

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

Reference: FLT 3749821 (Translation of the German Prüfzeugnis - no guarantee for translation of technical terms)

Sponsor: IBENA Textilwerke GmbH
Peterskamp 20
D - 46414 Rhede

Order: 2021-04-26 **Arrived:** 2021-04-26

Description of samples: Uncoated fabric made of cotton and polyester, named "**Euro Molton**".
(for details see page 2)

Delivered: 2021-04-29

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 it is used in one layer, suspended freely or with distance of >40 mm to same or other plain materials.
(for details see page 5)

Validity: 2026-07-26

Sampling: The sample was 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 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 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This test certificate must not be published and copied preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.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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CERTIFICATE
TEST



1 Description of test material

1.1 Test material (according to the sponsor)

The material provided was a fabric made of 64 % cotton and 36 % polyester with a flame-retardant treatment and roughed surfaces. The material is intended to be used inside of buildings as curtain fabric or for decorative purposes and was named with the trade name "Euro Molton" and article-No. 9714.

1.2 Description of the delivered samples

For the tests the laboratory received 1 section of an uncoated fabric with roughed surface on one both sides with a length of approx. 3 m and a width of 3,03 m. The material was not marked and was named with the trade name "Euro Molton" and article-no. 9714.

Colour: black

Colour-no.: 75

Further details are not known to the laboratory; a sample is stored.

Characteristic values: see paragraph 4.1; Photos: see enclosure 1-2

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 4 specimens were assembled. The samples (dimensions 1000 mm x 190 mm) for the test specimen A and C were cut in warp orientation; the samples for the test specimen 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 ("Brennkasten") tests have been performed acc. DIN 4102-1, chapter 6.2.5 (building materials class B2) without edge protection.

The tests were carried out in a single layer, freely suspended.

Period of testing: May, July 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

| Specific values | | Manufacturer's data | Measured values | |
|--------------------|---------------------|---------------------|-----------------|--------|
| | | | m.v. | s |
| Total thickness | [mm] | ./. | 1,19 | 0,016 |
| Mass per unit area | [g/m ²] | 320 | 336 | PRÜFER |

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 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 3)



4.2.2 Test results class B1 (Brandschacht)

Table 3

| Test results (part 1) | | | | | | |
|-----------------------|--|----------|------|------|------|--------------|
| line no. | | Specimen | | | | requirements |
| | | A | B | C | D | |
| 1 | Number of specimen arrangement acc. DIN 4102 –15 Table 1 | 1 | 1 | 1 | 1 | |
| 2 | Maximal flame height above bottom edge cm | 100 | 100 | 100 | 100 | *) |
| 3 | Time ¹⁾ min | 1 | 1 | 1 | 1 | |
| 4 | Burning / melting through Time ¹⁾min | 1 | 1 | 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 | No | No | |
| 8 | Extend: Sporadic falling of burning droplets | | | | | |
| 9 | Continuous falling of burning droplets | | | | | |
| 10 | Falling of burning parts Begin ¹⁾ min | Nein | Nein | Nein | Nein | |
| 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 | ./. | ./. | ./. | ./. | |
| 15 | Premature end of test Final occurrence of burning at the specimen ¹⁾min | 2 | 2 | 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 | | | | requirements |
| | | A | B | C | D | |
| 17 | <u>Afterflame after end of test</u> | No | No | No | No | |
| 18 | Timemin:s | | | | | |
| 19 | Number of specimen | | | | | |
| 20 | Front side of specimen | | | | | |
| 21 | Back side of specimen | | | | | |
| 21 | Flame lengthcm | | | | | |
| 22 | <u>Afterglow after end of test</u> | No | No | No | No | |
| 23 | Timemin:s | | | | | |
| 24 | Number of specimen | | | | | |
| 25 | <u>Place of appearance:</u> | | | | | |
| 26 | Lower half of specimen | | | | | |
| 27 | Upper half of specimen | | | | | |
| 28 | Front side of specimen | | | | | |
| 29 | Back side of specimen | | | | | |
| 30 | <u>Smoke density</u> | | | | | |
| 31 | ≤ 400 % min | 38,4 | 44,0 | 48,1 | 46,1 | |
| 32 | ≥ 400 % min (very strong smoke density) | ./. | ./. | ./. | ./. | |
| 33 | Diagram fig. no. | 1 | 3 | 5 | 7 | |
| 34 | <u>Residual length</u> | | | | | |
| 35 | Individual valuecm | 33 | 30 | 25 | 24 | > 0 |
| 36 | | 30 | 32 | 31 | 25 | |
| 37 | | 30 | 29 | 30 | 25 | |
| 38 | | 37 | 31 | 32 | 26 | |
| 39 | Average valuecm | 32 | 30 | 29 | 25 | ≥ 15 |
| 40 | Photo of test specimen fig. no. | 2 | 4 | 6 | 8 | |
| 41 | <u>Flue gas temperature</u> | | | | | |
| 42 | Maximum of average value...°C | 144 | 134 | 145 | 150 | ≤ 200 |
| 43 | Time ¹⁾min:s | 0:36 | 0:40 | 0:40 | 9:38 | |
| 44 | Diagram fig. no. | 1 | 3 | 5 | 7 | |
| 45 | Remarks: - | | | | | |

| Specimen | Test-no. | Direction of samples |
|----------|------------|----------------------|
| A | 749821-001 | warp |
| B | 749821-002 | weft |
| C | 749821-003 | |
| D | 749821-004 | |

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

- not tested

./. 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 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.

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 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 2026-07-26, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 27th July 2021



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



This translation was issued the 27th July 2021, in a case of doubt the German version is valid solely.

Test specimen A

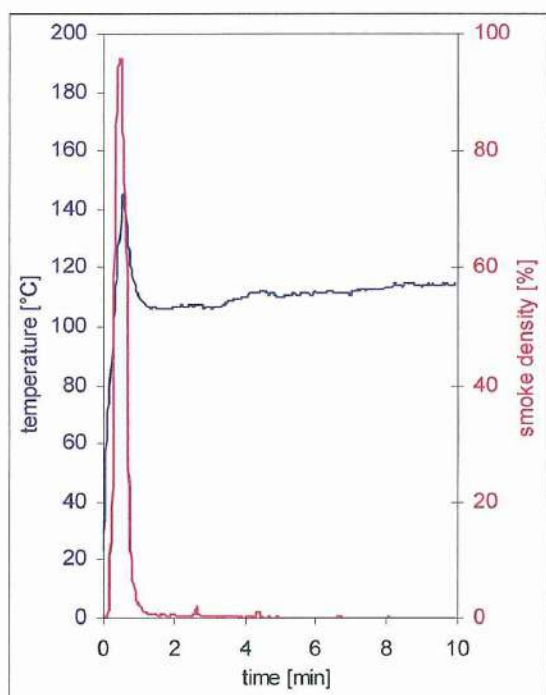


fig. 1
Graphs of the flue gas temperature and smoke density



fig. 2
View of test specimen after the test

Test specimen B

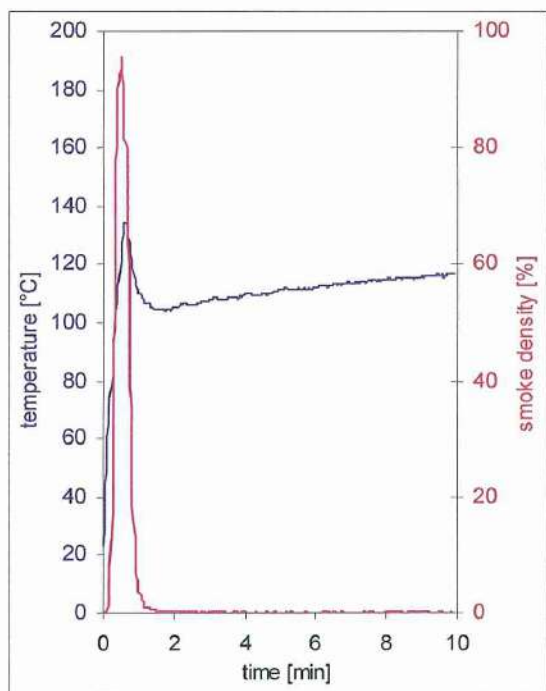


fig. 3
Graphs of the flue gas temperature and smoke density

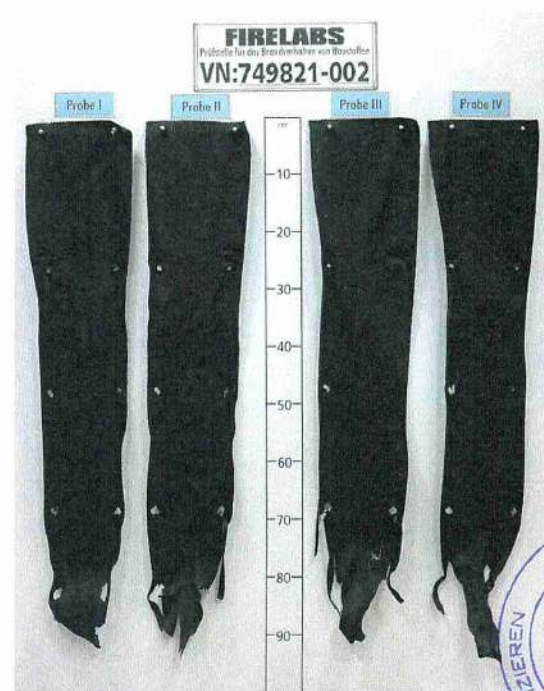


fig. 4
View of test specimen after the test



Test specimen C

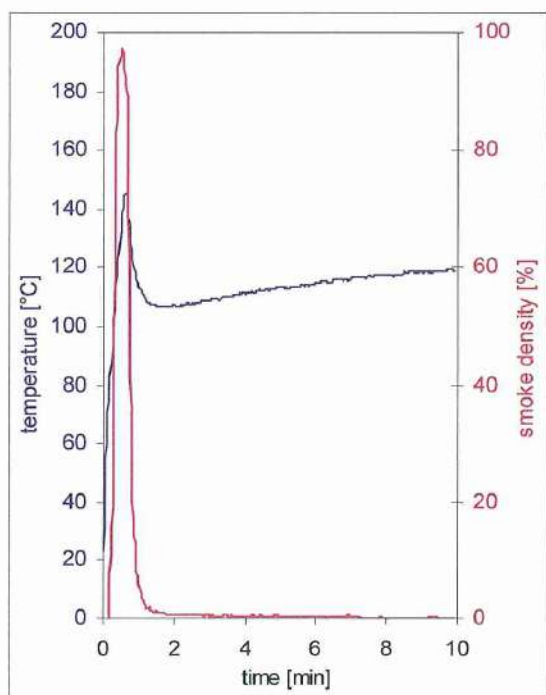


fig. 5
Graphs of the flue gas temperature and smoke density

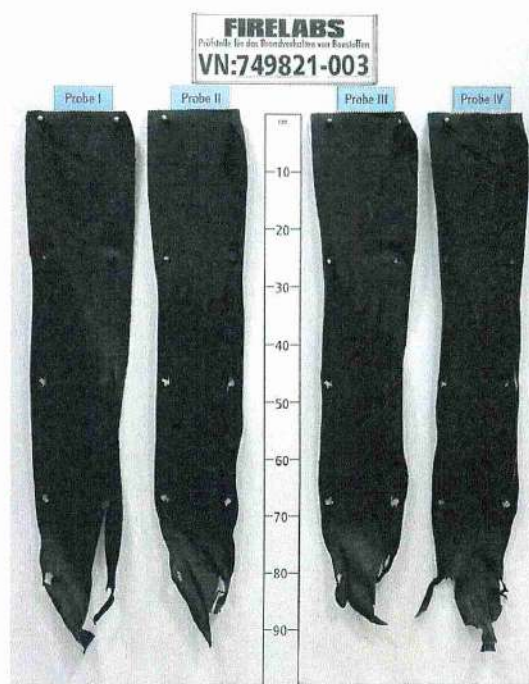


fig. 6
View of test specimen after the test

Test specimen D

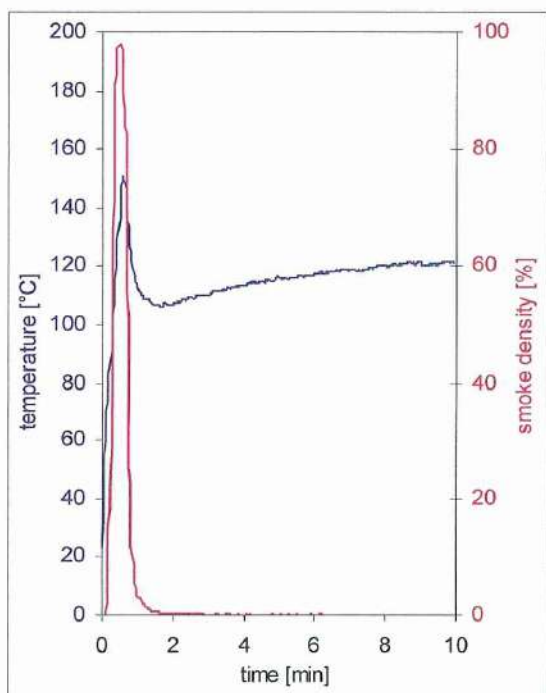


fig. 7
Graphs of the flue gas temperature and smoke density

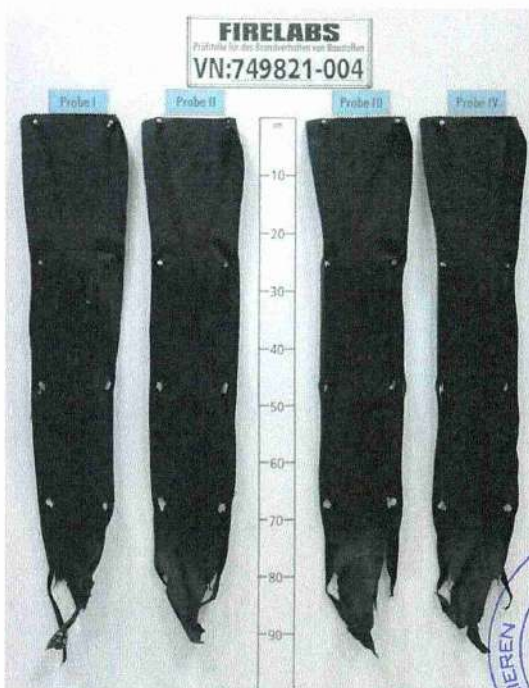


fig. 8
View of test specimen after the test



Test results small burner test ("Brennkasten")

Table 2

| | warp direction | | | | | | | weft direction | | | | | | | dim. | requirements |
|-----------------------------------|----------------|-----|-----|-----|-----|-----|---|----------------|-----|-----|-----|-----|-----|---|------|--------------|
| Sample-No. | 1 | 2 | 3 | 4 | 5 | 6 | - | 1 | 2 | 3 | 4 | 5 | 6 | - | - | - |
| Ignition of the sample | 1 | 1 | 2 | 2 | 1 | 9 | - | 1 | 1 | 2 | 1 | 2 | 8 | - | s | - |
| Maximum flame height | 4 | 4 | 4 | 4 | 4 | 4 | - | 4 | 4 | 4 | 4 | 4 | 4 | - | cm | - |
| Time of the maximum | 10 | 10 | 9 | 10 | 10 | 15 | - | 8 | 9 | 10 | 9 | 9 | 15 | - | s | - |
| Flame tip reached the 150 mm mark | ./. | ./. | ./. | ./. | ./. | ./. | - | ./. | ./. | ./. | ./. | ./. | ./. | - | s | ≥ 20 |
| Self-extinguishing of flames | 16 | 16 | 16 | 16 | 16 | 16 | - | 16 | 16 | 16 | 16 | 16 | 16 | - | 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 at flame impingement area in a max. length of app. 4 cm and destroyed width of 1,5 cm, above about 4 cm discoloured on the surface.

Samples 1-5: edge flame impingement

Samples 6: surface flame impingement

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

