

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

Reference:	FLT 3772322	(Translation of the German Prüfzeugnis - no guarantee for translation of technical terms)
Client:	SMD Holdings Ltd. Unit F2, Pittman Way Fulwood, Preston PR2 9ZD United Kingdom	
Order:	2022-01-26	Arrived: 2022-01-28
Description of samples:	Uncoated fabric made of polyester, referred to as "Xenia". (for details see page 2)	
Delivered:	2022-01-28	
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 "schwerentflammbare" (not easily flammable) building materials according to DIN 4102-1. If used in one layer, suspended freely or with distance of >40 mm to the same or other plain materials. (for details see page 5)	
Validity:	2027-02-28	
Sampling:	The samples were sent to the laboratory by the client	

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 3 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This test certificate must not be published and copied preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.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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PÜZ-Stelle (LBO): BRA09

TEST CERTIFICATE



1 Description of test material

1.1 Test material (according to the client)

The material provided is an uncoated textile fabric made of inherently flame-retardant treated polyester yarn (referred to as "inherently FR"), in two different colours. The fabrics are intended to be indoor as curtain fabric or for decorative purposes and were named with the trade name "Xenia" by the client.

1.2 Description of the delivered samples

For the tests, 2 sections of uncoated fabrics were provided to the laboratory by the client. The samples were not marked and were provided in the following variants (colours):

Trade name	Colour	Colour		Sample size [m]	
		Warp threads	Weft threads	Length	Width
Xenia	Black-Beige	White, Beige, Grey	Black, Brown	ca. 5	1,66
	Green-Beige		Green, Brown		1,67

Other specifications are not known to the laboratory, retain samples are stored.

Characteristic values see section 4.1; photos: see enclosures 1, 2.

2 Preparation of samples

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

For the fire shaft ("Brandschacht") tests 8 specimens were assembled. The samples (dimensions 1000 mm x 190 mm) for the test specimens A and C were cut in warp orientation; the samples for the test specimens B and D were cut in weft orientation of the fabric.

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 tests in the fire shaft ("Brandschacht") have been performed acc. DIN 4102-1 and -16 (building materials class B1). The small burner tests ("Brennkasten") have been performed acc. DIN 4102-1, chapter 6.2.5 (building materials class B2) without edge protection.

Arrangement of all samples: single layer, freely suspended

Examination period: March 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

Colour name, colour no.	Manufacturer`s data		Measured values		
	Weight per unit area [g/m ²]	Thickness [mm]	Weight per unit area [g/m ²]	Thickness (m.v.) [mm] s	
Black-Beige	496	./.	524	1.49	0.015
Green-Beige			517	1.47	0.019

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 class B2; the material did not show burning particles/droplets during these tests. Exposing the flame to the front or reverse side as well as the different colour areas did not influence the fire behaviour (Results: see enclosure 3).

4.2.2 Test results class B1 (Brandschacht)

Table 3

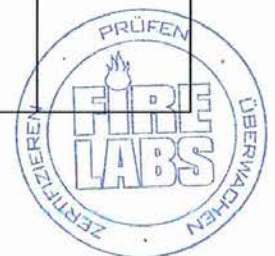
Test results (part 1)						
line no.		Specimen				requirements
		A	B	C	D	
1	<u>Number of specimen arrangement</u> acc. DIN 4102 –15 Table 1	1	1	1	1	
2	<u>Maximal flame height</u> above bottom edge cm	30	30	30	30	*)
3	Time ¹⁾ min	1	1	1	1	
4	Burning / melting through Time ¹⁾min	1	1	1	1	
5	<u>Back side of the specimens:</u> Flames / glowing Time ¹⁾ min	./.	./.	./.	./.	
6	Discolouring Time ¹⁾ min	./.	./.	./.	./.	
7	<u>Falling of burning droplets</u> Begin ¹⁾ min	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 ¹⁾ min	No	No	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	<u>Impairment of the burner flames by dropping or falling Material</u> Time ¹⁾ min:s	./.	./.	./.	./.	
15	<u>Premature end of test</u> Final occurrence of burning at the specimen ¹⁾min	2	3	3	3	
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				requirements
		A	B	C	D	
17	<u>Afterflame after end of test</u> Timemin:s	No	No	No	No	
18	Number of specimen					
19	Front side of specimen					
20	Back side of specimen					
21	Flame lengthcm					
22	<u>Afterglow after end of test</u> Timemin:s	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	1,7	4,6	5,4	0,9	
29	≥ 400 % min (very strong smoke density)	./.	./.	./.	./.	
30	Diagram fig. no.	1	3	5	7	
31	<u>Residual length</u> Individual valuecm	59 66 68 63	54 69 67 60	59 66 61 58	63 60 66 65	> 0
32	Average valuecm	64	62	61	63	≥ 15
33	Photo of test specimen fig. no.	2	4	6	8	
34	<u>Flue gas temperature</u> Maximum of average value...°C	114	115	116	117	≤ 200
35	Time ¹⁾min:s	9:32	9:50	9:40	9:40	
36	Diagram fig. no.	1	3	5	7	
37	<u>Remarks:</u> line 32: Due to the residual length of the samples of > 45 cm, no additional tests were carried out (DIN 4102-16, 5.2 b))					

Test specimen	Test-no.	Trade name	Colour name	Orientation of samples
A	772322-001	Xenia	Black-Beige	warp
B	772322-002			weft
C	772322-003		Green-Beige	warp
D	772322-004			weft

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



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 in one layer, 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 behaviour by outdoor weathering)
- after washing or dry cleaning

has not been 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 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 2027-02-28, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 11th of March 2022



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

This translation was issued the 11th of April 2022. In a case of doubt the German version is valid solely.

Test specimen A

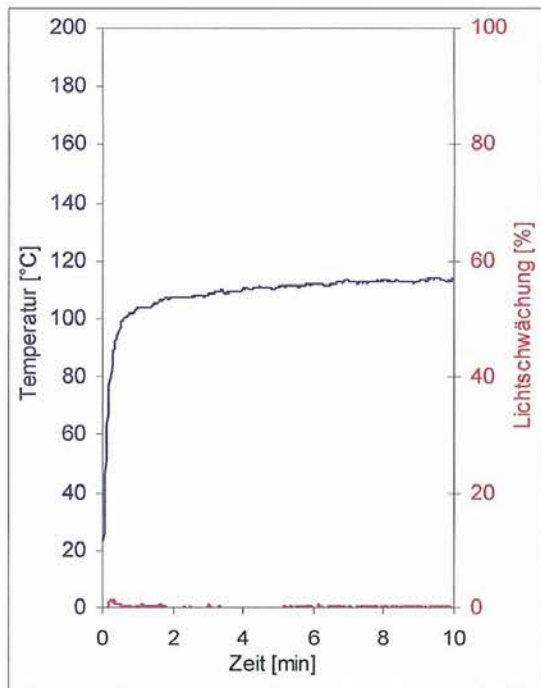


fig. 1
Graphs of the flue gas temperature and the smoke density

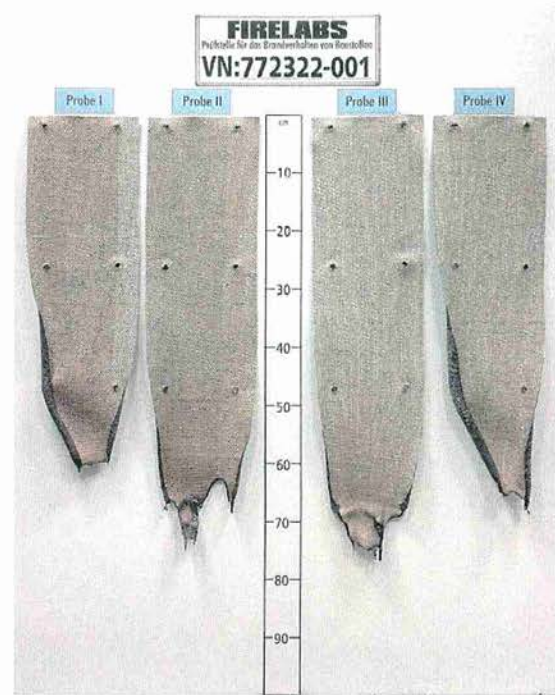


fig. 2
View of test specimen after the test

Test specimen B

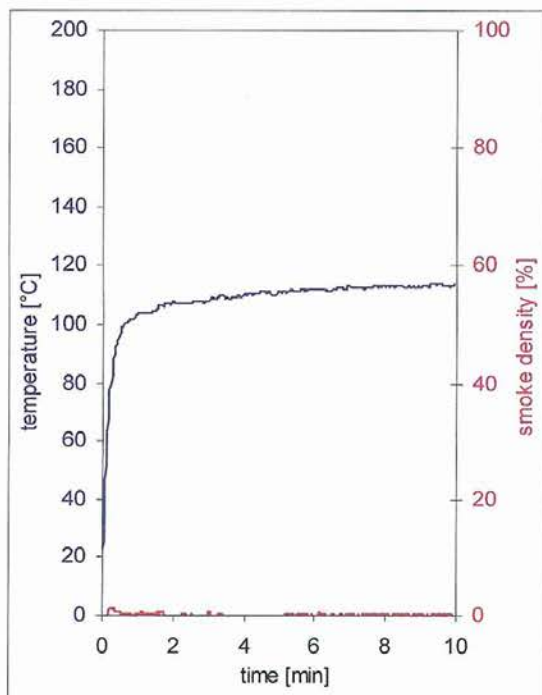


fig. 3
Graphs of the flue gas temperature and the smoke density

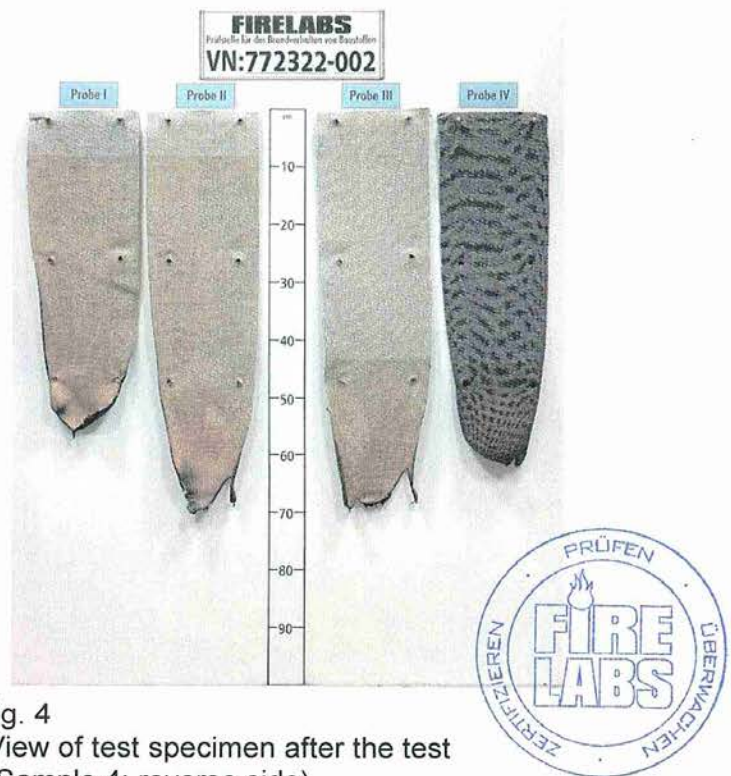


fig. 4
View of test specimen after the test (Sample 4: reverse side)

Test specimen C

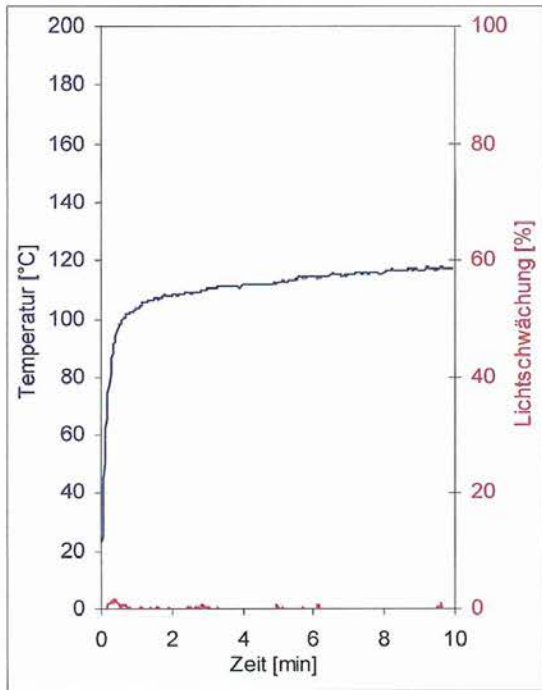


fig. 5
Graphs of the flue gas temperature and the smoke density

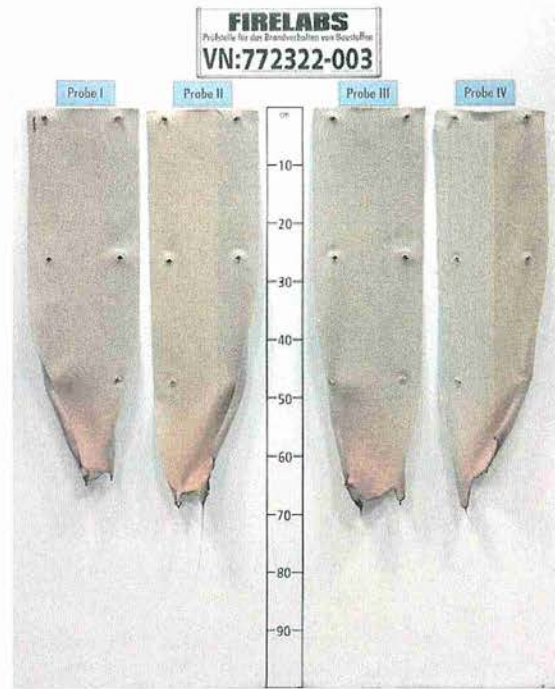


fig. 6
View of test specimen after the test

Test specimen D

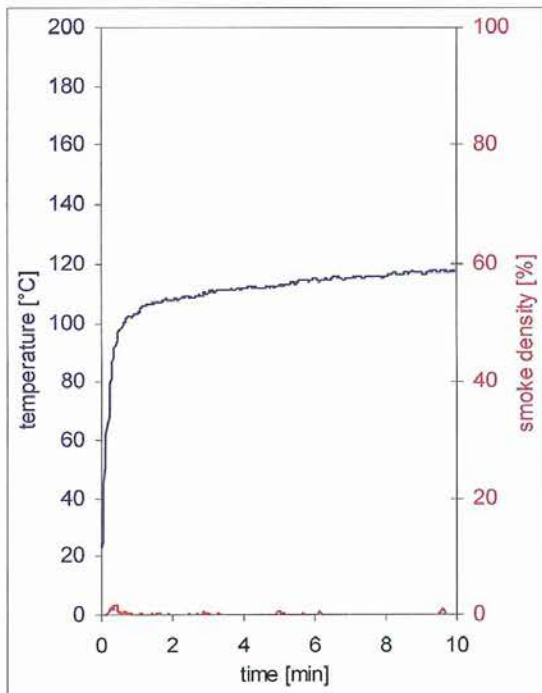


fig. 7
Graphs of the flue gas temperature and the smoke density

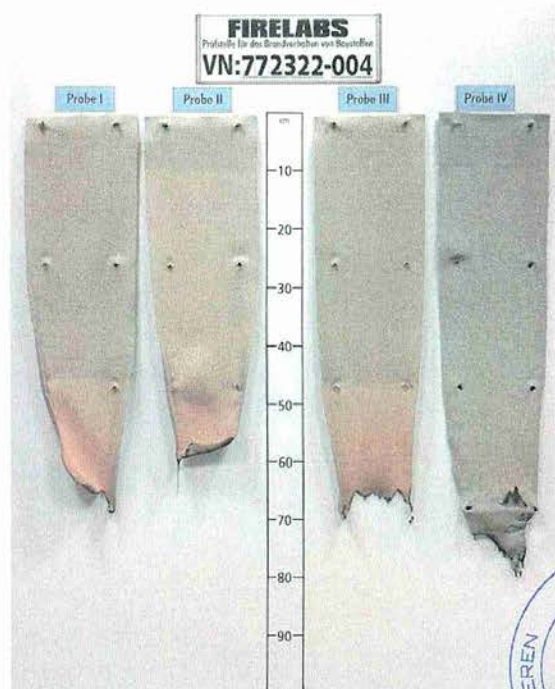


fig. 8
View of test specimen after the test
(Sample 4: reverse side)



Test results small burner ("Brennkasten") tests

Table 2.1: Colour: Green-Beige (full set of samples)

Sample-No.	warp						weft						dim.	requirements
	1	2	3	4	5	6	1	2	3	4	5	6		
Ignition of the sample	1	1	1	1	1	4	1	1	1	1	15		s	-
Maximum flame height	6	4	6	6	4	2	7	6	6	7	5	2	cm	-
Time of the maximum	12	8	11	10	9	7	11	15	13	14	12	10	-	-
Flame tip has reached the 150 mm mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flame has extinguished	13	9	14	13	10	9	16	22	18	22	17	11	s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	22	./.	22	./.	./.	s	1)
Smoke density (visual)	moderate						moderate						-	-
Afterburning time	./.	./.	./.	./.	./.	./.	./.	2	./.	2	./.	./.	s	-
Flames extinguished after	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-
View of the samples after the test (20 seconds after exposure the flame): Samples were destroyed at the flame impingement point up to a maximum height of about 7 cm and a width of about 4 cm, above slightly sooty to the top edge of the sample.														

Samples 1-5: edge flame exposure

Samples 6: surface flame exposure

Table 2.2

Colour	Black-Beige						-	dim.	requirements
Sample-No.	1	2	3	4	5	6		-	-
Ignition of the sample	1	1	4	1	1	4		s	-
Maximum flame height	5	4	3	5	7	2		cm	-
Time of the maximum	9	8	7	10	15	10		-	-
Flame tip has reached the 150 mm mark	./.	./.	./.	./.	./.	./.		s	≥ 20
Flame has extinguished	9	8	16	17	24	12		s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.		s	1)
Smoke density (visual)	moderate							-	-
Afterburning time	./.	./.	./.	./.	4	./.		s	-
Flames extinguished after	./.	./.	./.	./.	./.	./.		s	-
View of the samples after the test (20 seconds after exposure the flame): Samples were destroyed at the flame impingement point up to a maximum height of about 7 cm and a width of about 5 cm, above slightly sooty to the top edge of the sample.									

Samples 1, 2: edge flame exposure warp direction

Samples 3: surface flame exposure warp direction

Samples 4, 5: edge flame exposure weft direction

Samples 6: 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