

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-160668-2

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>ETTLIN Spinnerei und Weberei Produktions GmbH &amp; Co.KG</b> Pforzheimer Straße 202 D-76275 Ettlingen
<b>description of samples</b>	mixed fabric consisting of PES and PVDF in 3 different colours
<b>name of the material</b>	„ETTLINlux® Architekturgewebe PES & PVDF“
<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>	31.05.2022
<b>result</b>	<b>The examined product meets dyed in any colour the requirements of class B1 for “schwerentflammbare” (hardly flammable) building materials according to DIN 4102, part 1 (May 1998), suspended freely or with distance of &gt;40 mm to same or other plain materials.</b>

This test report includes 5 pages and 6 enclosures.

Remark: If the above mentioned building material is not used as product according to MBO § 2, Abs. 9, Ziffer 1, 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 in the meaning of 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 in the meaning of state building prescriptions. This has to be verified 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 non-regular building products for the needed proofs of applicability.

This test report must not be published and copied without preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.

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

**PN 23447:** “ETTLINlux® Architekturgewebe PES & PVDF“ colour: grey

- mixed fabric consisting of PES and PVDF -

There is no difference between side A and side B.

characteristic values determined by the test laboratory:

area weight: about 189 g/m<sup>2</sup>      thickness: about 0,42 mm

**PN 23448:** “ETTLINlux® Architekturgewebe PES & PVDF“ colour: red

- mixed fabric consisting of PES and PVDF -

There is no difference between side A and side B.

characteristic values determined by the test laboratory:

area weight: about 191 g/m<sup>2</sup>      thickness: about 0,42 mm

**PN 23676:** “ETTLINlux® Architekturgewebe PES & PVDF“ colour: beige

- mixed fabric consisting of PES and PVDF -

There is no difference between side A and side B.

characteristic values determined by the test laboratory:

area weight: about 205 g/m<sup>2</sup>      thickness: about 0,40 mm

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

## 2. Preparation of samples

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

## 3. Arrangement of samples      mounting: freely suspended

#7827:	PN 23448	flaming side A in warp direction / red
#7828:	PN 23448	flaming side B in weft direction / red
#7829:	PN 23447	flaming side B in weft direction / grey
#7975:	PN 23676	flaming side B in weft direction / beige

## 4. Date of test CW 18 until 26 in 2016 in 2017

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

no.	Measurement	Result with the tested specimen				Dim.
		#7827	#7828	#7829	#7975	
	Test number	#7827	#7828	#7829	#7975	
	flaming direction / side	warp / A	weft / B	weft / B	weft / B	
1	Number of specimen arrangement acc. to. DIN 4102/T15, schedule 1	1	1	1	1	
2	Maximum flame height above bottom edge of the specimen	30	30	30	30	cm
3	Time <sup>1)</sup>	9:58	9:58	9:58	9:58	min:s
4	Burn through / melting Time <sup>1)</sup>	0:03	0:03	0:03	0:03	min:s
	<u>Observations on the back side of the specimen</u>					
5	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	Extent sporadic falling of burning droplets <sup>2)</sup>	./.	./.	./.	./.	
9	continuous falling of burning droplets <sup>2)</sup>	./.	./.	./.	./.	min:s
10	<u>Falling of burning droplets</u> Start <sup>1)</sup>	./.	./.	X 0:27	./.	min:s
11	Extent sporadic falling of burning droplets <sup>2)</sup>	./.	./.	./.	./.	
12	continuous falling of burning droplets <sup>2)</sup>	./.	./.	./.	./.	
13	<u>After flame time at the bottom of the sieve (max.)</u>	./.	./.	0:04	./.	min:s
14	<u>Impairment of the 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>After flame after end of test</u> Time <sup>1)</sup>	./.	./.	./.	./.	min:s
18	Number of specimen	./.	./.	./.	./.	
19	Front side of specimen <sup>2)</sup>	./.	./.	./.	./.	
20	Back side of specimen <sup>2)</sup>	./.	./.	./.	./.	
21	flame length	./.	./.	./.	./.	cm

line no.	Measurement	Result with the tested specimen				Dim.
		#7827	#7828	#7829	#7975	
	Test number					
	flaming direction / side	warp / A	weft / B	weft / B	weft / B	
22	<u>Afterglow after end of test</u> Time <sup>1)</sup>	./.	./.	./.	./.	min:s
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	Back side of specimen <sup>2)</sup>	./.	./.	./.	./.	
28	<u>Density of smoke</u> ≤ 400 % * min	0	0	0	0	% * min
29	> 400 % * min <sup>4)</sup>	./.	./.	./.	./.	% * min
30	Diagram: incl. no.	1	2	3	4	
31	<u>Residual lengths:</u> individual value <sup>3)</sup>					
	Specimen 1	65	57	54	61	cm
	Specimen 2	65	60	61	59	cm
	Specimen 3	66	55	56	55	cm
	Specimen 4	61	57	52	65	cm
32	<u>Average value, individual test</u> <sup>3)</sup>	<b>64</b>	<b>57</b>	<b>56</b>	<b>60</b>	
33	<u>Photo of specimen in enclosure no.</u>	1	2	3	4	
34	<u>Flue gas temperature</u>	121	120	122	114	°C
35	Maximum of average value Time <sup>1)</sup>	09:48	09:42	09:45	08:10	min:s
36	Diagram: incl. no.	1	2	3	4	
37	Remarks: - none -					

<sup>1)</sup> indication of times: from the begin of testing procedure <sup>2)</sup> checked off 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

There were no additional tests proceeded because of the residual length of more than 45 cm.

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

lineo.	measurement	Result with the tested specimen				dimension
	test-no.	#7827-red warp / A	#7828-red weft / B	#7829-grey weft / B	#7975-beige weft / B	
1	residual length.	64	57	56	60	cm
2	max. smoke temperature	<b>121</b>	<b>120</b>	<b>122</b>	<b>114</b>	°C
3	density of smoke - integral	0	0	0	0	%min
4	remarks: -none-					

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

Pursuant to additional tests in the ignitability apparatus this can be determined (appendix 5 & 6).

## 8. Special remarks

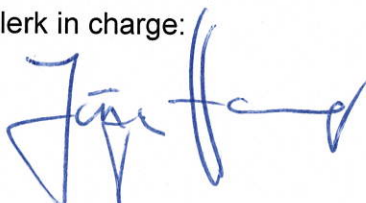
- This report is only valid for the material as described under paragraph 1. In combination with other materials or with additional coatings or grounds etc. the burning behaviour may differ.
- This test report is not valid for the exposure to outdoor climate conditions.
- This test report is not valid, as soon as the fabric is used as a building product in the sense of the "Landesbauordnungen" (state building requirements, 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 based 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 mentioned date on page 1. The test report becomes invalid in case the standards on which the tests are based are changed.

Fladungen, 19.12.2017

clerk in charge:



(Dipl.-Ing. (FH) Jürgen Hammer)



Head of the test laboratory:



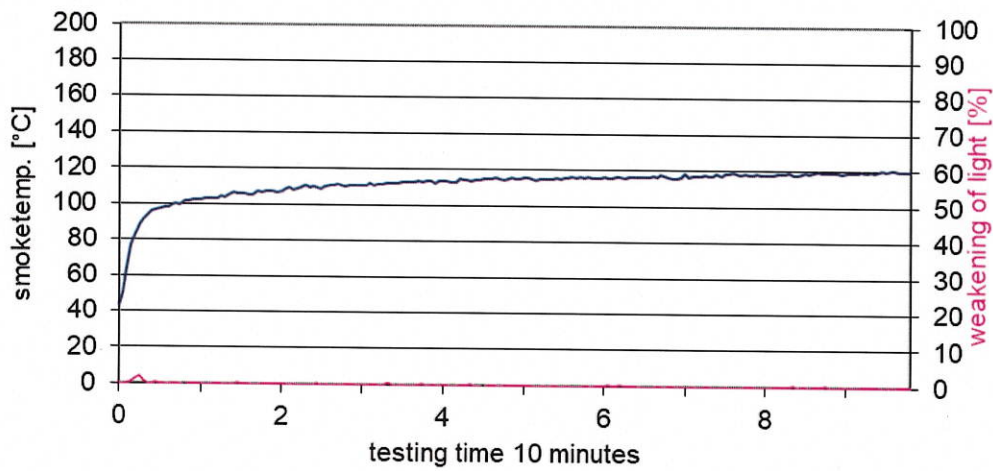
(Dipl.-Ing.(FH) Andreas Hoch)

„Brandschacht“-test #7827

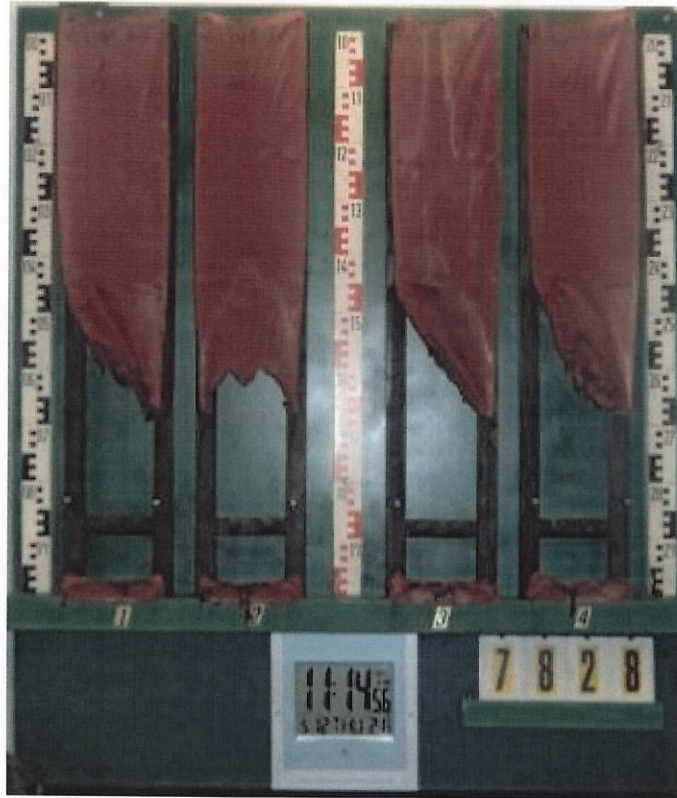


measurement

#7827, ETTLINlux 2105 red, PN 23448  
residual length: 64cm, max. smoketemp.: 121°C, smoke-Int.: 0%/min

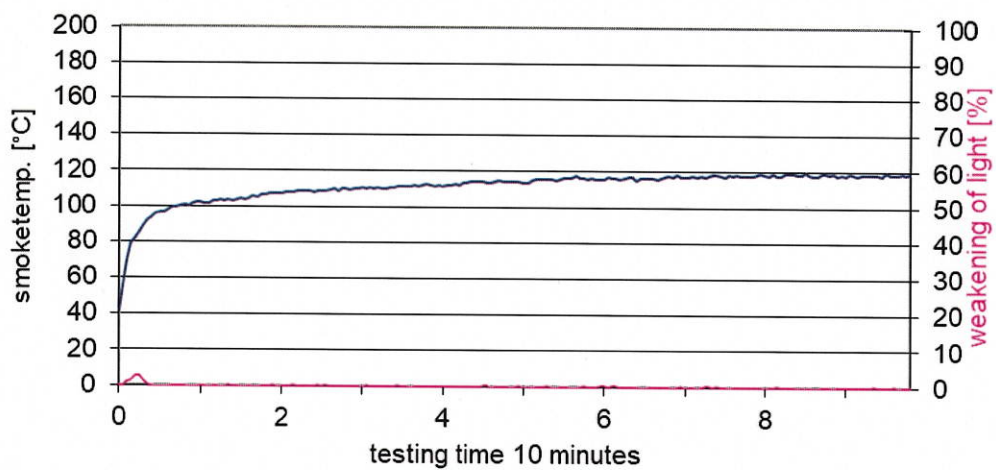


„Brandschacht“-test #7828

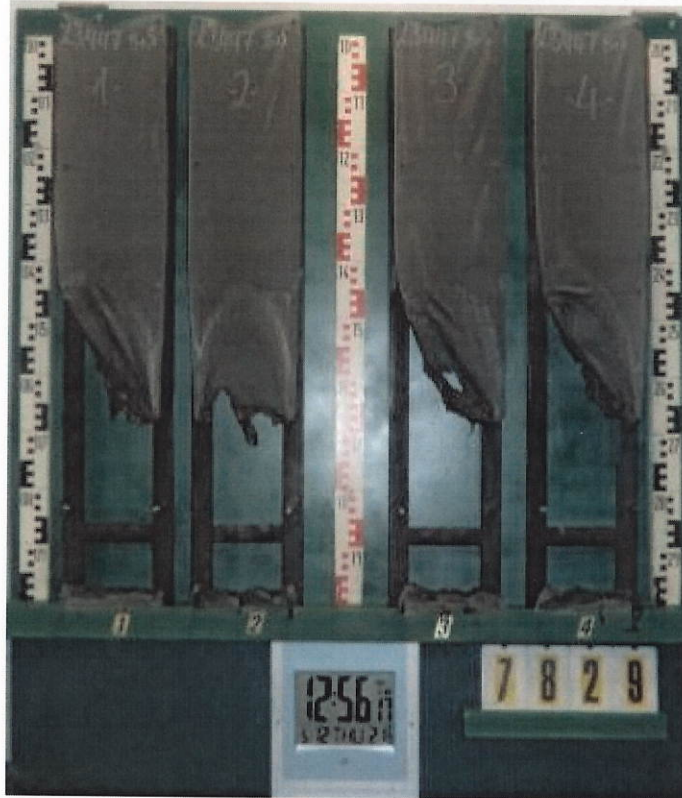


measurement

#7228, ETTLINlux 2105 red, PN 23448  
residual length: 57cm, max. smoketemp.: 120°C, smoke-Int.: 0%/min

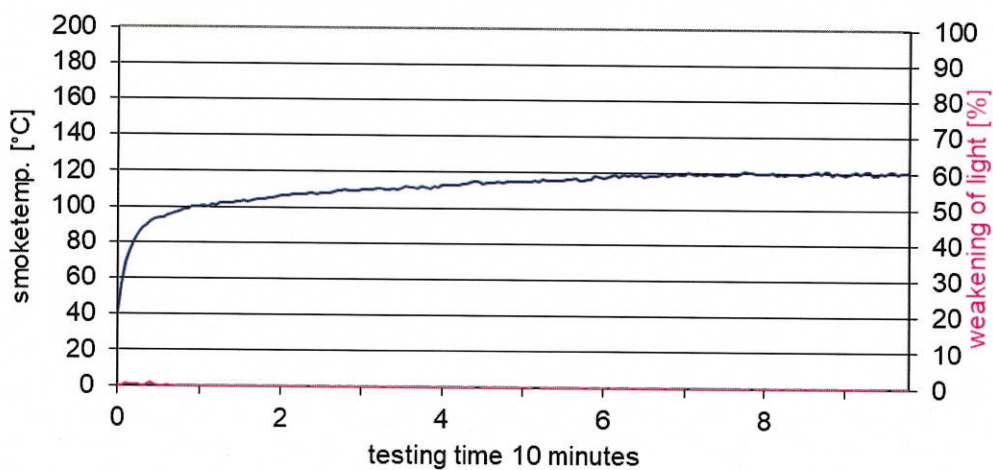


**„Brandschacht“-test #7829**



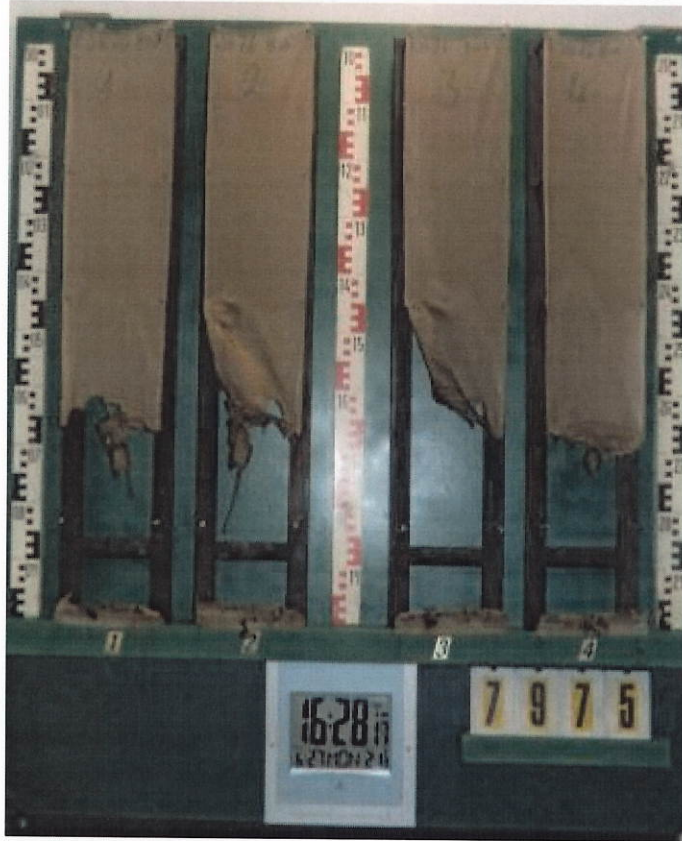
**measurement**

#7829, ETTLINlux 2101 grey, PN 23447  
residual length: 56cm, max. smoketemp.: 122°C, smoke-Int.: 0%/min



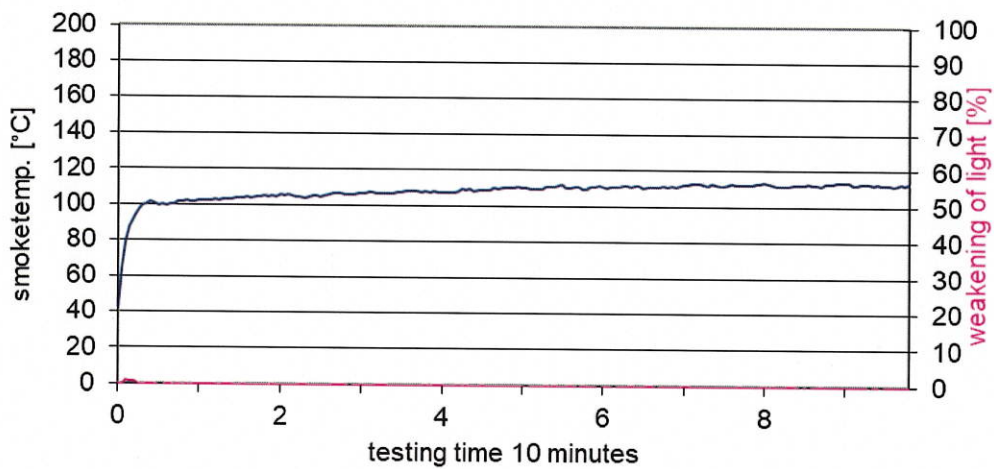


**„Brandschacht“-test #7975**



**measurement**

#7975, ETTLINlux 2102 beige, PN 23676  
residual length: 60cm, max. smoketemp.: 114°C, smoke-Int.: 0%/min



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

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

2. Preparation of samples

Out of the material there have been cut samples for the ignitability apparatus.  
The samples were kept in a climate 23/50 until they reached constant weight.

3. Arrangement of samples -freely suspended-

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

4. Date of test CW 18 and CW 25 in 2016

5. Results

PN 23448	edge-test								surface-test				Dim
	1	2	3	4	5	6	7	8	1	2	3	4	
samples no.													
ignition <sup>1)</sup>	1	1	1	1	1	1	1	1	2	1	1	1	s
reaching the mark of measurement <sup>1)2)</sup>	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	S
max. flame height	6	10	9	7	8	9	8	8	7	5	4	6	cm
time	7	12	9	6	9	7	9	7	13	7	6	7	
self cessation of the flames end of afterflame <sup>1)</sup>	8	15	11	9	14	13	13	12	17	9	11	12	s
end of glowing <sup>1)</sup>	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s
flames were extinguished after <sup>1)</sup>	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s
smoke development (visual)	heavy								heavy				
dropping of burning material during 20 s <sup>1)</sup>	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s
Appearance after test: burned out till max. height 9 cm x width 3 cm													

<sup>1)</sup> time mentioned from the beginning of the test <sup>2)</sup> during 20 Sec -/- no appearance -- no information

PN 23447:	edge-test						surface-test						Dim
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition <sup>1)</sup>	1	1	1	1	--	--	1	1	1	1	--	--	s
reaching the mark of measurement <sup>1)2)</sup>	./.	./.	./.	./.	--	--	./.	./.	./.	./.	--	--	s
max. flame height	9	6	5	8	--	--	5	4	6	7	--	--	cm
time	14	10	6	13	--	--	4	5	7	9	--	--	
self cessation of the flames end of afterflame <sup>1)</sup>	16	12	8	15	--	--	7	15	10	13	--	--	s
end of glowing <sup>1)</sup>	./.	./.	./.	./.	--	--	./.	./.	./.	./.	--	--	s
flames were extinguished after <sup>1)</sup>	./.	./.	./.	./.	--	--	./.	./.	./.	./.	--	--	s
smoke development (visual)	heavy						heavy						
dropping of burning material during 20 s <sup>1)</sup>	./.	./.	./.	./.	--	--	./.	./.	./.	./.	--	--	s
Appearance after test: burned out till max. height 9 cm x width 2 cm													

PN 23676:	edge-test						surface-test						Dim
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
reaching the mark of measurement <sup>1)2)</sup>	./.	./.	./.	./.	--	--	./.	./.	./.	./.	--	--	s
max. flame height	5	4	4	5	--	--	7	5	5	6	--	--	cm
time	13	4	6	5	--	--	11	10	9	10	--	--	
self cessation of the flames end of afterflame <sup>1)</sup>	15	6	11	8	--	--	13	13	14	13	--	--	s
end of glowing <sup>1)</sup>	./.	./.	./.	./.	--	--	./.	./.	./.	./.	--	--	s
flames were extinguished after <sup>1)</sup>	./.	./.	./.	./.	--	--	./.	./.	./.	./.	--	--	s
smoke development (visual)	moderate						moderate						
dropping of burning material during 20 s <sup>1)</sup>	./.	./.	./.	./.	--	--	./.	./.	./.	./.	--	--	s
Appearance after test: burned out till max. height 7 cm x width 2 cm													

<sup>1)</sup> time mentioned from the beginning of the test <sup>2)</sup> during 20 Sec -/- no appearance -- 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 burning dripping material.