

Fire Test Certificate - Specimen

Fabric: Joelastic

Type: BS5867 Part 2 Type B

J&C Joel 
Inspiration in every performance

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

Reference: FLT 3705319 (Translation of the German Prüfzeugnis - no guarantee for translation of technical terms)

Sponsor:

Order: 2019-10-16 Arrived: 2019-10-21

Description of samples: Uncoated knit fabrics made of polyester and elastane to be used for decorative purposes, named "IFR Stretch".
(for details see page 2)

Delivered: 2019-10-21, 2019-12-04

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 "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)

Validity: 2025-01-31

Sampling: The sample material 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 shall not be deemed as sole proof 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 substitutes the test certificate FLT 3705319 dated 7th November 2019.
This test certificate comprises 6 pages and 5 enclosures.

Approved testing, inspection and certification body

This test certificate must not be published and copied without agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.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.


**FIRE
LABS**

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TEST CERTIFICATE



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1 Description of test material in condition as delivered

1.1 Test material (according to the sponsor)

The delivered materials are uncoated knitted fabrics made of 85% flame-retardant polyester yarn (referred to as "Polyester-FR") and 15% elasthane. The knitted fabrics are intended to be used indoor for decorative purposes and were named with the trade name "IFR Stretch" and article-no. 8991 by the sponsor.

1.2 Description of the delivered samples

For the tests 4 sections of fabrics made of synthetic fibres were provided to the test laboratory. The samples were not marked and have been delivered in the following variants (colours):

Trade name	Colour	Sample size	
		Length [m]	Width [m]
IFR Stretch	black	ca. 2	3.27
	silver grey	ca. 1.5	3.15
	white	ca. 2	3.21
	red	ca. 2	3.5

Characteristic values: see passage 4.1; photos: see enclosures

Further details are not known to the laboratory; a retain sample each has been stored.

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 longitudinal direction and transverse direction of the fabric.

For the tests in the fire shaft ("Brandschacht") 8 specimens, each made of 4 samples (dimensions 1000 mm x 190 mm) were assembled. The samples for the test specimens A, C, E and G were cut in longitudinal direction, the samples for the test specimens B, D, F and H were cut in transverse direction of the material in the respective colour.

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: November 2019, February 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

Colour	Manufacturer's data		Measured values		
	Mass per unit area [g/m ²]	Thickness [mm]	Mass per unit area [g/m ²]	Thickness (m.v.) [mm]	s
black	ca. 210	J.	209	0.61	0.020
silver grey			216	0.60	0.030
white			213	0.60	0.035
red			223	0.59	0.024

J. not received/not measured

m.v. mean value

s standard deviation



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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 does not show burning particles / droplets. (Results: see enclosure 5)

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	G	H	
1	Number of specimen arrangement acc. DIN 4102 -15 Table 1	1	1	1	1	1	1	1	1	
2	Maximal flame height above bottom edge cm	30	30	30	30	30	30	30	30	*)
3	Time ¹⁾ min	1	1	1	1	1	1	1	1	
4	Burning / melting through Time ¹⁾ min	1	1	1	1	1	1	1	1	
5	Back side of the specimens: Flames / glowing Time ¹⁾ mins	J.	J.	J.	J.	J.	J.	J.	J.	
6	Discolouring Time ¹⁾ mins	J.	J.	J.	J.	J.	J.	J.	J.	
7	Falling of burning droplets Begin ¹⁾ min	No	No	No	No	No	No	No	No	
8	Extend: Sporadic falling of burning droplets									
9	Continuous falling of burning droplets									
10	Falling of burning parts Begin ¹⁾ mins	No	No	No	No	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.) mins	J.	J.	J.	J.	J.	J.	J.	J.	
14	Impairment of the burner flames by dropping or falling Material Time ¹⁾ mins	J.	J.	J.	J.	J.	J.	J.	J.	
15	Premature end of test Final occurrence of burning at the specimen ¹⁾ min	2	3	2	2	2	3	2	2	
16	Time of eventually end of test ¹⁾ mins	J.	J.	J.	J.	J.	J.	J.	J.	

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

- Not tested

J. Not occurred

*) No cause for complaint



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Test results "Brandschachtprüfung" (part 2)										
line no.		Test results								requirements
		A	B	C	D	E	F	G	H	
17	Afterflame after end of test	No	No	No	No	No	No	No	No	
18	Time mins									
19	Number of specimen									
20	Front side of specimen									
21	Back side of specimen									
22	Flame length cm									
23	Afterglow after end of test	No	No	No	No	No	No	No	No	
24	Time mins									
25	Number of specimen									
26	Place of appearance:									
27	Lower half of specimen									
28	Upper half of specimen									
29	Front side of specimen									
30	Back side of specimen									
31	Smoke density									
32	≤ 400 % min	2.2	1.1	3.0	1.0	1.7	3.0	3.4	5.8	
33	≥ 400 % min (very strong smoke density)	1	3	5	7	9	11	13	15	
34	Diagram fig. no.									
35	Residual length									
36	Individual value cm	66	64	69	72	67	67	67	67	> 0
37		65	70	65	68	64	67	63	60	
38		70	60	60	63	70	72	64	64	
39		63	65	72	69	67	70	66	65	
40	Average value cm	66	64	66	68	67	68	66	64	≥ 15
41	Photo of the test specimen fig. no.	2	4	6	8	10	12	14	16	
42	Flue gas temperature									
43	Maximum of average value °C	115	117	115	120	117	118	111	112	≤ 200
44	Time ^{*)} mins	8:32	9:42	9:54	9:58	10:00	9:50	10:00	9:40	
45	Diagram fig. no.	1	3	5	7	9	11	13	15	
46	Remarks: line 32: Due to the residual length of > 45 cm, no further tests were carried out (DIN 4102-16, 5.2 b)).									

^{*)} indication of time: from the beginning of testing procedure

- Not tested

- Not occurred

- No cause for complaint

Test Specimen	Test-no.	Colour	Direction of samples
A	705319-001	black	longitudinal direction
B	705319-002		transverse direction
C	705319-003	silver grey	longitudinal direction
D	705319-004		transverse direction
E	705319-005	white	longitudinal direction
F	705319-006		transverse direction
G	705319-007	red	longitudinal direction
H	705319-008		transverse direction



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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 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.

According to DIN 4102-16:2015-09 section 4.2, this assessment applies to the material described in section 4.2 in any colour.

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 cleaning with chemicals

has not been proven with this test certificate.

6 Special remarks

This test 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.

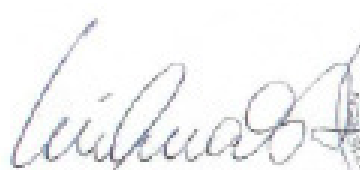
In General Building Inspectorates procedures this test certificate can be based for

- regulated building materials for the required proof of accordance
- for 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 2025-01-31, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 13th of February 2020




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

This translation was issued 13th of February 2020, in a case of doubt the German version is valid solely.

