for the proof of fire behaviour according to DIN 4102-1

FIRE LABS
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PÜZ-Stelle (LBO): BRA09

Reference: FLT 3794523 (Translation of the German Prüfzeugnis - no guarantee for translation of technical terms)

Client: ADO Goldkante GmbH Co. KG
Zimmersmühlenweg 14-18
D – 61440 Oberursel

Test order: 2022-05-02 **Arrived:** 2022-05-04

Description of samples: Uncoated fabric made of polyester to be used as curtain or for decorative purposes, named "**1396**".
(for details see page 2)

Delivered: 2022-05-04

Content of request: Proof of flammability to classify building materials to class B1 "schwerentflammbar" according to DIN 4102-1

Assessment: The examined product meets the requirements of class B1 for not easily flammable ("schwerentflammbare") building materials according to DIN 4102-1. If used in one layer, suspended freely or with distance of >40 mm to same or other plain materials.
(for details see page 5)

Validity: 2027-05-31

Sampling: The sample was sent to the laboratory by the manufacturer.

TEST CERTIFICATE

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 proofs of conformity
- non-regulated building products for the needed proofs of applicability.

This test certificate comprises 5 pages and 2 appendices.

Approved testing, inspection and certification body

This test certificate must not be published and copied preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.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.

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1 Description of test material

1.1 Test material (according to the manufacturer)
The material provided is an uncoated fabric made of flame retardant polyester yarn (referred to as "Polyester FR"). The fabric is intended to be used indoor as curtain fabric or for decorative purposes and was named with the trade name "1396" by the client.

1.2 Description of the delivered samples
For the tests, a section of an uncoated fabric made of synthetic fibres with a length of about 3 m and a width of 1.53 m was submitted to the laboratory by the client. The sample was marked with the trade name, colour code and batch of the manufacturer, as well as the sample size.
Colour: Green, consisting of green warp and black weft threads.
Characteristic values see section 4.1; photos: see enclosure 1.
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 flame exposure (dimensions 230 mm x 90 mm) have been cut in warp and in weft orientation of the fabric.

For the fire shaft (Brandschacht) tests 2 specimens were assembled. The samples (dimensions 1000 mm x 190 mm) for the test specimen A were cut in warp orientation; the samples for the test specimen B were cut in weft orientation of the fabric.

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).

All tests were carried out in single layer, freely suspended.

Period of testing: June 2022.

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

Specific values		Specifications by manufacturer	Measured values m.v.	s
Thickness	[mm]	0.5	0.60	0.007
Mass per unit area	[g/m^2]	260	256	

m.v. mean value (n=10)
s standard deviation
./. not received/not measured

4.2 Results of the fire behaviour

4.2.1 Test results class B2 (Brennkasten)

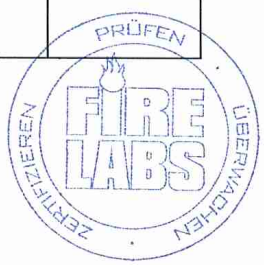
All building materials class B1 must also meet the requirements of materials class B2 (flammable). The material, tested in "Brennkasten" acc. DIN 50 050 meets the requirements of building materials class B2; the material did not show burning particles/droplets during these tests. Exposing the flame to the front or reverse side did not influence the fire behaviour (results: see enclosure 2).

4.2.2 Test results class B1 (Brandschacht)

Table 3

Test results (part 1)						
line no.		Specimen				require-ments
		A	B	C	D	
1	Number of specimen arrangement acc. DIN 4102 –15 Table 1	1	1	-	-	
2	Maximal flame height above bottom edge ..... cm	30	30	-	-	
3	Time [1] ..... min	1	1	-	-	*)
4	Burning / melting through Time [1] .....min	1	1	-	-	
5	Back side of the specimens: Flames / glowing Time [1] ..... min	./.	./.	-	-	
6	Discolouring Time [1] ..... min	./.	./.			
7	Falling of burning droplets Begin 1)..... min	No	No	-	-	
8	Extend: Sporadic falling of burning droplets			-	-	
9	Continuous falling of burning droplets			-	-	
10	Falling of burning parts Begin [1]..... min	No	No	-	-	
11	Extend: Sporadic falling of burning parts					
12	Continuous falling of burning parts					
13	Afterflame time at the bottom of the sieve (max.). min:s	./.	./.	-	-	
14	Impairment of the burner flames by dropping or falling Material Time [1] ..... min:s	No	No	-	-	
15	Premature end of test Final occurrence of burning at the samples [1] .....min	2	2	-	-	
16	Time of eventually end of test [1] ..... min:s	./.	./.	-	-	

[1] Indication of time: from the beginning of testing procedure
- Not tested
. /. Not occurred
*) No cause for complaint



Test results (part 2)						
line no.		Specimen				require-ments
		A	B	C	D	
	Afterflame after end of test	No	No	-	-	
17	Time .....min:s					
18	Number of specimen					
19	Front side of specimen					
20	Back side of specimen					
21	Flame length .....cm					
	Afterglow after end of test	No	No	-	-	
22	Time .....min:s					
23	Number of specimen					
	Place of appearance:					
24	Lower half of specimen					
25	Upper half of specimen					
26	Front side of specimen					
27	Back side of specimen					
	Smoke density					
28	≤ 400 % min	0.9	1.2	-	-	
29	≥ 400 % min (very strong smoke density)	./.	./.	-	-	
30	Diagram fig. no.	1	3	-	-	
	Residual length					
31	Individual value .....cm	63 65 64 60	66 66 64 63	- - - -	- - - -	> 0
32	Average value .....cm	**63**	**64**	-	-	≥ 15
33	Photo of test specimen fig. no.	2	4	-	-	
	Flue gas temperature					
34	Maximum of average value...°C	115	117	-	-	≤ 200
35	Time [1] .....min:s	9:46	9:44	-	-	
36	Diagram fig. no.	1	3	-	-	
37	Remarks Line 32: Due to the residual length of > 45 cm, no further tests were carried out (DIN 4102-16:2015-09, 5.2 b)). (Graphs and photos: see enclosures 1)					

Specimen	Test-no.	Direction of fabric
A	781122-001	Warp
B	781122-002	Weft

1) indication of time: from the beginning of testing procedure
- not tested
. /. not occurred
*) no cause for complaint

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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 for

- outdoor usage (ageing by outdoor weathering)
- after washing or dry cleaning

is not proven 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 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.

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

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

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

This test certificate is valid until 2027-05-31, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 31st January 2023

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

This translation was issued the 31st January 2023, in a case of doubt the German version is valid solely.

Test specimen A

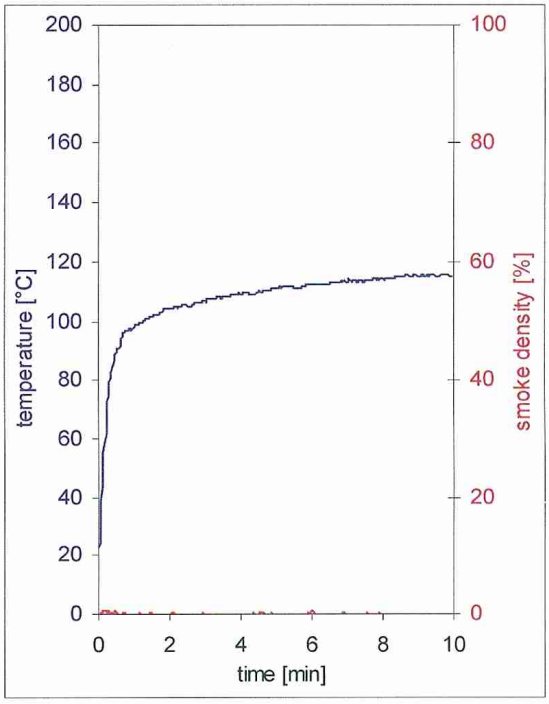

fig. 1
Graphs of the flue gas temperature and smoke density

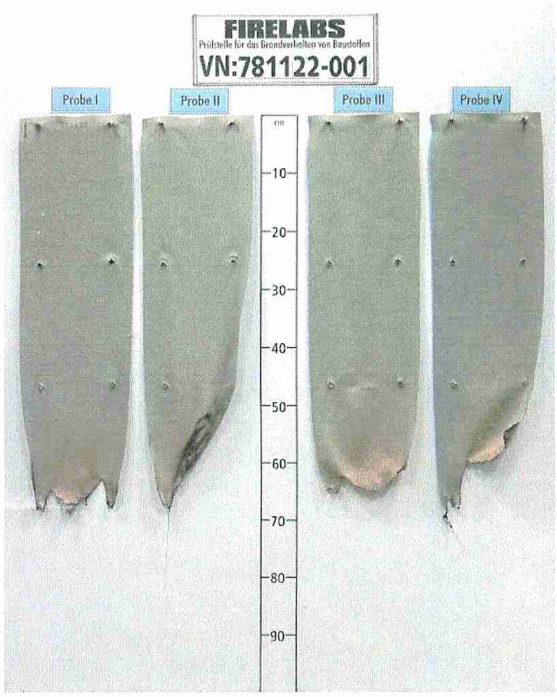

fig. 2
View of test specimen after the test

Test specimen B

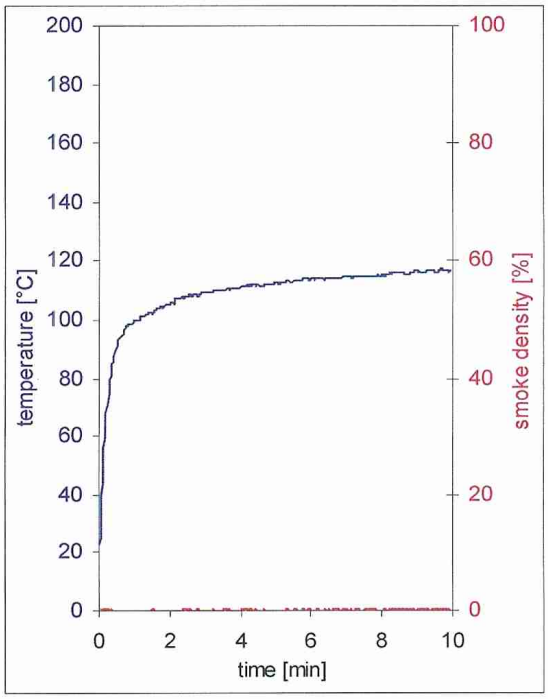

fig. 3
Graphs of the flue gas temperature and smoke density

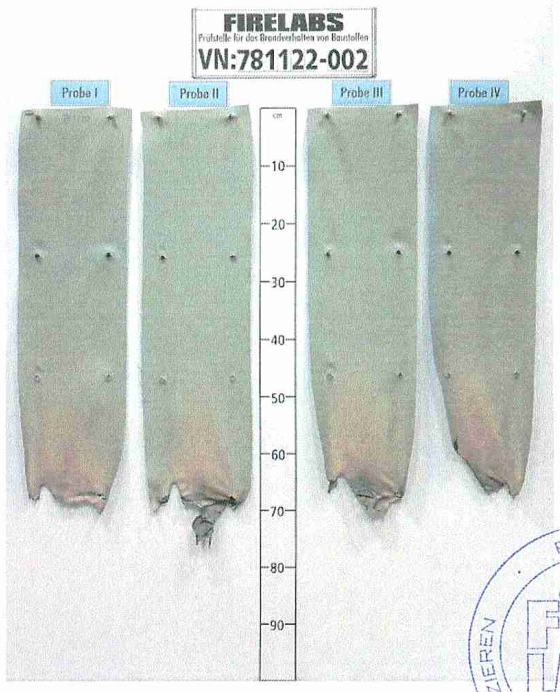

fig. 4
View of test specimen after the test

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Test results small burner test (Brennkasten)

Table 2

	Warp							Weft							Dim.	Require-ments
Sample-No.	1	2	3	4	5	6	-	1	2	3	4	5	6	-	-	-
Ignition of the sample	1	1	1	1	1	3	-	1	1	1	1	1	3	-	s	-
Maximum flame height	5	3	2	9	6	2	-	4	5	5	5	4	1	-	cm	-
Time of the maximum	5	3	3	8	5	6	-	3	6	5	5	5	3	-	s	-
Flame tip reached the 150 mm mark	./.	./.	./.	./.	./.	./.	-	./.	./.	./.	./.	./.	./.	-	s	≥ 20
Extinction of the flames	6	5	4	8	7	8	-	5	8	5	5	5	3	-	s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.	-	./.	./.	./.	./.	./.	./.	-	s	[1]
Smoke density (visual)	very low							very low							-	-
Afterburning time	./.	./.	./.	./.	./.	./.	-	./.	./.	./.	./.	./.	./.	-	s	-
Flames were extinguished after	./.	./.	./.	./.	./.	./.	-	./.	./.	./.	./.	./.	./.	-	s	-
View of the samples after the test (20 seconds after exposure the flame): Samples were destroyed up to a max. height of approx. 3 cm and a width of 1.5 cm, slightly soot above up to the upper edge.																

Samples 1-5: edge flame exposure
Samples 6: surface flame exposure

[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

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