climate chamber 23/50 until they reached constant weight.

## 3. Arrangement of samples

mounting:      freely suspended

#8717:      PN 24817      flaming side A in warp direction      **-light fabric-**

#8718:      PN 24817      flaming side B in weft direction      **-light fabric-**

#8719:      PN 24818      flaming side B in weft direction      **-heavy fabric-**

## 4. Date of test      CW 06 in 2017

**5. Results** The test has been performed according to DIN 4102 (Mai 1998)

line no.	Measurement	Result with the tested specimen				Dim.
	Test number	#8717	#8718	#8719	---	
	flaming direction	warp	weft	weft	---	
	side	A	B	B	---	
	light / heavy fabric	light		heavy	---	
1	Number of specimen arrangement acc. to. DIN 4102/T15, schedule 1	1	1	1	---	
2	Maximum flame height above bottom edge of specimen	30	30	30	cm	
3	Time <sup>1)</sup>	0:02	0:02	0:02	min:s	
4	<u>Burn-through / melting</u> Time <sup>1)</sup>	0:02	0:02	0:03	min:s	
5	<u>Observations on the back side of specimen</u> Flames / Glowing Time <sup>1)</sup>	./.	./.	./.	min:s	
6	Change of colour Time <sup>1)</sup>	./.	./.	./.	min:s	
7	<u>Falling of burning droplets</u> Start <sup>1)</sup>	./.	./.	./.	min:s	
8	<u>Extent</u> sporadic falling of burning droplets <sup>2)</sup>	./.	./.	./.	min:s	
9	continuous falling of burning droplets <sup>2)</sup>	./.	./.	./.	min:s	
10	<u>Falling of burning parts</u> Start <sup>1)</sup>	./.	./.	./.	min:s	
11	<u>Extent</u> sporadic falling of burning parts <sup>2)</sup>	./.	./.	./.	min:s	
12	continuous falling of burning parts <sup>2)</sup>	./.	./.	./.	min:s	
13	<u>Burning duration at sieve plate (max.)</u>	./.	./.	./.	min:s	
14	<u>Impairment of burner by dropping or falling material:</u> Time <sup>1)</sup>	./.	./.	./.	min:s	
15	<u>Premature end of test</u> Final occurrence of burning at the specimen <sup>1)</sup>	./.	./.	./.	min:s	
16	Time of eventually end of test <sup>1)</sup>	./.	./.	./.	min:s	
17	<u>Afterburning after end of test</u> Time <sup>1)</sup>	./.	./.	./.	min:s	
18	Number of specimen	./.	./.	./.	min:s	
19	Front side of specimen <sup>2)</sup>	./.	./.	./.	min:s	
20	Rear side of specimen <sup>2)</sup>	./.	./.	./.	min:s	
21	flame length	./.	./.	./.	cm	

line no.	Measurement	Result with the tested specimen				Dim.
	Test number	#8717	#8718	#8719	---	
	flaming direction	warp	weft	weft	---	
	side	A	B	B	---	
	light / heavy fabric	light		heavy	---	
22	<u>Afterglow after end of test</u>	./.	./.	./.	---	min:s
	Time <sup>1)</sup>	./.	./.	./.	---	
23	Number of specimen	./.	./.	./.	---	
	<u>Place of appearance</u>	./.	./.	./.	---	
24	Lower half of the specimen <sup>2)</sup>	./.	./.	./.	---	
25	Upper half of the specimen <sup>2)</sup>	./.	./.	./.	---	
26	Front side of specimen <sup>2)</sup>	./.	./.	./.	---	
27	Rear side of specimen <sup>2)</sup>	./.	./.	./.	---	
	<u>Density of smoke</u>					% * min
28	≤ 400 % * min	1	1	1	---	
29	> 400 % * min <sup>4)</sup>	./.	./.	./.	---	
30	Diagram in enclosure no.	1	2	3	---	
	<u>Residual lengths: individual values<sup>3)</sup></u>					
31	Specimen 1	75	64	69	---	cm
	Specimen 2	64	62	68	---	cm
	Specimen 3	67	67	68	---	cm
	Specimen 4	62	67	68	---	cm
32	<u>Average residual length<sup>3)</sup></u>	<b>67</b>	<b>65</b>	<b>68</b>	---	
33	<u>Photo of specimen in enclosure no.</u>	1	2	3	---	
	<u>Flue gas temperature</u>					°C
34	Maximum of average values	121	123	119	---	
35	Time <sup>1)</sup>	9:21	10:00	08:29	---	
36	Diagram in enclosure no.	1	2	3	---	min:s
37	Remarks: - none -					

<sup>1)</sup> indication of times relative to beginning of test

<sup>2)</sup> checked if applicable

<sup>3)</sup> indication of carrier/foam layer separated in case of fire-proofing agents

<sup>4)</sup> very strong development of smoke

## 6. Explanations concerning the testing procedure

-none-

## 7. Summary of results and additional establishments to Fire Behaviour

lineo.	Measurement	Result with the tested specimen				dimension
	test-no.	#8717 warp side A	#8718 weft side B	#8719 weft side B	---	
	light / heavy fabric	light		heavy	---	
1	residual length	67	65	68	---	cm
2	max. smoke temperature	121	123	119	---	°C
3	integral of smoke density	1	1	1	---	%min
4	remarks: none					

According to DIN 4102, pt. 1, hardly flammable ("schwerentflammbare") building materials must meet the requirements of class B2.

After performing additional tests in the ignitability apparatus, this could be verified (encl. 4 & 5).

## 8. Special remarks


- This report is only valid for the material as described in paragraph 1. In combination with other materials or with additional coatings or primers etc., the burning behaviour may differ.
- This test report is not valid for the exposure to outdoor climate conditions, washing or cleaning with chemicals.
- This test report is not valid if the material is used as a building product in the sense of the State Building Regulations ("Landesbauordnungen", MBO § 17, par. 3).
- This test report is no substitute for a General Building Inspectorate Certificate.
- This test report is granted without prejudice to the rights of third parties, in particular private proprietary rights.
- For legal interests, only the German original version is relevant.
- In General Building Inspectorates procedures, this test report can be used for
  - regular building materials for the required proof of accordance
  - for not regular building materials for the required proof of applicability

## 9. Validity

This test report is valid until the denoted date on page 1. The test report becomes invalid in case the standards on which these tests are based are changed.

Fladungen, 06.02.2017

Clerk in charge



(Dipl.-Ing. (FH) Jürgen Hammer)



Head of test laboratory:



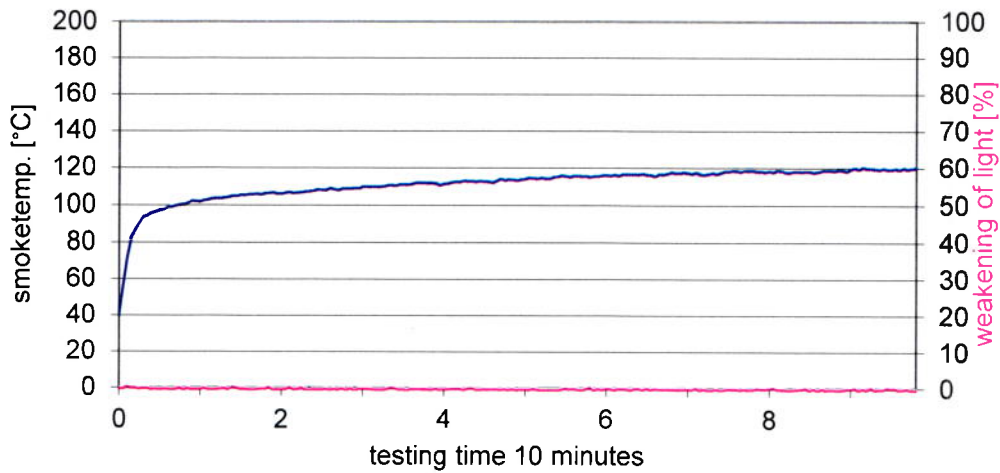
(Dipl.-Ing. (FH) Andreas Hoch)

**Fire shaft test #8717**

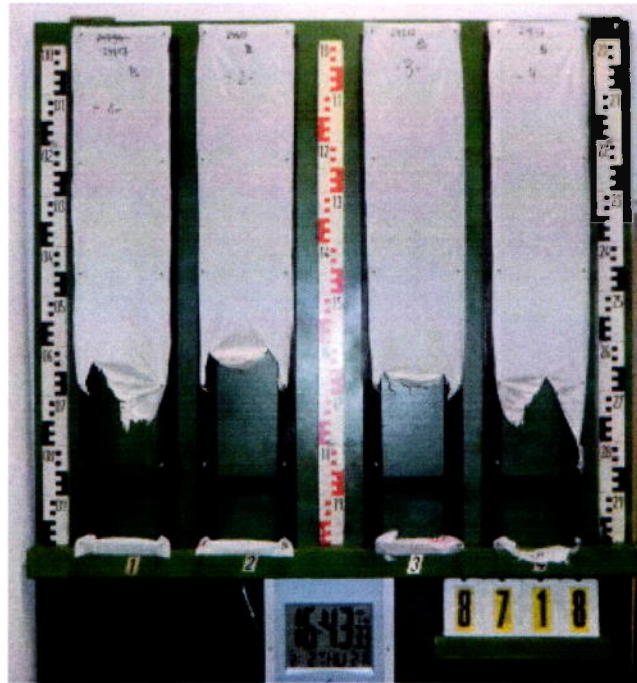


**measurement**

#8717, Georg + Otto Friedrich, "PES-Fahnenstoff...", A+K, PN 24817  
 residual length: 67cm, max. smoketemp.: 121°C, smoke-Int.: 1%/min

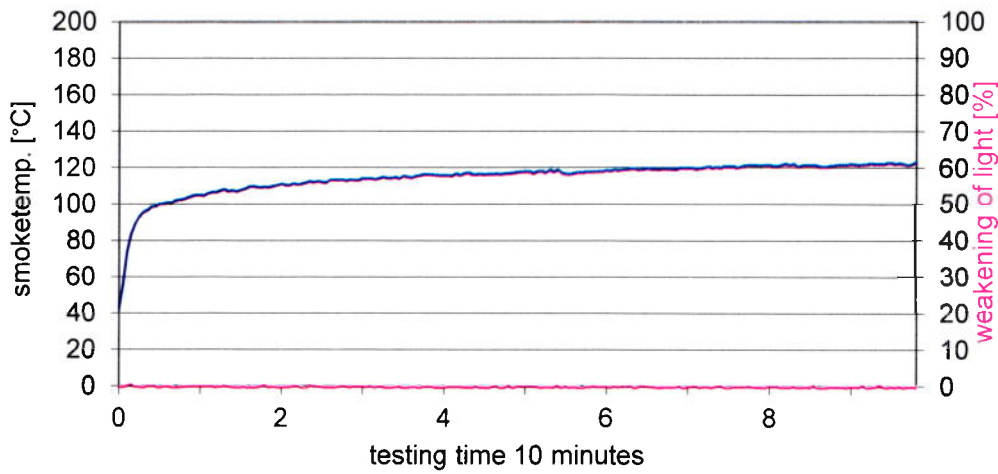


**Fire shaft test #8718**



**measurement**

#8718, Georg + Otto Friedrich, "PES-Fahnenstoff...", B+S, PN 24817  
residual length: 65cm, max. smoketemp.: 123°C, smoke-Int.: 1%/min

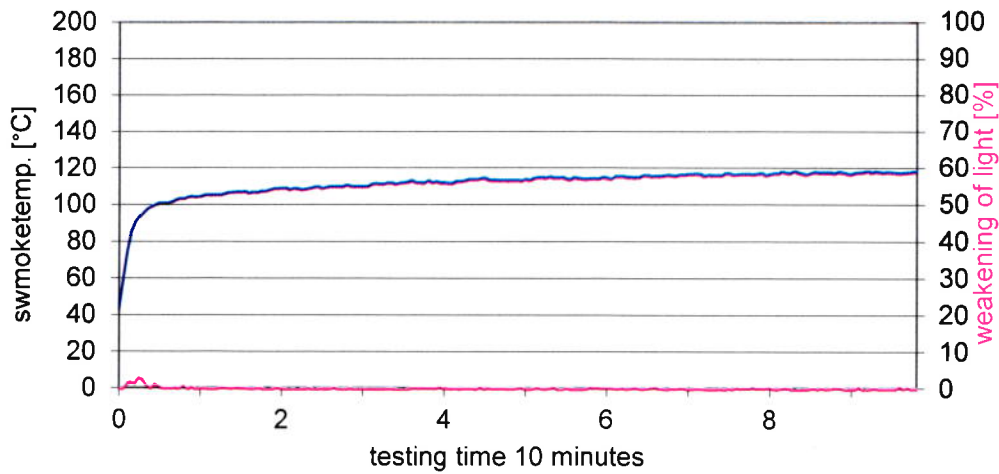


**Fire shaft test #8719**



**measurement**

#8719, Georg + Otto Friedrich, "PES-Fahnenstoff...", B+S, PN 24818  
 residual length: 68cm, max. smoketemp.: 119°C, smoke-Int.: 1%/min





**Test for normal flammability**  
**classifying B2 according to DIN 4102**

1. Description of test material in condition as delivered cf. page 2

2. Preparation of samples

Samples for the ignitability apparatus were cut from the sample.  
 The samples were kept in a climate 23/50 until they reached constant weight.

3. Arrangement of samples freely suspended

Flaming side A and side B in warp and in weft direction

4. Date of test CW 04 in 2017

5. Results

PN 24817: flaming side A in weft direction	edge-test						surface-test						Dim
	1	2	3	4	5	6	1	2	3	4	5	6	
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition <sup>1)</sup>	1	1	1	1	1	--	1	--	--	--	--	--	s
measurement mark reached <sup>1)2)</sup>	-/-	-/-	-/-	-/-	-/-	--	-/-	--	--	--	--	--	s
maximum flame height	4	3	2	2	2	--	3	--	--	--	--	--	cm
time of max. flame height	2	1	1	1	1	--	2	--	--	--	--	--	
Self-cessation of flames end of afterburning <sup>1)</sup>	3	2	2	2	2	--	3	--	--	--	--	--	s
flames were extinguished after <sup>1)</sup>	-/-	-/-	-/-	-/-	-/-	--	-/-	--	--	--	--	--	s
smoke development (visually)	very little						very little						
dropping of burning material <sup>1)2)</sup>	-/-	-/-	-/-	-/-	-/-	--	-/-	--	--	--	--	--	s
Appearance after test: burned out till max. width 3 cm x height 6 cm													

PN 24817: additional tests	edge-test						surface-test						Dim
	1	2	3	4	5	6	1	2	3	4	5	6	
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition <sup>1)</sup>	1	1	1	--	--	--	1	1	1	--	--	--	s
measurement mark reached <sup>1)2)</sup>	-/-	-/-	-/-	--	--	--	-/-	-/-	-/-	--	--	--	s
maximum flame height	1	1	1	--	--	--	3	2	2	--	--	--	cm
time of max. flame height	1	1	1	--	--	--	2	2	2	--	--	--	
Self-cessation of flames end of afterburning <sup>1)</sup>	1	2	2	--	--	--	3	2	2	--	--	--	s
flames were extinguished after <sup>1)</sup>	-/-	-/-	-/-	--	--	--	-/-	-/-	-/-	--	--	--	s
smoke development (visually)	very little						very little						
dropping of burning material <sup>1)2)</sup>	-/-	-/-	-/-	--	--	--	-/-	-/-	-/-	--	--	--	s
Appearance after test: burned out till max. width 3 cm x height 16 cm													

<sup>1)</sup> time denoted relative to beginning of test

<sup>2)</sup> during 20 Sec    -/- no occurrence    -- no information

PN 24818: additional tests	edge-test						surface-test						Dim
	1	2	3	4	5	6	1	2	3	4	5	6	
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition <sup>1)</sup>	1	1	1	1	--	--	2	2	2	2	--	--	s
measurement mark reached <sup>1)2)</sup>	-/-	-/-	-/-	-/-	--	--	-/-	-/-	-/-	-/-	--	--	s
maximum flame height	2	2	2	2	--	--	3	2	2	2	--	--	cm
time of max. flame height	4	4	4	4	--	--	5	2	2	2	--	--	
Self-cessation of flames end of afterburning <sup>1)</sup>	5	5	5	4	--	--	6	3	3	3	--	--	s
flames were extinguished after <sup>1)</sup>	-/-	-/-	-/-	-/-	--	--	-/-	-/-	-/-	-/-	--	--	s
smoke development (visually)	very little						very little						
dropping of burning material <sup>1)2)</sup>	-/-	-/-	-/-	-/-	--	--	-/-	-/-	-/-	-/-	--	--	s
Appearance after test: burned out till max. width 2 cm x height 4 cm													

<sup>1)</sup> time denoted relative to beginning of test

<sup>2)</sup> during 20 Sec

-/- no occurrence

-- no information

6. Remarks and explanations to the testing procedure - none –

7. Opinion concerning the dropping of burning material

The test for normal flammability shows no dropping burning material.