

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



Prüfstelle für das  
Brandverhalten  
von Baustoffen  
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PÜZ-Stelle (LBO): BRA09

<b>Reference:</b>	FLT 3749421	(Translation of the German Prüfzeugnis - no guarantee for translation of technical terms)
<b>Sponsor:</b>	HEWI Heinrich Wilke GmbH Prof.-Bier-Straße 1-5 D - 34454 Bad Arolsen	
<b>Test order:</b>	2021-03-18	<b>Arrived:</b> 2021-03-19
<b>Description of samples:</b>	Uncoated, unprinted and printed fabrics made of polyester named "Dekor 30", "Dekor 38" and "Dekor 01". (for details see page 2)	
<b>Delivered:</b>	2021-03-19	
<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, in any colour, if used suspended freely or with distance of > 40 mm to the same or other plain materials (For details see page 5).	
<b>Validity:</b>	2026-03-31	
<b>Sampling:</b>	The samples have been sent to the laboratory by the manufacturer.	

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

This test certificate is not regarded as the sole proof if the tested building material is used as building product within the meaning of state building prescriptions (MBO § 17).

This test certificate 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 certificate can serve as a basis for building supervisory procedures for:

- regulated building products for the pre-scribed proof of conformity
- non-regulated building products for the needed proof of applicability.

This test certificate comprises 5 pages and 4 enclosures.

**A p p r o v e d   t e s t i n g ,   i n s p e c t i o n   a n d   c e r t i f i c a t i o n   b o d y**

Test certificates may only be published in full and without additions. For modified reproductions and excerpts, the revocable permission of the test laboratory must be obtained in advance. The test results refer exclusively to the test materials examined.

TEST CERTIFICATE



## 1 Description of test material in condition as delivered

### 1.1 Test material (according to the manufacturer)

The materials submitted are fabrics made of inherently flame-retardant polyester yarn (trade name "Trevira CS"), unprinted and printed on one and both sides. The fabrics were treated water repellent, antibacterial, fungicidal, antistatic and antimicrobial and intended to be used indoor as curtain fabric or for decorative purposes. The fabrics were named with the trade names "Dekor 30", "Dekor 38" and "Dekor 01".

### 1.2 Description of the delivered samples

For the tests, 3 sections of uncoated, white woven fabrics made of synthetic fibres were submitted to the laboratory. The fabrics were unprinted or printed over small areas on one or both sides. The samples were marked with the manufacturer's trade names and the colour-name and were provided in the following variants:

Trade name	Colour-name	Printing, Colour, Proportion [%]	Sample size [m]	
			Length	Width
Dekor 30	uni weiß	unprinted	ca. 3	2.12
Dekor 38	squares umbra sand	both sides, brown tones, ca. 0.4		2.07
Dekor 01	new dots silver	one-sided, silver, ca. 0.7		2.08

Characteristic values: see passage 4.1; photos: see enclosures

Further details are not known to the laboratory, information about the manufacturer and a retain sample have been deposited.

## 2 Preparation of samples

For the small burner ("Brennkasten") tests samples for edge flame exposure (dimensions 190 mm x 90 mm) and samples for surface exposure (dimensions 230 mm x 90 mm) were cut in warp and weft direction of the fabric.

For the tests in the fire shaft ("Brandschacht") 6 specimens, each made of 4 samples (dimensions 1000 mm x 190 mm) were assembled. The samples for the test specimens A, C and E were cut in warp, the samples for the test specimens B, D and F were cut in weft direction of the material in the respective variant.

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

## 3 Arrangement of samples

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

Arrangement of all samples: single layer, freely suspended.

Examination period: April 2021.

## 4 Results

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



### 4.1 Material characteristics

Table 1

Trade name	Manufacturer's data		Measured values		
	Mass per unit area [g/m <sup>2</sup> ]	Thickness [mm]	Mass per unit area [g/m <sup>2</sup> ]	Thickness (m.v.) [mm]   s	
Dekor 30	75	./.	73	0.14	0.002
Dekor 38			69	0.12	0.003
Dekor 01			71	0.11	0.002

./. not received/not measured

m.v. mean value (n=10)

s standard deviation



**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. Flame impingement to front or reversed side did not influence the fire behaviour (Results: see enclosure 4).

**4.2.2 Test results class B1 (Brandschacht)**

Table 3

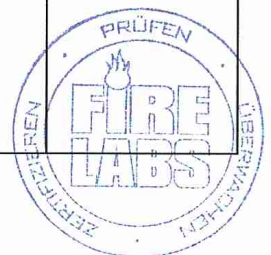
Test results "Brandschachtprüfung" (part 1)								
line no.		Test results						requirements
		A	B	C	D	E	F	
1	<u>Number of specimen arrangement</u> acc. DIN 4102 –15 Table 1	1	1	1	1	1	1	
2	<u>Maximal flame height</u> above bottom edge ..... cm	30	30	30	30	30	30	*)
3	Time <sup>1)</sup> ..... min	1	1	1	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> <u>Flames / glowing</u> Time <sup>1)</sup> .....min:s	./.	./.	./.	./.	./.	./.	
6	<u>Discolouring</u> 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	No	No	No	No	No	No	
11	Extend: Sporadic falling of burning parts							
12	Continuous falling of burning parts							
13	<u>Afterflame time at the bottom of the sieve (max.)</u> ..... min:s	./.	./.	./.	./.	./.	./.	
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> Final occurrence of burning at the specimen <sup>1)</sup> .....min	2	2	3	2	3	2	
16	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

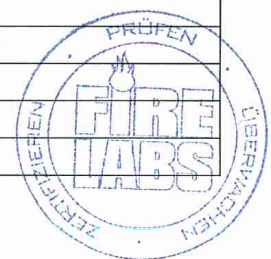
\*) No cause for complaint



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	2.1	1.2	0.3	0.5	1.3	1.0	
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	70 61 60 63	70 66 63 65	63 64 63 66	64 62 64 64	62 63 61 61	61 66 63 63	> 0
32	Average value .....cm	<b>63</b>	<b>66</b>	<b>64</b>	<b>65</b>	<b>61</b>	<b>63</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	116	116	118	117	118	116	≤ 200
35	Time <sup>1)</sup> .....min:s	9:22	9:48	9:56	9:30	9:56	9:38	
36	Diagram fig. no.	1	3	5	7	9	11	
37	<u>Remarks:</u> line 32: There were no additional tests proceeded because of the residual length of > 45 cm (DIN 4102-16: 2015-09, 5.2 b)). (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

Test Specimen	Test-no.	Colour-no, Colour-name	Direction of samples
A	747921-001	Dekor 30, uni weiß	Warp
B	747921-002		Weft
C	747921-003	Dekor 38, squares umbra sand	Warp
D	747921-004		Weft
E	747921-005	Dekor 01, new dots silver	Warp
F	747921-006		Weft



## **5 Assessment**

According to the test results in section 4.2 the material, described in section 1 and 4.1, fulfils 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 are also fulfilled. No falling of burning parts or droplets occurred during these tests.

The verification

- after washing or cleaning with chemicals

is not proved with this test certificate.

## **6 Special remarks**

This certificate 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 certificate is not regarded as the sole proof if the tested building material is used as a building product within the meaning of state building prescriptions (MBO § 17).

This test certificate is no substitute for a General Building Inspectorate Certificate. This test certificate is granted without prejudice to the rights of third parties, or particular private proprietary rights.

In General Building Inspectorates procedures this test certificate can be based for

- regulated building materials for the required proof of accordance
- for not regulated 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 certificate is valid until 2026-03-31, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 29<sup>th</sup> April 2021



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

*This translation was issued 29<sup>th</sup> April 2021, in a case of doubt the German version is valid solely.*

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Test specimen A

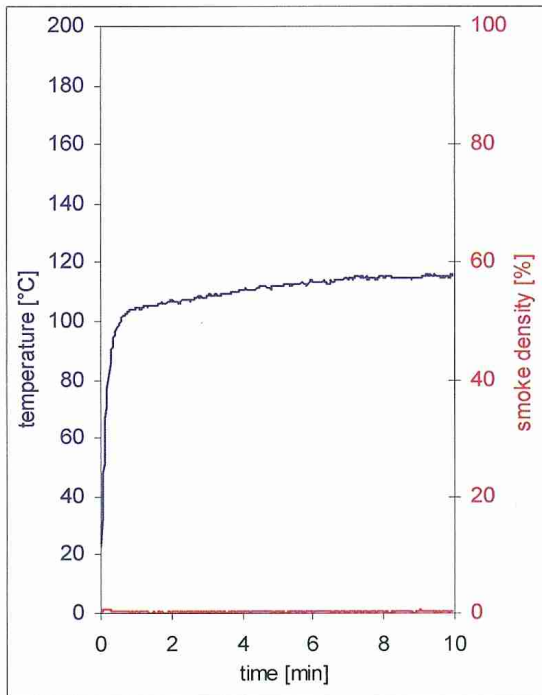


fig. 1  
Graphs of the flue gas temperature and the smoke density

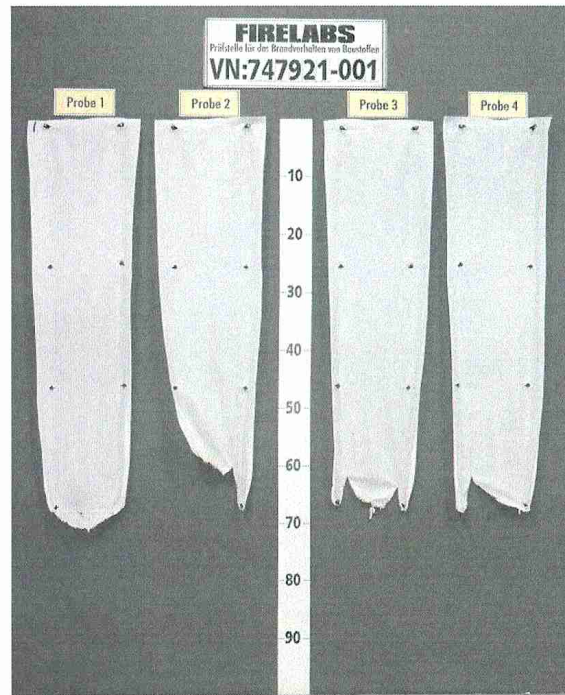


fig. 2  
Photo of test specimen after the test

Test specimen B

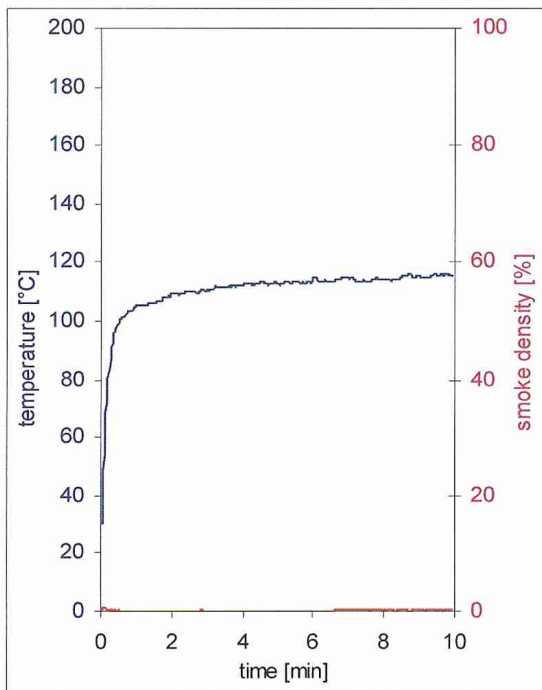


fig. 3  
Graphs of the flue gas temperature and the smoke density

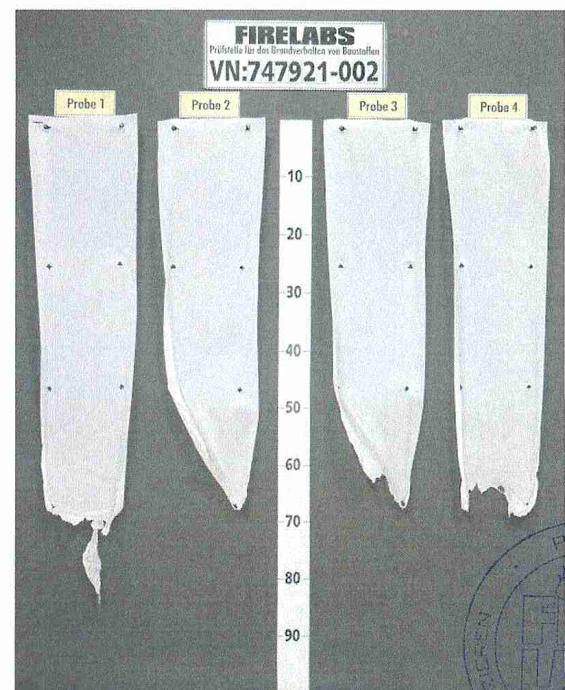


fig. 4  
Photo of test specimen after the test

Test specimen C

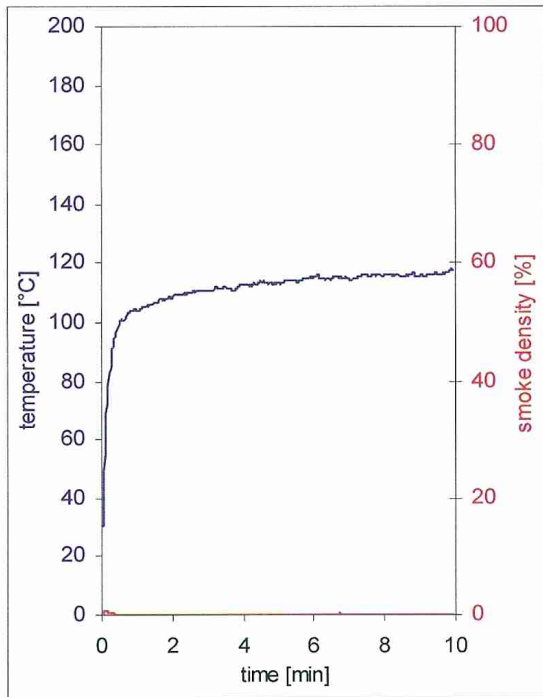


fig. 5  
Graphs of the flue gas temperature and the smoke density

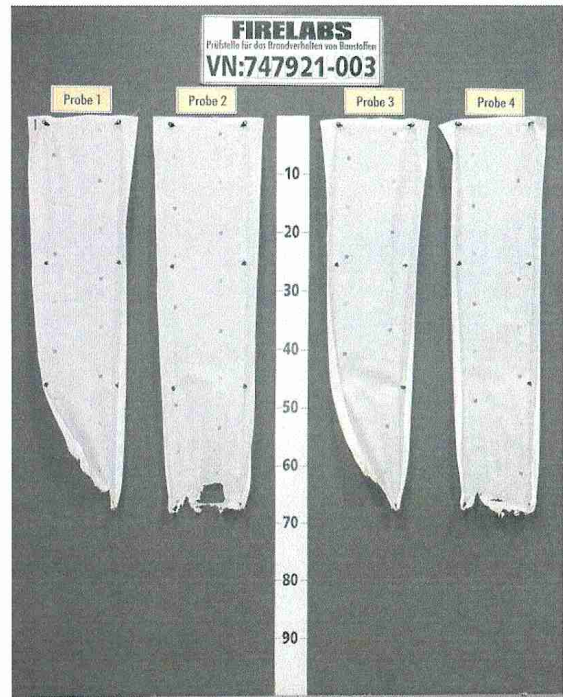


fig. 6  
Photo of test specimen after the test

Test specimen D

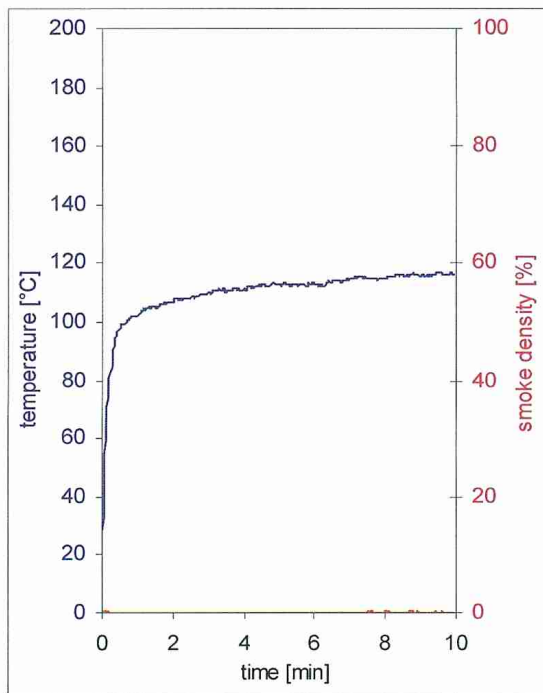


fig. 7  
Graphs of the flue gas temperature and the smoke density

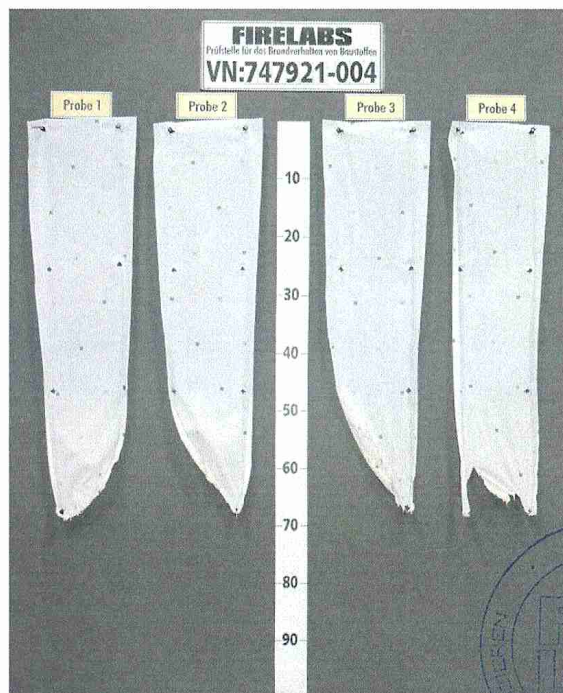


fig. 8  
Photo of test specimen after the test





Test specimen E

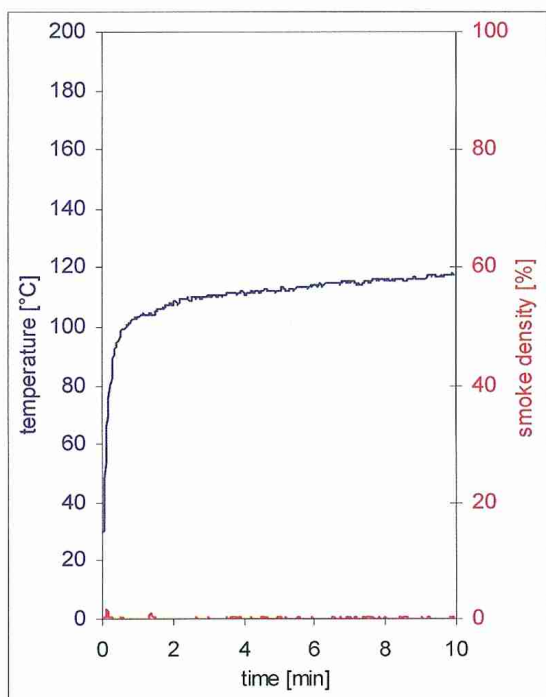


fig. 9  
Graphs of the flue gas temperature and the smoke density

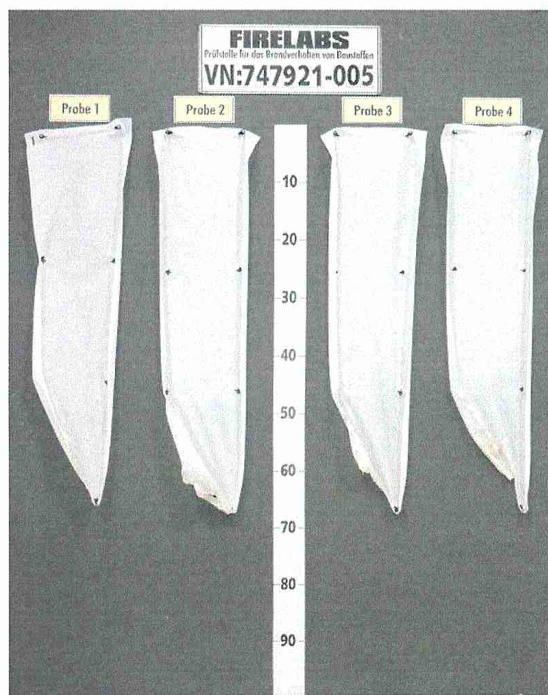


fig. 10  
Photo of test specimen after the test

Test specimen F

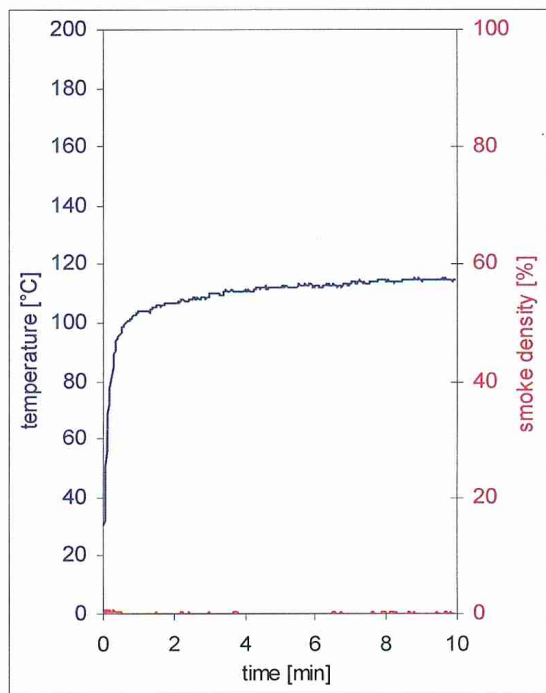


fig. 11  
Graphs of the flue gas temperature and the smoke density

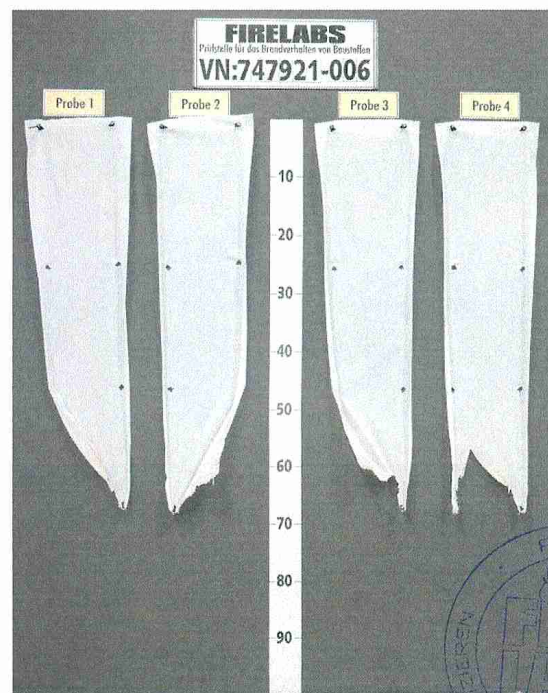


fig. 12  
Photo of test specimen after the test





Test results class B2 (Brennkasten)

Table 2.1: Dekor 38, squares umbra sand (complete set of samples)

Sample-No.	Warp direction								Weft direction								Dim.	Requirements
	1	2	3	4	5	6	-	1	2	3	4	5	6	-	-	-		
Ignition of the sample	1	1	1	1	1	1	-	1	1	1	1	1	1	-	s	-		
Maximum flame height	5	9	7	5	5	3	-	3	5	4	4	3	2	-	cm	-		
Time of the maximum	3	6	4	3	4	4	-	2	3	2	3	2	2	-	s	-		
Flame tip reached the 150 mm test mark	./.	./.	./.	./.	./.	./.	-	./.	./.	./.	./.	./.	./.	-	s	≥ 20		
Flames extinguished	7	8	6	3	7	16	-	2	3	2	3	2	6	-	s	-		
Ignition of filter paper	./.	./.	./.	./.	./.	./.	-	./.	./.	./.	./.	./.	./.	-	s	1)		
Smoke density (visual)	very low								very low								-	-
Flames have been extinguished	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	-	
Afterburning time	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	-	

View of the samples after the test (20 seconds after exposure the flame):  
 The samples were destroyed at flame impingement area up to a max height of about 10 cm and about 2 cm in width, slightly soot above until top edge of the sample.

Samples 1: edge flame exposure  
 Samples 2-6: surface flame exposure

Table 2.2

Sample-No.	Dekor 30, uni weiß								Dekor 01, new dots silver								Dim.	Requirements
	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8		
Ignition of the sample	1	1	2	2	1	1	1	1	1	1	1	1	1	1	1	1	s	-
Maximum flame height	4	3	2	2	3	2	5	4	5	4	3	6	4	3	5	3	cm	-
Time of the maximum	2	2	2	2	3	4	2	2	2	2	3	4	2	2	3	2	s	-
Flame tip reached the 150 mm test mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	> 20
Flames extinguished	6	3	2	2	6	2	4	2	2	3	5	10	3	2	8	8	s	s
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	1)
Smoke density (visual)	very low								very low								-	-
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 up to a max height of approx. 8 cm and approx. 2 cm in width, slightly soot above until top edge of the samples.

Samples 1, 2: edge flame exposure warp direction  
 Samples 3, 4: surface flame exposure warp direction  
 Samples 5, 6: edge flame exposure weft direction  
 Samples 7, 8: surface flame exposure weft direction

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

