

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

**Reference:** FLT 3710119 (Translation of the German Prüfzeugnis - no guarantee for translation of technical terms)

**Sponsor:** SMD Textiles Ltd.  
Unit F2, Pittman Way  
Fulwood, Preston  
PR2 9ZD  
United Kingdom

**Order:** 2019-12-04      **Arrived:** 2019-12-06

**Description of samples:** Uncoated fabric with a single-sided pile, named "**Denver (Faux Mohair Velvet)**".  
(for details see page 2)

**Delivered:** 2019-12-06

**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** 2024-12-31

**Sampling:** The samples were sent to the laboratory by the sponsor

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 valid if the examined building material is used as product in 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 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This test certificate must not be published and copied preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.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 sponsor)

The material provided is a fabric with single-sided cut pile, both consisting of 100% flame-retardant polyester yarn (designated as "IFR polyester"). The fabric is intended to be used inside of buildings as curtain fabric or for decorative purposes and was named with the trade name "Denver (Faux Mohair Velvet)".

### 1.2 Description of the delivered samples

For the tests the laboratory received an uncoated fabric with a single-sided cut pile of approximately 7.5 m long and 1.48 m wide. The fabric was labelled "Denver Eucalyptus Faux Mohair Velvet 140" and batch SO 254651 and was named "Denver (Faux Mohair Velvet)".

Colour: pale green

Characteristic values: see paragraph 4.1; Photos: see enclosures 1, 2

Further details are not known to the laboratory; a sample has 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) were cut in warp and in weft orientation of the fabric.

For the fire shaft ("Brandschacht") tests 4 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 base 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 ("Brennkastenprüfungen") have been performed acc. DIN 4102-1, chapter 6.2.5 (building materials class B2).

All tests were carried out in a single-layer, freely suspended arrangement, both on the pile and fabric side.

Period of testing: January 2020

## 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	Specifications by manufacturer		Measured values		
	Mass per unit area	thickness	Mass per unit area	thickness (m.v.)	
	[g/m <sup>2</sup> ]	[mm]	[g/m <sup>2</sup> ]	[mm]	s
Denver (Faux Mohair Velvet)	540	./.	537	1,85	0,015

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 (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.

(Results: see enclosure 3)



## 4.2.2 Test results class B1 (Brandschacht)

Table 3

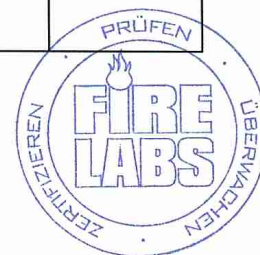
Results from fire shaft test (part 1)						
line no.		Test results				requirements
		A	B	C	D	
1	<u>Number of specimen arrangement</u> acc. DIN 4102 –15 Table 1	1	1	1	1	
2	<u>Maximal flame height</u> above bottom edge ..... cm	30	30	30	30	*)
3	Time <sup>1)</sup> ..... min	1	1	1	1	
4	<u>Burning / melting through</u> Time <sup>1)</sup> .....min	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:s	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	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.). min:s</u>	./.	./.	./.	./.	
14	<u>Impairment of the burner flames by dropping or falling</u> <u>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	3	4	5	4	
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



Results from fire shaft test (part 2)						
line no.		Test results				requirements
		A	B	C	D	
17	<u>Afterflame after end of test</u> Time .....min:s	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	
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	4.0	0.9	2.7	8.8	
29	≥ 400 % min (very strong smoke density)	./.	./.	./.	./.	
30	Diagram fig. no.	1	3	5	7	
31	<u>Residual length</u> Individual value .....cm	68 62 60 57	68 61 63 62	62 63 63 64	68 59 66 62	> 0
32	Average value .....cm	<b>61</b>	<b>63</b>	<b>63</b>	<b>63</b>	≥ 15
33	Photo of test specimen fig. no.	2	4	6	8	
34	<u>Flue gas temperature</u> Maximum of average value...°C	117	114	109	109	≤ 200
35	Time <sup>1)</sup> .....min:s	9:56	9:34	10:00	9:36	
36	Diagram fig. no.	1	3	5	7	
37	<u>Remarks:</u> line 32: There were no additional tests proceeded, because of the residual length of more then 45 cm. (DIN 4102-16:2015-09, 5.2 b))					

1) indication of time: from the beginning of testing procedure

- not tested

./. not occurred

\*) no cause for complaint

Specimen	Test-No.	Sampling / tested surface
A	710119-001	longitudinal direction / pile
B	710119-002	longitudinal direction / fabric
C	710119-003	transversal direction / pile
D	710119-004	transversal direction / fabric



## 5 Assessment

According to the test results in section 4.2 the material, described in section 1 and 4.1, fulfils the requirements of a building material 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 behavior by outdoor weathering)
- after washing or cleaning with chemicals.

has not been proved.

## 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 valid, as soon as the product is used as a building product in the sense of the "Landesbauordnungen" (state building requirements, 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 non-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 2024-12-31, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 17<sup>th</sup> of January 2020



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

*This translation was issued 17<sup>th</sup> of January 2020, in a case of doubt the German version is valid solely.*

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Test specimen A

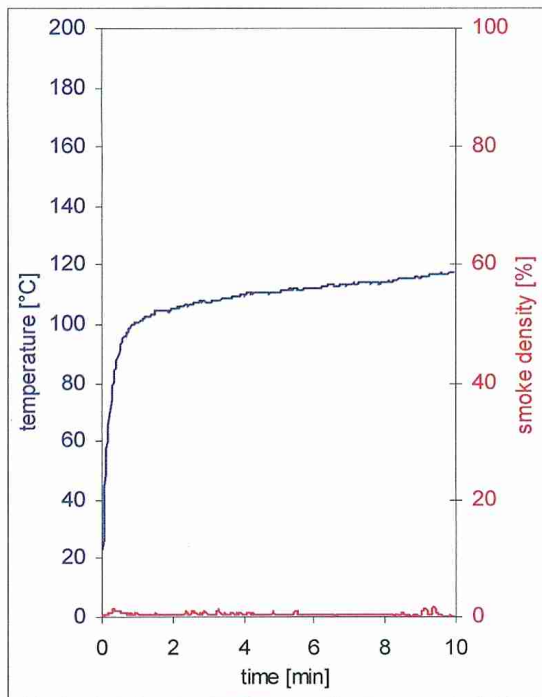


fig. 1  
Graphs of the flue gas temperature and the smoke density

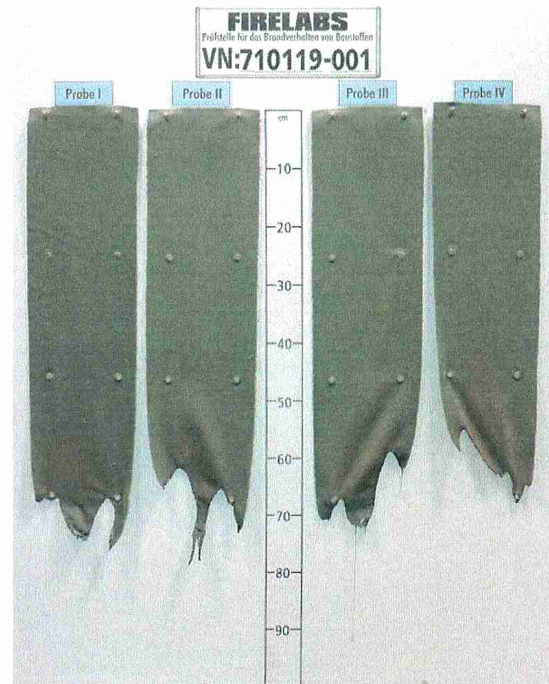


fig. 2  
View of test specimen after the test

Test specimen B

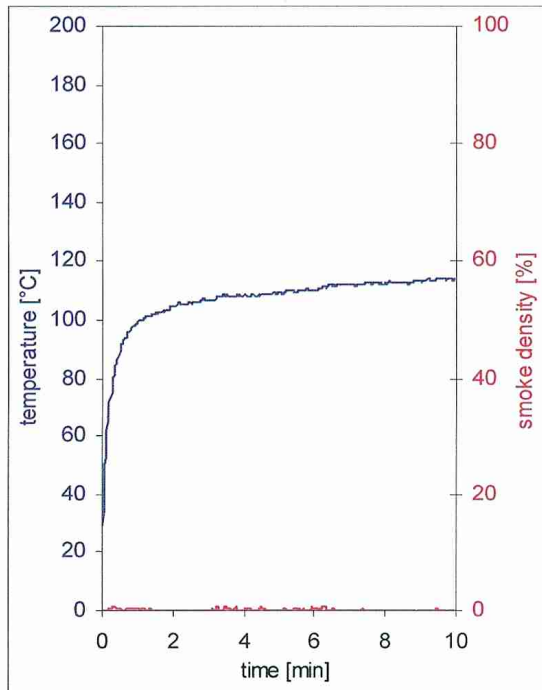


fig. 3  
Graphs of the flue gas temperature and the smoke density



fig. 4  
View of test specimen after the test

Test specimen C

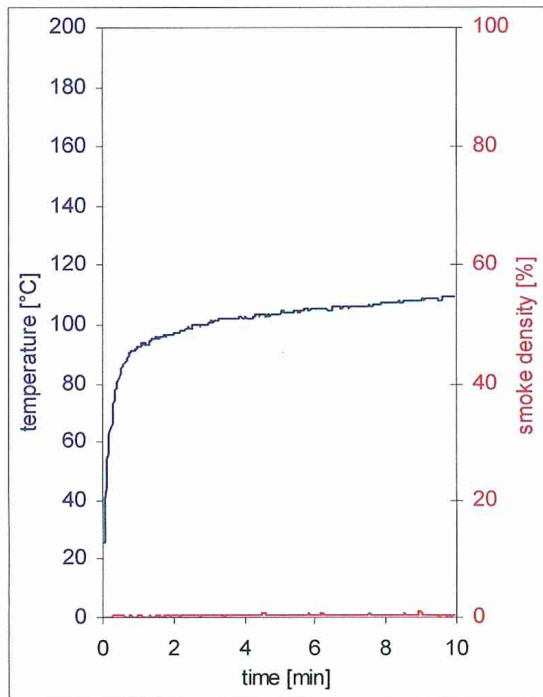


fig. 5  
Graphs of the flue gas temperature and the smoke density

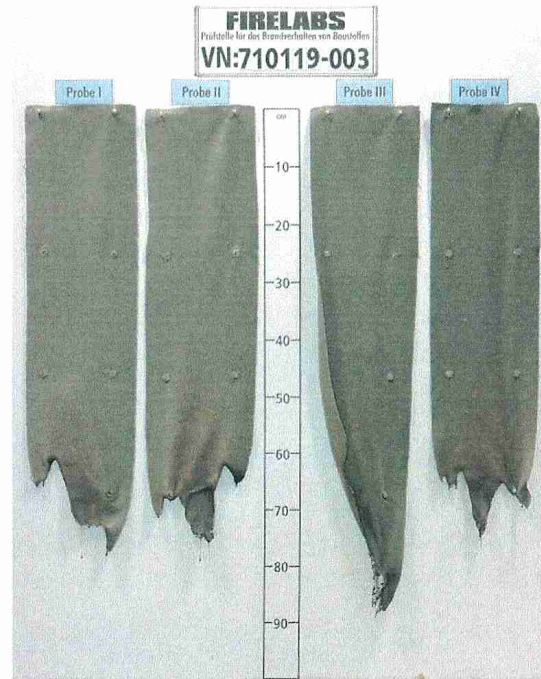


fig. 6  
View of test specimen after the test

Test specimen D

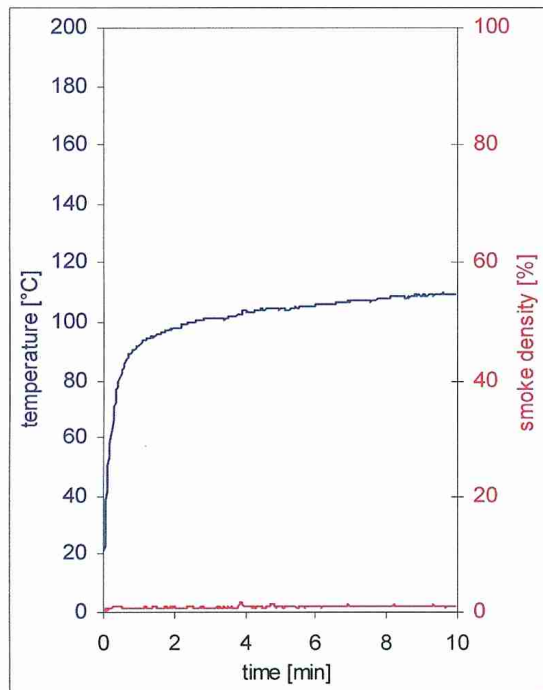


fig. 7  
Graphs of the flue gas temperature and the smoke density



fig. 8  
View of test specimen after the test

Test results small burner ("Brennkasten") tests

Table 2

Sample-No.	warp direction							weft direction							dim.	requirements
	1	2	3	4	5	6	7	1	2	3	4	5	6	7		
Ignition of the sample	1	2	1	1	2	6	5	1	1	1	1	1	7	5	s	-
Maximum flame height	10	7	6	9	8	1	1	6	7	7	6	6	1	1	cm	-
Time of the maximum	15	15	15	15	15	6	7	15	15	13	14	16	8	7	s	-
Flame tip reached the 150 mm mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flames extinguished	30	17	21	16	19	7	7	16	22	23	19	17	9	7	s	-
Ignition of filter paper	24	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	1)
Smoke density (visual)	moderate							moderate							-	-
Afterburning time	10	./.	1	./.	./.	./.	./.	./.	2	3	./.	./.	./.	./.	s	-
Flames were extinguished after	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-

View of the samples after the test (20 seconds after exposure the flame):

- The samples were destroyed in the area of the flame impingement point up to a maximum height of approx. 9 cm and a width of approx. 5 cm, slightly sooty above

Samples 1-5: Edge flame exposure

Samples 6: Surface flame impingement onto pile surface

Samples 7: Surface flame impingement onto base fabric

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

