

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

Reference: FLT 3557115 (Translation of the German test report - no guarantee for translation of technical terms)

Sponsor: DATAPLOT GmbH
Gutenbergstrasse 15
D – 24558 Henstedt-Ulzburg

Order: 2012-09-11 **Arrived:** 2015-09-11

Description of sample: Transparent, self-adhesive plastic film, to be used on metal surfaces, named **"EMBLEM Laminat Sand"**.
(for details see page 2)

Delivered: 2015-09-14

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

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

Validity of report: 2020-09-30

Sampling: The test material was provided by the sponsor itself

Remark: If the above-mentioned building material is not used as product according to MBO § 2, article 9, clause 1, there is no need for a general building supervisory test report.
This test report is not valid if the examined building material is used as product in the meaning of state building prescriptions (MBO § 17, article 3).

This test report 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 report 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 report comprises 5 pages and 2 enclosures.

Approved testing, inspection and certification body

This test report must not be published and copied preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.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



1 Test material

1.1 Description (according to the sponsor)

The materials provided is a self-adhesive film made of a transparent flexible PVC film with a thickness of 100 µm, with a transparent acrylic adhesive on the back and a paper liner to protect the adhesive surface. The self-adhesive film is intended to be used indoor, applied onto metal surfaces and was named with the trade name "EMBLEM Laminat Sand".

1.2 Description of the delivered samples

For the tests the laboratory received a sample of a transparent self-adhesive plastic film of approx. 5 m length and approx. 1,05 m width with a transparent adhesive, the self-adhesive surface was covered with a protective paper. The material was delivered without printings or other coatings and was named with "EMBLEM Laminat Sand" and "Matchcode: LAMPERSA3" by the sponsor.

Colour: transparent film.

Characteristic values: see table 1; photos: see enclosures.

Other specifications are not known by the laboratory, samples are stored.

2 Preparation of samples

For the fire shaft test ("Brandschacht") 2 specimen were prepared. The samples (dimensions 1000 mm x 190 mm) of test specimen A were cut in machine direction, the samples for the test specimen B were cut in cross direction of the material and applied onto sheet aluminium (thickness 1,0 mm).

For the small burner test ("Brennkasten") samples for edge exposure (dimensions 190 mm x 90 mm) and 1 sample for surface exposure (dimensions 230 mm x 90 mm) were cut in machine- and cross direction of the material and applied onto sheet aluminium (thickness 1,0 mm).

Afterwards all samples kept in a climate chamber acc. DIN 50014-23/50-2 until they reached constant weight.

3 Test procedure

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). There was no additional substrate arranged behind the material compound.

Examination period: October 2015

4 Results

- Table 1 Material characteristics
- Table 2 Test results class B2 (enclosure 2)
- Table 3 Test results class B1

4.1 Material characteristics

Table 1

Characteristic value			Manufacturer's data	Measured values (m.v.)
self-adhesive film with adhesive	thickness	[mm]	0,1	0,1
	weight per unit area	[g/m ²]	./.	136
siliconized paper	thickness	[mm]	0,062	0,04
	weight per unit area	[g/m ²]	72	74

m.v. mean value

./. not received/not measured

4.2 Results of the fire behaviour

4.2.1 Test results class B2 (Brennkasten)

According DIN 4102-1 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 2)



4.2.2 Test results class B1 (Brandschacht)

Table 3

Test results "Brandschachtprüfung" (part 1)						
line no.	Measurement	Test results				requirements
		A	B	C	D	
1	<u>Number of specimen arrangement</u> acc. DIN 4102 –15 Table 1	7	7	-	-	
2	<u>Maximal flame height</u> above bottom edge cm	50	50	-	-	*)
3	Time ¹⁾ min	2	2	-	-	
4	<u>Burning / melting through</u> Time ¹⁾min	./.	./.	-	-	
5	<u>Back side of the specimens:</u> Flames / glowing Time ¹⁾min:s	./.	./.	-	-	
6	Discolouring Time ¹⁾min:s	./.	./.	-	-	
7	<u>Falling of burning droplets</u> Begin ¹⁾min:s	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:s	No	No	-	-	
11	Extend: Sporadic falling of burning parts					
12	Continuous falling of burning parts					
13	<u>Afterflame time at the bottom of thesieve (max.).</u>min:s	./.	./.	-	-	
14	<u>Impairment of the burner flames by dropping or falling Material</u> Time ¹⁾min:s	No	No	-	-	
15	<u>Premature end of test</u> Final occurrence of burning at the specimen ¹⁾min	No	No	-	-	
16	Time of eventually end of test ¹⁾min:s	10	10	./.	./.	

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

- Not tested

./. Not occurred

*) No cause for complaint



Test results "Brandschachtprüfung" (part 2)						
line no.	Measurement	Test results				requirements
		A	B	C	D	
17	<u>Afterflame after end of test</u>	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	-	-	
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	14,1	16,9	-	-	
32	≥ 400 % min (very strong smoke density)	./.	./.			
33	Diagram fig. no.	1	3			
34	<u>Residual length</u>					
35	Individual valuecm	47	45	-	-	> 0
36		46	46	-	-	
37		44	44	-	-	
38		43	45	-	-	
39	Average valuecm	45	45	-	-	≥ 15
40	Photo of the test specimen fig. no.	2	4			
41	<u>Flue gas temperature</u>					
42	Maximum of average value...°C	116	119	-	-	≤ 200
43	Time ¹⁾min:s	10:00	9:34	-	-	
44	Diagram fig. no.	1	3			
45	<u>Remarks:</u> line 32: There were no additional tests proceeded, because of the residual length of ≥ 45 cm.					

Test specimen A (VN 557115-003): samples in machine direction

Test specimen B (VN 557115-004): samples in cross direction

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

- not tested

./. not occurred

*) no cause for complaint

VN test-number



5 Assessment

Section 4.2 lists the test results of the composite which is described in section 1 and compares the results with the requirements for not easily flammable building materials acc. DIN 4102-1. According to the test results the self-adhesive plastic foil fulfils the requirements of building materials class B1 according to DIN 4102-1 if used on metal surfaces (melting point ≥ 500 °C, thickness $\geq 0,8$ mm) and if the composite is mounted in 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 the tests.

This test report is not valid for:

- the exposure to outdoor climate conditions.

6 Special remarks

This report 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 report is not valid, as soon as the product is used as a building product in the sense of the "Landesbauordnungen" (state building regulations, MBO § 17, par. 3).

This test report is no substitute for a General Building Inspectorate Certificate. This test report is granted without prejudice to the rights of third parties, or particular private proprietary rights.

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

- regulated building materials for the required proof of accordance
- 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 report is valid until 2020-09-30, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 20th of October 2015



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



In charge for testing
(Dipl.-Ing. Manfred Sailer)

This translation was issued on 20th of October 2015, in a case of doubt the German version is valid solely.

Test specimen A

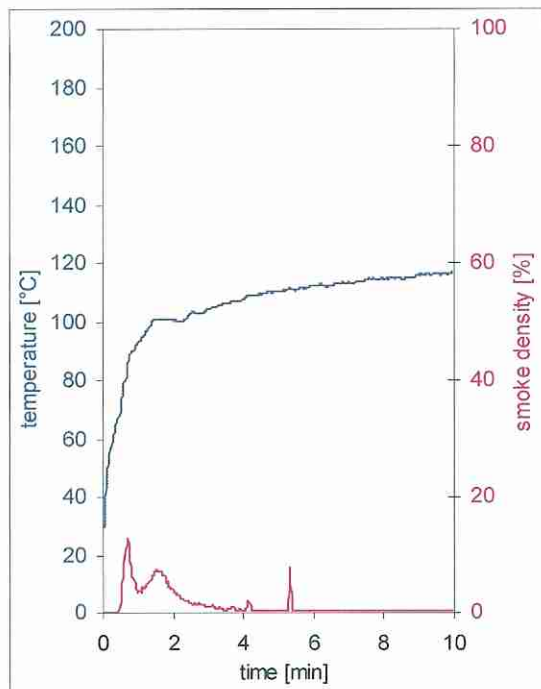


fig. 1
Graphs of the flue gas temperature and the smoke density

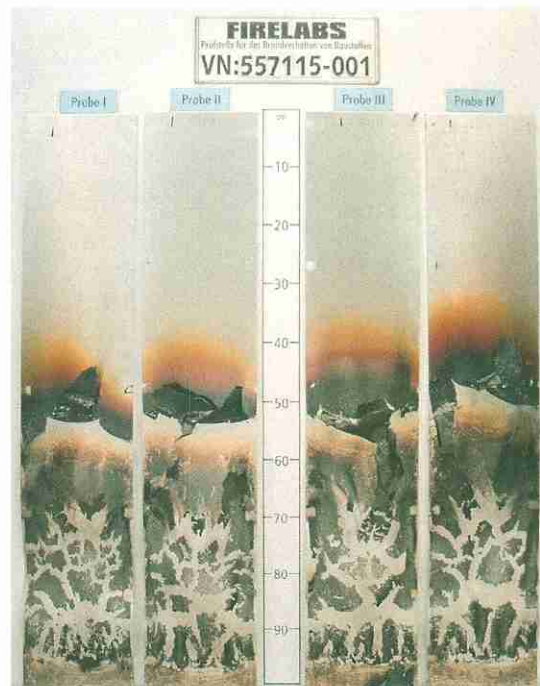


fig. 2
Photo of the test specimen after the test

Test specimen B

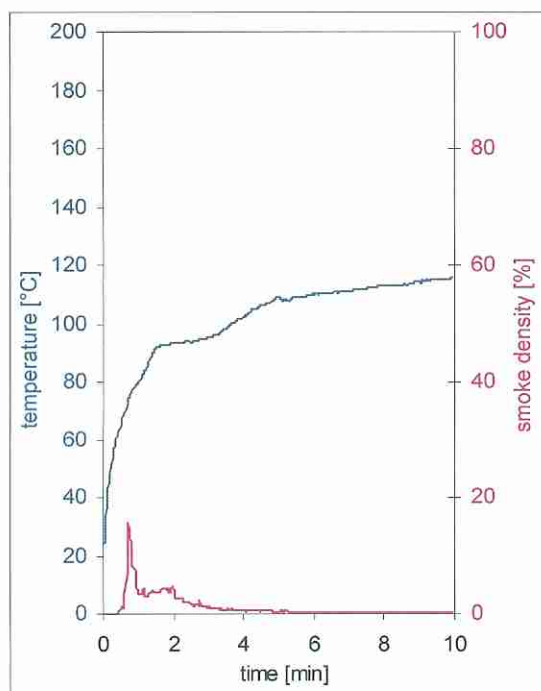


fig. 3
Graphs of the flue gas temperature and the smoke density

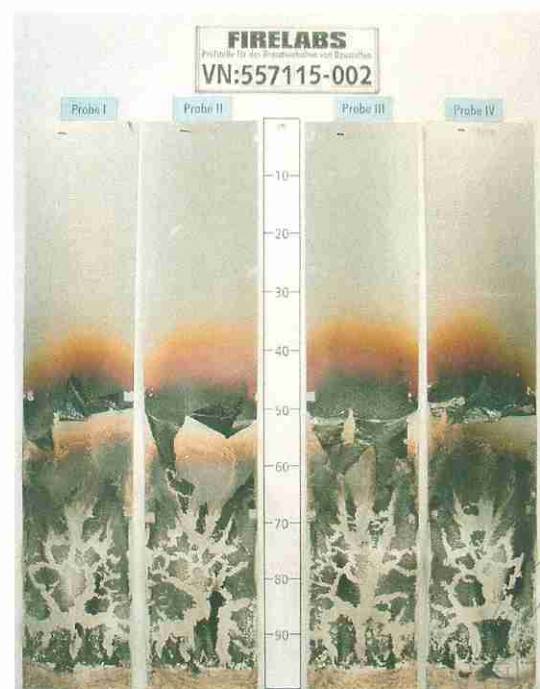


fig. 4
Photo of the test specimen after the test



Test results small burner test

Table 2

	longitudinal direction						transversal direction						dim.	requirements
Sample-No.	1	2	3	4	5	6	1	2	3	4	5	6	-	-
Ignition of the sample	7	./.	8	./.	./.	./.	./.	10	./.	./.	11	./.	s	-
Maximum flame height	1	./.	1	./.	./.	./.	./.	1	./.	./.	1	./.	cm	-
Time of the maximum	15	./.	15	./.	./.	./.	./.	15	./.	./.	15	./.	s	-
Flame tip reached the 150 mm test mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flame has extinguished before reaching the test mark	16	./.	16	./.	./.	./.	./.	16	./.	./.	16	./.	s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	1)
Smoke density	very low						very low						-	-
Afterburning after end of test	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-

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

- damaged area at the point of flame impingement: approx. 1 cm height x 0,5 cm width

Samples 1-5: Edge exposure

Samples 6: Surface 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

