

# for the proof of Fire behaviour according to DIN 4102-1



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PÜZ-Stelle (LBO): BRA09  
Notified Body no.: 1507<sup>1)</sup>

<b>Reference</b>	FLT 3464713 (Translation of the German test report - no guarantee for translation of technical terms)
<b>Sponsor</b>	Neschen AG Hans-Neschen-Straße 1 D - 31675 Bückeburg
<b>Order</b>	2013-11-12 <b>Arrived</b> 2013-11-13
<b>Description of samples</b>	On one side coated rigid PVC-film, to be used as advertising space, named: "printlux easy panel 310 B1" and "printlux easy panel 430 B1" (for details see page 2)
<b>Delivered</b>	2013-11-13
<b>Content of request</b>	Proof of flammability to classify building materials to class B1 "schwerentflammbar" according to DIN 4102-1
<b>Assessment</b>	The examined product meets the requirements of class B1 for "schwerentflammbare" (not easily flammable) building materials according to DIN 4102-1, if used suspended freely or with distance of >40 mm to the same or other plain materials. (for details see page 5).
<b>Validity of report</b>	2018-11-30
<b>Sampling</b>	by the company itself

#### 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

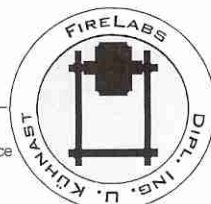
- for regular building products for the pre scribed proofs of conformity
- for non-regular building products for the needed proofs of applicability.

This test report comprises 5 pages and 4 enclosures.

**Approved testing, inspection and certification body**

This test report must not be published and copied preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents. Agreement of the test laboratory has to be given in any case if norms in which the tests are based or other technical standards have changed.

<sup>1)</sup> 89/106/EEC



TEST REPORT

## 1 Description of test material in condition as delivered

### 1.1 Test material (according to the sponsor):

The delivered material is a white rigid PVC film with a white coating on one side (printable surface). The material is intended to be used indoor as advertising space and was named with the trade names "printlux easy panel 310 B1" and "printlux easy panel 430 B1" by the sponsor.

### 1.2 Description of the delivered material

For the tests the laboratory received the following plastic films, coated on one side:

- "printlux easy panel 310 B1": 1 roll with app. 0,914 m width and app. 20,0 m length
- "printlux easy panel 430 B1": 1 roll with app. 1,067 m width and app. 20,0 m length

The coated plastic films were delivered without printings or other additional coatings and were labelled with:

- "printlux easy panel 310 B1" and batch 490744
- "printlux easy panel 430 B1" and batch 496487

Colour: white films with white coating

Characteristic values: see paragraph 4.1; Photos: see enclosures.

Other specifications are not known to the laboratory, a sample each is stored.

## 2 Preparation of samples

For the small burner test (Brennkasten) samples for edge flame exposure (dimensions 190 mm x 90 mm) and samples for surface flame exposure (dimensions 230 mm x 90 mm) have been cut in longitudinal and in transverse direction of the material.

For the fire shaft test (Brandschacht) 6 specimens were assembled. The samples (dimensions 1000 mm x 190 mm) for the test specimens A, C and E were cut in longitudinal direction, the samples for the test specimen B, D, and F were cut in transverse direction of the material. (details: refer to page 4)

Afterwards all samples were kept in a climate chamber acc. DIN 50014-23/50-2 until they reached constant weight.

## 3 Arrangement of samples

The small burner tests ("Brennkasten") have been performed acc. DIN 4102-1, chapter 6.2.5 (building materials class B2). The tests in the fire shaft test ("Brandschacht") have been performed acc. DIN 4102-1 and -16 (building materials class B1).

Arrangement of all samples: single layered, freely suspended, as well from the front and the reversed side.

Examination period: November 2013

## 4 Results

- section 4.1 Material characteristics
- section 4.2.1 Test results class B2 (Brennkasten), see enclosure 4
- section 4.2.2 Test results class B1 (Brandschacht)

### 4.1 Material characteristics

Table 1

Type:	Manufacturer's data			Measured values			
	Width	Mass per unit area	Thickness	Shipping width	Mass per unit area	Thickness (m.v.)	
"printlux easy	[cm]	[g/m <sup>2</sup> ]	[mm]	[cm]	[g/m <sup>2</sup> ]	[mm]	s
panel 310 B1"	91,4	445 ±7%	310 ±7%	91,4	440	0,32	0,005
panel 430 B1"	106,7	610 ±7%	430 ±7%	106,7	595	0,43	0,005

m.v. mean value

s standard deviation

./ not received/not measured



## 4.2 Results of the fire behaviour

### 4.2.1 Test results class B2 (Brennkasten)

All building materials class B1 must also meet the requirements of materials class B2 (low flammable). The material, tested in "Brennkasten" acc. DIN 50 050 meets the requirements class B2; the material did not show burning particles / droplets. (Results see enclosure 4)

### 4.2.2 Test results class B1 (Brandschacht)

Table 3

Test results "Brandschachtprüfung" (part 1)								
line no.		Test results						requirements
		A	B	C	D	E	F	
1	<u>Number of specimen arrangement</u> acc. DIN 4102 –15 Table 1	1	1	1	1	1	1	
2	<u>Maximal flame height</u> above bottom edge ..... cm	50	60	70	60	60	60	*)
3	Time <sup>1)</sup> ..... min	1	1	1	1	1	1	
4	<u>Burning / melting through</u> Time <sup>1)</sup> .....min	1	1	1	1	1	1	
5	<u>Back side of the specimens:</u> Flames / glowing Time <sup>1)</sup> .....min:s	./.	./.	./.	./.	./.	./.	
6	Discolouring Time <sup>1)</sup> .....min:s	./.	./.	./.	./.	./.	./.	
7	<u>Falling of burning droplets</u> Begin <sup>1)</sup> .....min	No	No	No	No	No	No	
8	Extend: Sporadic falling of burning droplets							
9	Continuous falling of burning droplets							
10	<u>Falling of burning parts</u> Begin <sup>1)</sup> .....min:s	Yes	Yes	Yes	Yes	Yes	Yes	
11	Extend: Sporadic falling of burning parts	1	1	1	1	1	1	
12	Continuous falling of burning parts	Yes	Yes	Yes	Yes	Yes	Yes	
13	<u>Afterflame time at the bottom of the sieve (max.)</u> ..... min:s	0:04	./.	0:17	0:10	0:05	0:04	
14	<u>Impairment of the burner flames by dropping or falling</u> <u>Material</u> Time <sup>1)</sup> .....min:s	No	No	No	No	No	No	
15	<u>Premature end of test</u>	No	No	No	No	No	No	
16	Final occurrence of burning at the specimen <sup>1)</sup> .....min	10	10	10	10	3	3	
	Time of eventually end of test <sup>1)</sup> .....min:s	./.	./.	./.	./.	./.	./.	

<sup>1)</sup> Indication of time: from the beginning of testing procedure

- Not tested

./. Not occurred

\*) No cause for complaint



Test results "Brandschachtprüfung" (part 2)								
line no.		Test results						requirements
		A	B	C	D	E	F	
17	<u>Afterflame after end of test</u> Time .....min:s	No	No	No	No	No	No	
18	Number of specimen							
19	Front side of specimen							
20	Back side of specimen							
21	Flame length .....cm							
22	<u>Afterglow after end of test</u> Time .....min:s	No	No	No	No	No	No	
23	Number of specimen							
24	<u>Place of appearance:</u> Lower half of specimen							
25	Upper half of specimen							
26	Front side of specimen							
27	Back side of specimen							
28	<u>Smoke density</u> ≤ 400 % min	79,1	65,7	72,0	82,4	75,8	77,0	
29	≥ 400 % min (very strong smoke density)							
30	Diagram fig. no.	1	3	5	7	9	11	
31	<u>Residual length</u> Individual value .....cm	55 60 57 55	50 40 48 50	45 42 43 49	45 53 46 43	48 45 55 53	54 53 54 54	> 0
32	Average value .....cm	<b>56</b>	<b>47</b>	<b>44</b>	<b>46</b>	<b>50</b>	<b>53</b>	≥ 15
33	Photo of the test specimen fig. no.	2	4	6	8	10	12	
34	<u>Flue gas temperature</u> Maximum of average value. °C	112	117	117	116	116	111	≤ 200
35	Time <sup>1)</sup> .....min:s	9:58	9:48	9:46	9:54	9:44	9:54	
36	Diagram fig. no.	1	3	5	7	9	11	
37	<u>Remarks:</u> -none- (Graphs and photos: see enclosures 1-3)							

<sup>1)</sup> Indication of time: from the beginning of testing procedure

- Not tested

./. Not occurred

\*) No cause for complaint



Specimen	Type	Test-No.	Samples orientation	Tested surface
A	430 B1	464713-001	longitudinal	coated surface
B	430 B1	464713-002	transversal	
C	430 B1	464713-003	longitudinal	uncoated surface
D	430 B1	464713-004	transversal	
E	310 B1	464713-005	longitudinal	coated surface
F	310 B1	464713-006	transversal	

## 5 Assessment

According to the test results in section 4.2 the materials, described in section 1 and 4.1, fulfil the requirements of building materials class B1 according to DIN 4102-1 if the material is used suspended freely or with a distance of > 40 mm to the same or other plain materials.

The requirements of building materials class B2 were fulfilled also. Falling of burning parts or droplets did not occur during these tests.

This test report is not valid for

- the exposure to outdoor climate conditions.

## 6 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 surfaces etc. the burning behaviour may differ.

This test report is not valid, as soon as the product 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, or particular private proprietary rights.

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.

The explanations given in DIN 4102-1 app. D, especially concerning an external production control has to be considered.

This test report is valid until 2018-11-30, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 1<sup>st</sup> of December 2013



Head of the test laboratory  
(Dipl.-Ing. Uwe Kühnast)



In charge for testing  
(Dipl.-Ing. Manfred Sailer)

Test specimen A

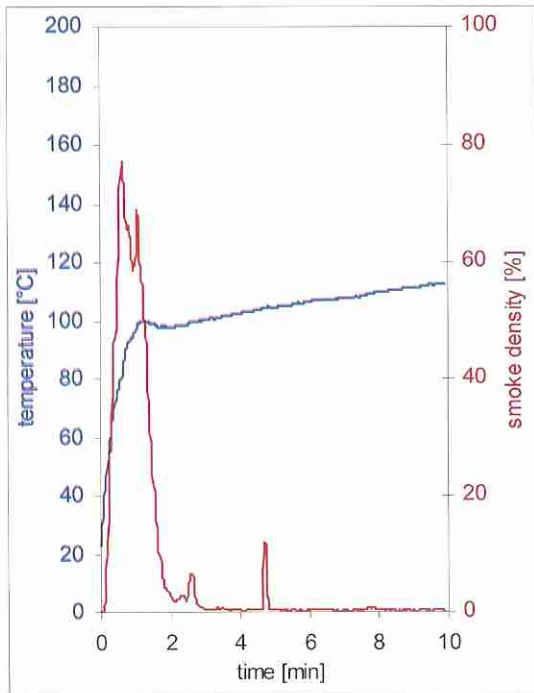


fig. 1  
Graphs of the flue gas temperature and the smoke density

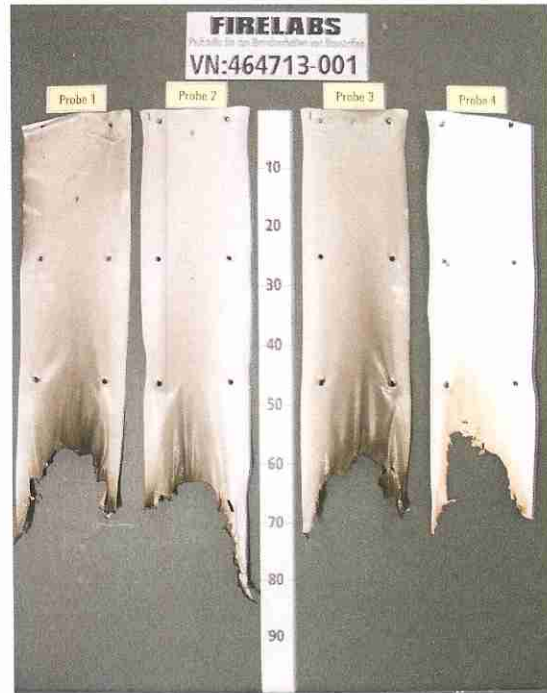


fig. 2  
Photo of test specimen after the test (sample 4: rear side)

Test specimen B

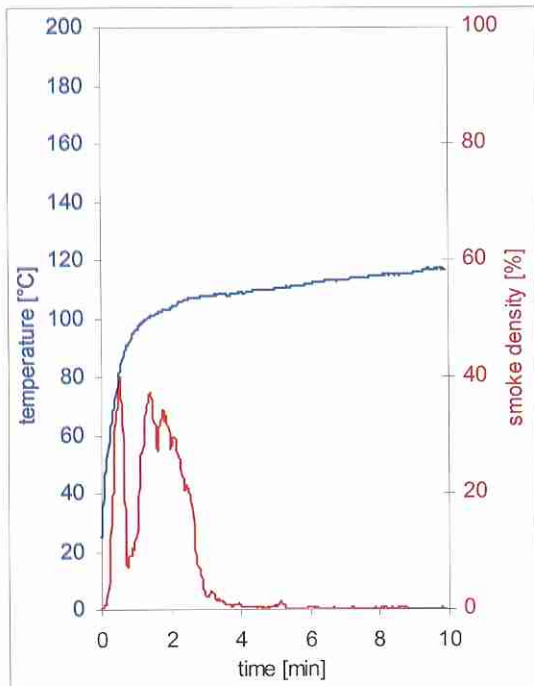


fig. 3  
Graphs of the flue gas temperature and the smoke density

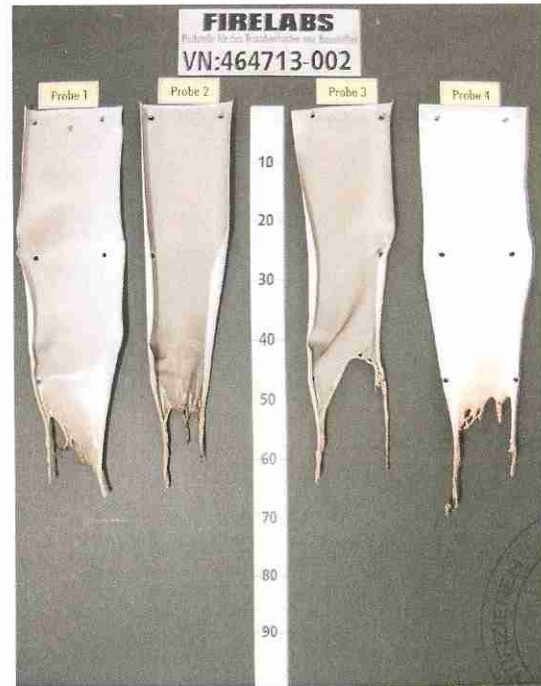


fig. 4  
Photo of test specimen after the test (sample 4: rear side)

Test specimen C

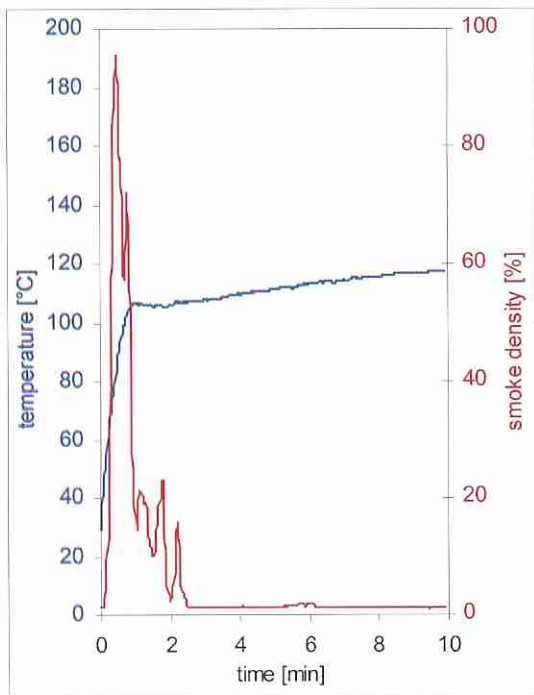


fig. 5  
Graphs of the flue gas temperature and the smoke density

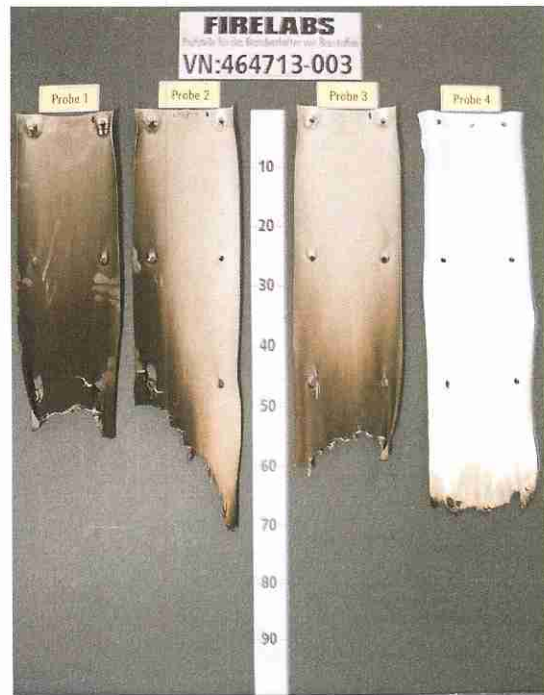


fig. 6  
Photo of test specimen after the test (sample 4: rear side)

Test specimen D

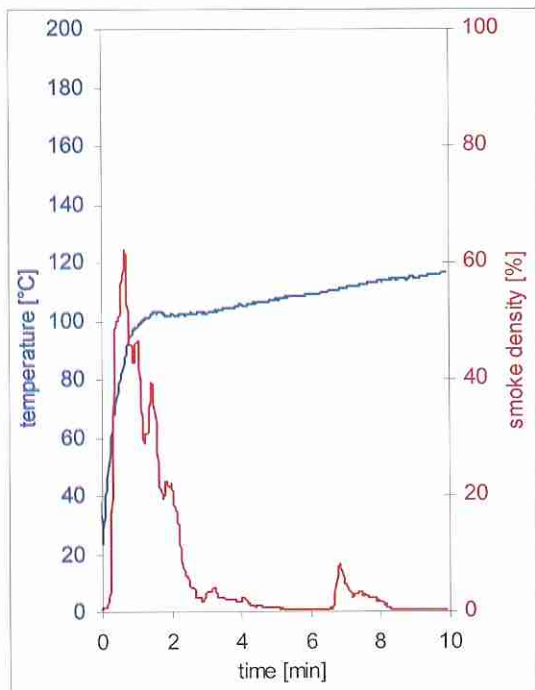


fig. 7  
Graphs of the flue gas temperature and the smoke density

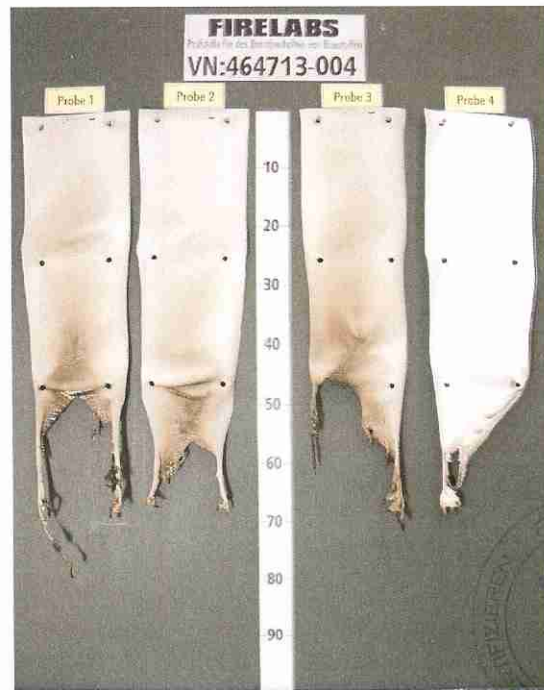


fig. 8  
Photo of test specimen after the test (sample 4: rear side)

Test specimen E

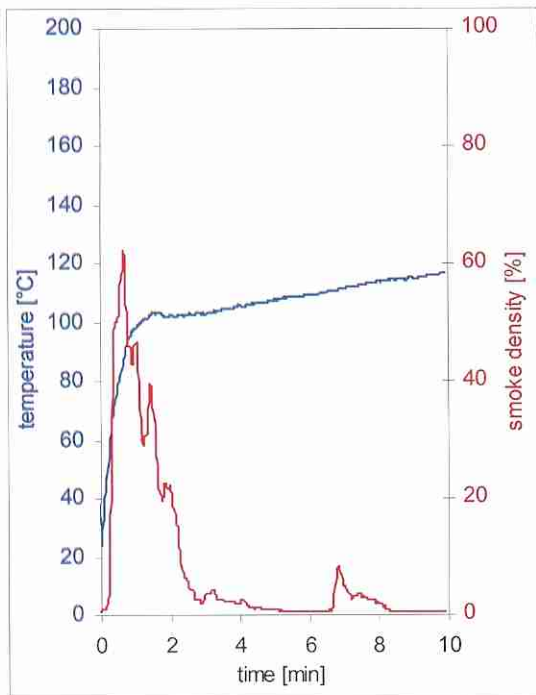


fig. 9  
Graphs of the flue gas temperature and the smoke density

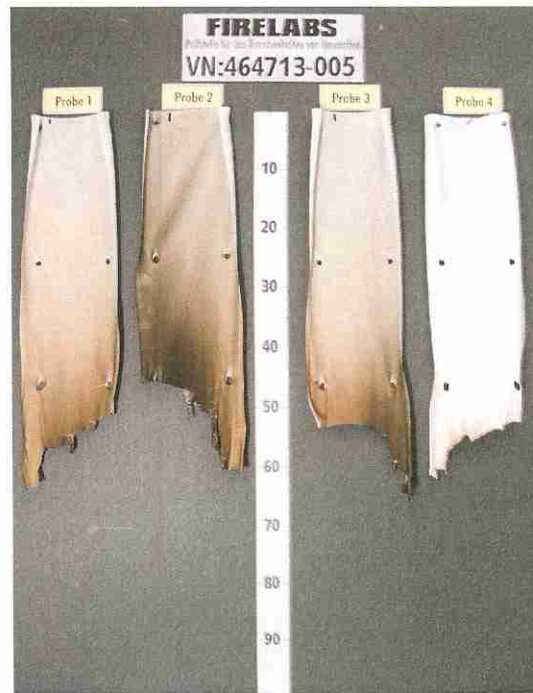


fig. 10  
Photo of test specimen after the test (sample 4: rear side)

Test specimen F

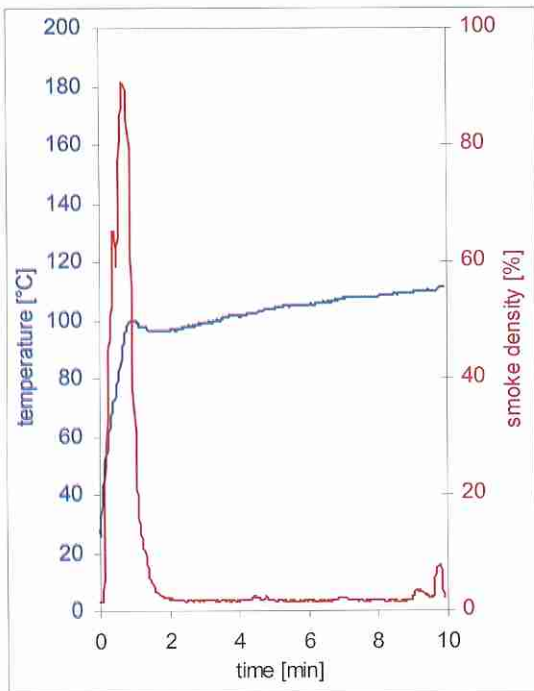


fig. 11  
Graphs of the flue gas temperature and the smoke density

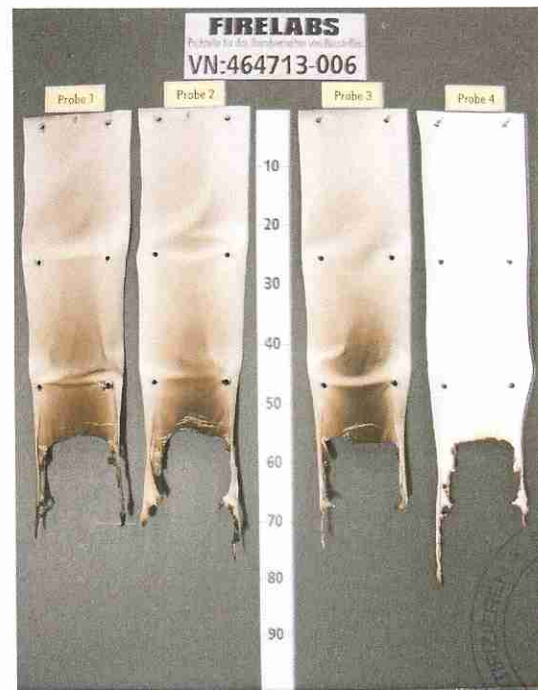


fig. 12  
Photo of test specimen after the test (sample 4: rear side)



## Test results class B2 (Brennkasten)

Table 2.1

"printlux easy panel 310 B1"	longitudinal direction							transversal direction							dim.	requirements
	1	2	3	4	5	6	7	1	2	3	4	5	6	7		
Sample-No.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	-	-
Ignition of the sample	1	5	5	5	5	5	5	1	5	5	5	5	5	5	s	-
Maximum flame height	5	5	6	5	5	6	5	5	6	5	6	6	6	5	cm	-
Time of the maximum	12	10	11	10	10	11	10	11	12	10	10	11	12	11	s	-
Flame tip reached the 150 mm test mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flame has extinguished before reaching the test mark	16	16	16	16	16	15	16	16	16	16	16	16	16	16	s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	1)
Smoke density (visual)	intense							intense							-	-
Afterburning time	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-
Flames have been extinguished	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-
View of the samples after the test (20 seconds after exposure the flame): The samples were destroyed at flame impingement area: - in longitudinal and transversal direction max. length approx. 5 cm and approx. 2 cm in width, above sooted until top edge of the sample.																

Table 2.2

"printlux easy panel 430 B1"	longitudinal direction							transversal direction							dim.	requirements
	1	2	3	4	5	6	7	1	2	3	4	5	6	7		
Sample-No.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	-	-
Ignition of the sample	2	5	5	5	5	5	5	2	5	5	5	5	5	5	s	-
Maximum flame height	5	5	4	5	4	4	4	4	5	5	5	4	5	5	cm	-
Time of the maximum	15	11	12	12	12	11	13	10	11	12	12	12	11	11	s	-
Flame tip reached the 150 mm test mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flame has extinguished before reaching the test mark	16	16	16	16	16	15	16	16	16	16	16	16	16	16	s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	1)
Smoke density (visual)	intense							intense							-	-
Afterburning time	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-
Flames have been extinguished	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-
View of the samples after the test (20 seconds after exposure the flame): The samples were destroyed at flame impingement area: - in longitudinal and transversal direction max. length approx. 5 cm and approx. 2 cm in width, above sooted until top edge of the sample.																

Samples 1: edge flame exposure

Samples 2-6: surface flame exposure (coated surface)

Samples 7: surface flame exposure (uncoated surface)

1) No ignition within 20 seconds

./. Not occurred

dim. Dimension

Indication of time: from the beginning of testing procedure

Indication of measurements: from reference line of the flame

