

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



Prüfstelle für das  
Brandverhalten  
von Baustoffen  
Dipl.-Ing. Uwe Kühnast

Steinstrasse 18  
D - 14822 Borkheide  
Fon: +49 33845 90901  
Fax: +49 33845 90909  
Mail: info@firelabs.de  
PÜZ-Stelle (LBO): BRA09

<b>Reference</b>	FLT 3541015 (Translation of the German test report - no guarantee for translation of technical terms)
<b>Sponsor</b>	DATAPLOT GmbH Gutenbergstrasse 15 D – 24558 Henstedt-Ulzburg
<b>Test order</b>	2015-01-28 <b>Arrived</b> 2015-01-30
<b>Description of samples</b>	On one side coated rigid PVC-film, named: "EMBLEM Solvent Value Display Film FR - SOVDFFR" (for details see page 2)
<b>Delivered</b>	2015-01-30
<b>Content of request</b>	Proof of flammability to classify building materials to class B1 "schwerentflammbar" according to DIN 4102-1
<b>Assessment</b>	The examined product meets the requirements of class B1 for "schwerentflammbare" (not easily flammable) building materials according to DIN 4102-1, if used suspended freely or with distance of >40 mm to the same or other plain materials. (for details see page 5).
<b>Validity of report</b>	2020-01-31
<b>Sampling</b>	The sample had been sent to the laboratory by the manufacturer.

#### Remark:

If the above-mentioned building material is not used as product according to MBO § 2, Abs. 9, Ziffer 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, Abs. 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 underlie building supervisory procedures

- for regular building products for the pre scribed proofs of conformity
- for non-regular building products for the needed proofs of applicability.

This test report comprises 5 pages and 3 enclosures.

**Approved testing, inspection and certification body**

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**TEST REPORT**

## 1 Description of test material in condition as delivered

### 1.1 Test material (according to the manufacturer):

The delivered material is a rigid PVC film with a coating on one side (printable surface). The material is intended to be used indoor as advertising space and was named by the sponsor with the trade name "EMBLEM Solvent Value Display Film FR - SOVDFFR".

### 1.2 Description of the delivered material

For the tests the laboratory received by the manufacturer a rolled plastic film, coated on one side, dimensions 0,912 m in width and app. 15 m in length. The material was not printed or coated with additional coatings and was marked with the material number of the manufacturer.

Colour: white film, white coating on one side;

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

Further details are not known to the laboratory, information about the manufacturer and a retain sample have been deposited.

## 2 Preparation of samples

For the small burner test (Brennkasten) 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 longitudinal and in transverse direction of the material.

For the fire shaft test (Brandschacht) 4 specimens were assembled. The samples (dimensions 1000 mm x 190 mm) for the test specimens A and C were cut in longitudinal direction, the samples for the test specimen B and D were cut in transverse direction of the material (for details refer to page 4).

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 small burner ("Brennkasten") tests have been performed acc. DIN 4102-1, chapter 6.2.5 (building materials class B2). The tests in the fire shaft ("Brandschacht") have been performed acc. DIN 4102-1 and -16 (building materials class B1).

Arrangement of all samples: single layered, freely suspended, each from the front and reverse side.

Examination period: February 2015.

## 4 Results

- section 4.1 Material characteristics
- section 4.2.1 Test results class B2 (Brennkasten), see enclosure 3
- section 4.2.2 Test results class B1 (Brandschacht)

### 4.1 Material characteristics

Table 1

Type name:	Manufacturer's data		Measured values		
	Mass per unit area [g/m <sup>2</sup> ]	Thickness [mm]	Mass per unit area [g/m <sup>2</sup> ]	Thickness (m.v.) [mm]   s	
"EMBLEM Solvent Value Display Film FR - SOVDFFR"	485	0,35	491	0,35	< 0,005

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 (low flammable). The material, tested in "Brennkasten" acc. DIN 50 050 meets the requirements class B2. (Results see enclosure 3)

### 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	
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	60	60	70	60	-	-	*)
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	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	Yes 1	No	-	-	
11	Extend: Sporadic falling of burning parts			Yes		-	-	
12	Continuous falling of burning parts			No		-	-	
13	<u>Afterflame time at the bottom of the sieve (max.)</u> ..... min:s	./.	./.	0:16	./.	-	-	
14	<u>Impairment of the burner flames by dropping or falling</u> <u>Material</u> Time <sup>1)</sup> .....min:s	No	No	No	No	-	-	
15	<u>Premature end of test</u> Final occurrence of burning at the specimen <sup>1)</sup> .....min	No	No	No	No	-	-	
16	Time of eventually end of test <sup>1)</sup> .....min:s	./.	./.	./.	./.	-	-	

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.		Test results						requirements
		A	B	C	D	E	F	
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	29,3	60,2	69,9	76,5	-	-	
29	≥ 400 % min (very strong smoke density)	./.	./.	./.	./.	-	-	
30	Diagram fig. no.	1	3	5	7	-	-	
31	<u>Residual length</u> Individual value .....cm	53 50 60 53	65 54 55 55	43 47 63 49	51 48 50 57	- - - -	- - - -	> 0
32	Average value .....cm	<b>54</b>	<b>57</b>	<b>50</b>	<b>51</b>	-	-	≥ 15
33	Photo of the test specimen fig. no.	2	4	6	8	-	-	
34	<u>Flue gas temperature</u> Maximum of average value.°C	117	113	119	118	-	-	≤ 200
35	Time <sup>1)</sup> .....min:s	9:58	9:06	9:58	9:36	-	-	
36	Diagram fig. no.	1	3	5	7	-	-	
37	<p><u>Remarks:</u> line 13: Afterflame time at the bottom of the sieve &lt; 20 sec. is not rated as "falling of burning parts or droplets"                      line 32: There were no additional tests proceeded, because of the residual length of more then 45 cm.                      (Graphs and photos: see enclosures 1, 2)</p>							

<sup>1)</sup> Indication of time: from the beginning of testing procedure

- Not tested

./. Not occurred

\*) No cause for complaint

Specimen	Test-No.	Samples orientation	flame exposure onto
A	521215-001	longitudinal	coated surface
B	521215-002	transversal	
C	521215-003	longitudinal	uncoated surface
D	521215-004	transversal	



## 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.

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 requirements, 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

- regular building materials for the required proof of accordance
- for not regular 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 2020-01-31, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 25<sup>th</sup> of April 2015



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



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

*This translation was issued 25<sup>th</sup> of April 2015, in a case of doubt the German version is valid solely.*

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Test specimen A

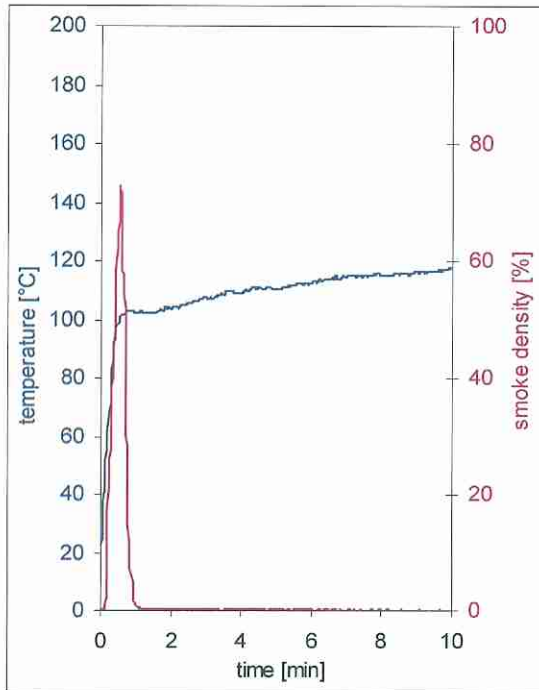


fig. 1  
Graphs of the flue gas temperature and the smoke density

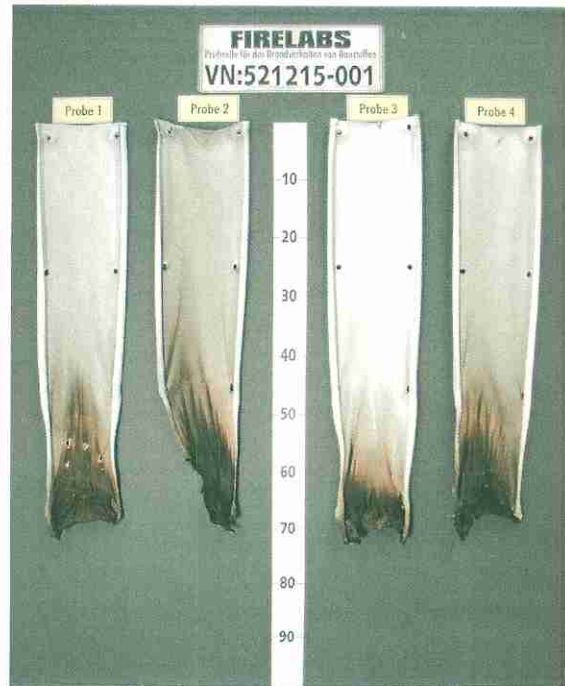


fig. 2  
Photo of test specimen after the test

Test specimen B

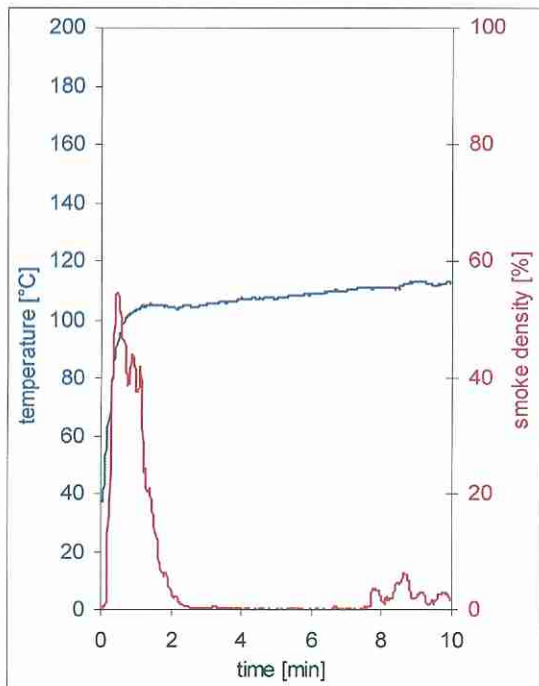


fig. 3  
Graphs of the flue gas temperature and the smoke density

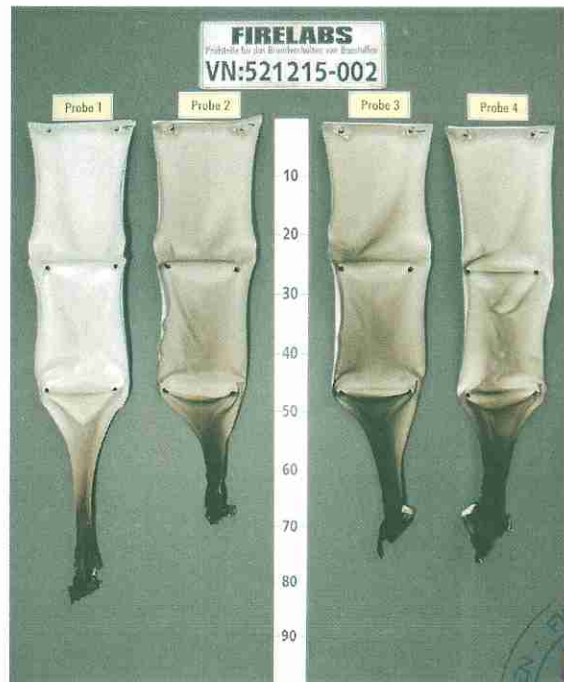


fig. 4  
Photo of test specimen after the test



Test specimen C

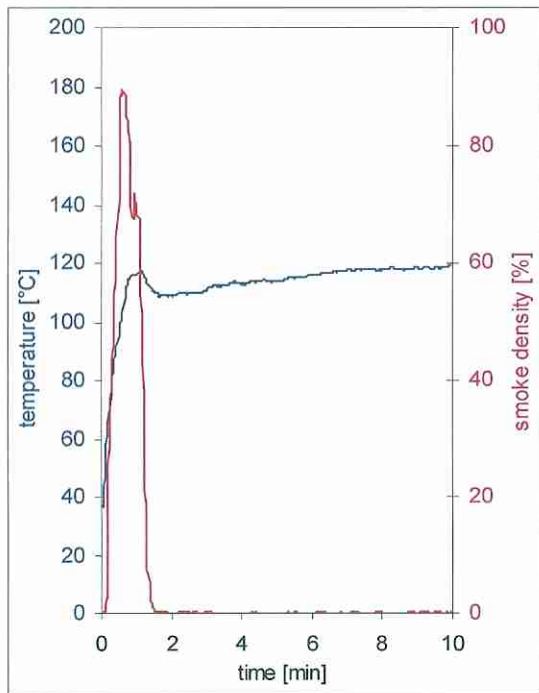


fig. 5  
Graphs of the flue gas temperature and the smoke density



fig. 6  
Photo of test specimen after the test

Test specimen D

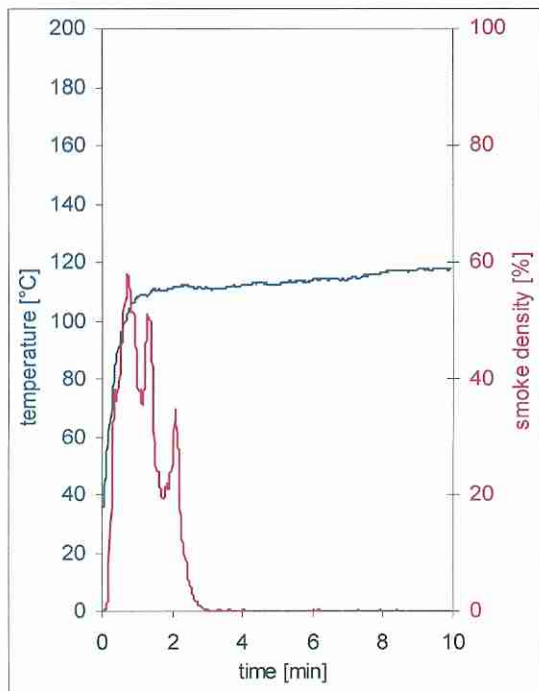


fig. 7  
Graphs of the flue gas temperature and the smoke density

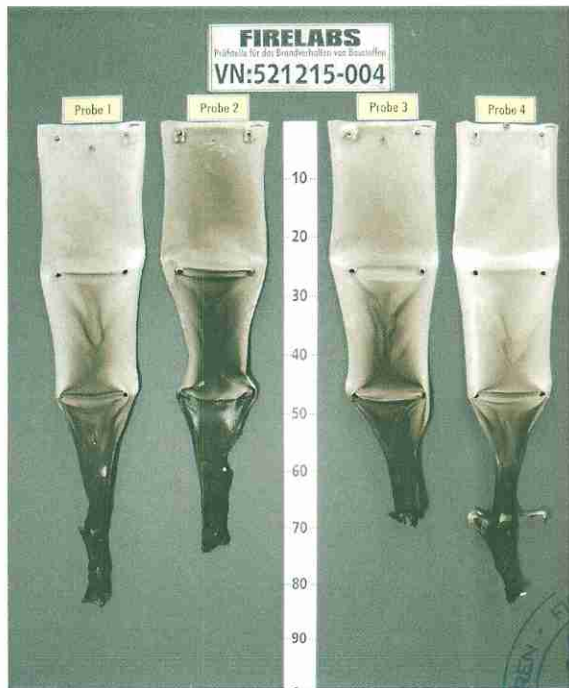


fig. 8  
Photo of test specimen after the test



Test results class B2 (Brennkasten)

Table 2

	longitudinal direction							transversal direction							dim.	requirements
	1	2	3	4	5	6	7	1	2	3	4	5	6	7		
Sample-No.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	-	-
Ignition of the sample	2	2	1	1	1	4	5	2	1	2	1	1	5	6	s	-
Maximum flame height	7	6	7	6	7	6	6	7	7	6	7	6	6	6	cm	-
Time of the maximum	10	11	11	10	12	13	14	13	12	12	12	16	12	15	s	-
Flame tip reached the 150 mm test mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flame has extinguished before reaching the test mark	16	16	16	16	16	16	16	16	16	16	16	16	16	16	s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	1)
Smoke density (visual)	intense							intense							-	-
Afterburning time	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-
Flames have been extinguished	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-
View of the samples after the test (20 seconds after exposure the flame):																
The samples were destroyed at flame impingement area:																
- max. length approx. 6-7 cm and approx. 2 cm in width, above sooted until top edge of the samples.																

Samples 1-5: edge flame exposure  
 Samples 6: surface flame exposure (uncoated surface)  
 Samples 7: surface flame exposure (coated surface)

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

