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

FIRE LABS
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
Notified Body no.: 1507

TEST REPORT

Reference	FLT 3447713 (Translation of the German test report - no guarantee for translation of technical terms)
Sponsor	Neschen AG Hans-Neschen-Straße 1 D - 31675 Bückeburg
Order	2013-06-19 **Arrived** 2013-06-21
Description of samples	On one side coated rigid PVC-film, to be used as advertising space, named: "**solvoprint easy panel 430 B1 CA**" (for details see page 2)
Delivered	2013-06-21
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 suspended freely or with distance of >40 mm to the same or other plain materials (for details see page 5).
Validity of report	2018-07-31
Sampling	by the company itself

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 Prufzeugnis (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 4 enclosures.

This test report must not be published and copied preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.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

1 Description of test material in condition as delivered

1.1 Test material (according to the sponsor)
The delivered material is a white rigid PVC film with a white coating on one side (printable surface). The material is intended to be used indoor as advertising space and was named with the trade name "solvoprint easy panel 430 B1 CA" by the sponsor.

1.2 Description of the delivered material
For the tests the laboratory received a plastic film, coated on one side with a length of approx. 15 m and a width of 0.91 m. The material was delivered without printings or other additional coatings and was labelled with the trade name "solvoprint easy panel 430 B1 CA " and a batch-No.: Y00482095A.
Colour: white film, white coating;
Characteristic values: see paragraph 4.1; Photos: see enclosures.
Other specifications are not known to the laboratory, a sample is stored.

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) 6 specimens were assembled. The samples (dimensions 1000 mm x 190 mm) for the test specimens A, C and E were cut in longitudinal direction, the samples for the test specimen B, D, and F were cut in transverse direction of the material.

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

Arrangement of all samples: single layered, freely suspended.

Examination period: August 2013

4 Results

- section 4.1 Material characteristics
- section 4.2.1 Test results class B2 (Brennkasten), see enclosure 4
- 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]	0,43	0,43	0,005
Mass per unit area	[g/m^2]	ca. 610	603	

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; the material did not show burning particles / droplets. (Results see enclosure 4)

4.2.2 Test results class B1 (Brandschacht)

Table 3

Test results "Brandschachtprüfung" (part 1)								
line no.		Test results						
		A	B	C	D	E	F	require-ments
1	Number of specimen arrangement acc. DIN 4102 –15 Table 1	1	1	1	1	1	1	
2	Maximal flame height above bottom edge ..... cm	60	80	60	80	70	70	*)
3	Time [1] ..... min	1	1	1	1	1	1	
4	Burning / melting through Time [1] .....min	1	1	1	1	1	1	
5	Back side of the specimens: Flames / glowing Time [1] .....min:s	./.	./.	./.	./.	./.	./.	
6	Discolouring Time [1] .....min:s	./.	./.	./.	./.	./.	./.	
7	Falling of burning droplets Begin [1].....min	No	No	No	No	No	No	
8	Extend: Sporadic falling of burning droplets							
9	Continuous falling of burning droplets							
	Falling of burning parts Begin [1].....min:s	Yes	Yes	Yes	Yes	Yes	Yes	
10	Extend:	1	1	1	1	1	1	
11	Sporadic falling of burning parts	Yes	Yes	Yes	Yes	Yes	Yes	
12	Continuous falling of burning parts	No	No	No	No	No	No	
13	Afterflame time at the bottom of the sieve (max.) ..... min:s	0:30	0:35	0:29	0:15	1:22	0:46	
14	Impairment of the burner flames by dropping or falling Material Time [1] .....min:s	No	No	No	No	No	No	
15	Premature end of test	No	No	No	No	No	No	
16	Final occurrence of burning at the specimen [1].....min	3	3	3	3	3	3	
	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

ZERTIFIZIEREN · PRÜFEN · ÜBERWACHEN · FIRELABS

Test results "Brandschachtprüfung" (part 2)								
line no.		Messwerte Probekörper						
		A	B	C	D	E	F	require-ments
	Afterflame after end of test	No	No	No	No	No	No	
17	Time .....min:s							
18	Number of specimen							
19	Front side of specimen							
20	Back side of specimen							
21	Flame length .....cm							
	Afterglow after end of test	No	No	No	No	No	No	
22	Time .....min:s							
23	Number of specimen							
	Place of appearance:							
24	Lower half of specimen							
25	Upper half of specimen							
26	Front side of specimen							
27	Back side of specimen							
	Smoke density							
28	≤ 400 % min	63,2	113	84,4	88,1	108	79,8	
29	≥ 400 % min (very strong smoke density)							
30	Diagram fig. no.	1	3	5	7	9	11	
	Residual length							
31	Individual value .....cm	18 7 43 23	33 30 57 51	41 53 54 53	43 46 45 47	44 40 37 33	56 48 51 50	> 0
32	Average value .....cm	**22**	**42**	**50**	**45**	**38**	**51**	≥ 15
33	Photo of the test specimen fig. no.	2	4	6	8	10	12	
	Flue gas temperature							
34	Maximum of average value.°C	112	114	106	118	115	116	≤ 200
35	Time [1] .....min:s	9:58	1:23	9:58	9:58	1:28	9:54	
36	Diagram fig. no.	1	3	5	7	9	11	
37	Remarks: -none- (Graphs and photos: see enclosures 1-3)							

[1] Indication of time: from the beginning of testing procedure
- Not tested
. /. Not occurred
*) No cause for complaint

Test specimen	Test-no.	Sample direction	Tested surface
A	447713-003	longitudinal	coated surface
B	447713-004	transversal	
C	447713-005	longitudinal	uncoated surface
D	447713-006	transversal	
E	447713-007	longitudinal	coated surface
F	447713-008	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 were fulfilled also.

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 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 2018-07-31, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 10th of August 2013

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

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

This translation was issued on the 12th of August 2013.

Test specimen A

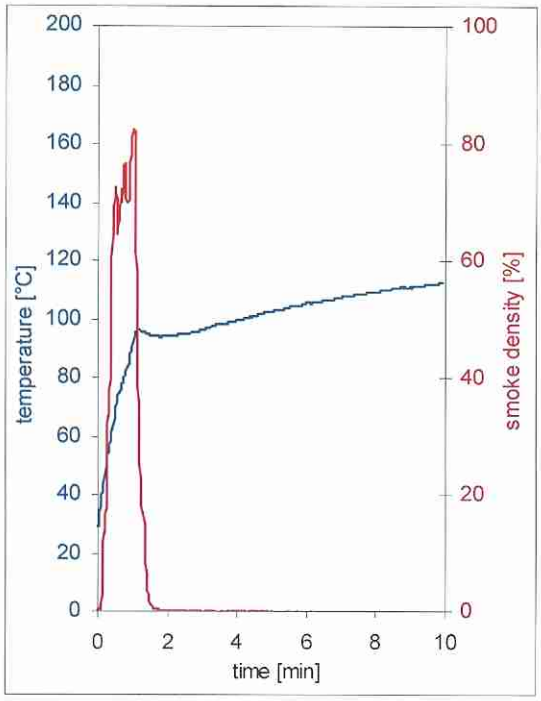

fig. 1
Graphs of the flue gas temperature and the smoke density

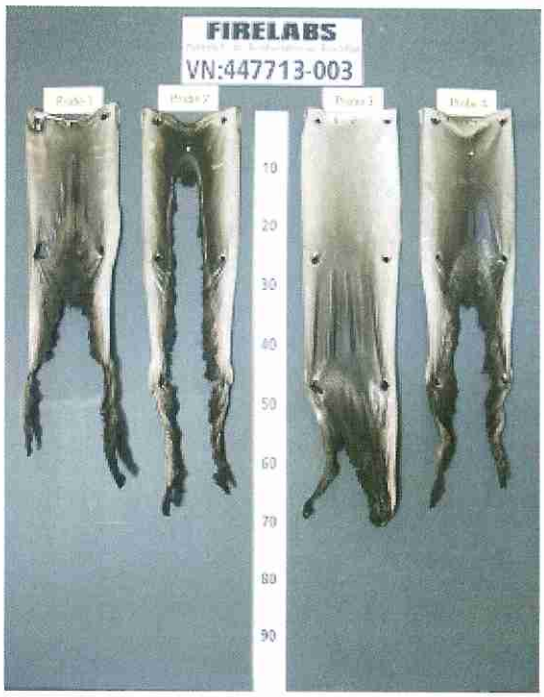

fig. 2
Photo of test specimen after the test (sample 4: reverse side)

Test specimen B

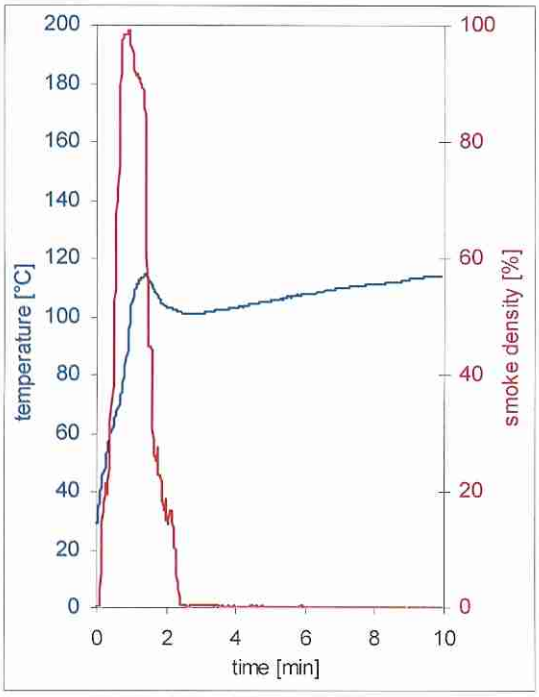

fig. 3
Graphs of the flue gas temperature and the smoke density

fig. 4
Photo of test specimen after the test

Test specimen C

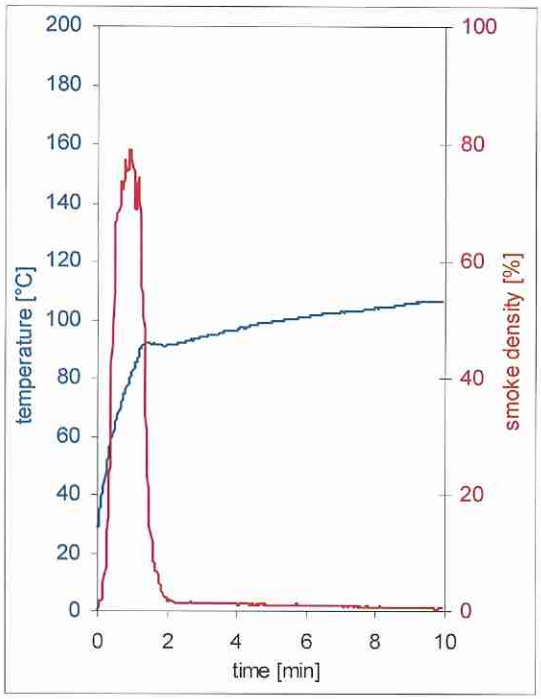

fig. 5
Graphs of the flue gas temperature and the smoke density

fig. 6
Photo of test specimen after the test

Test specimen D

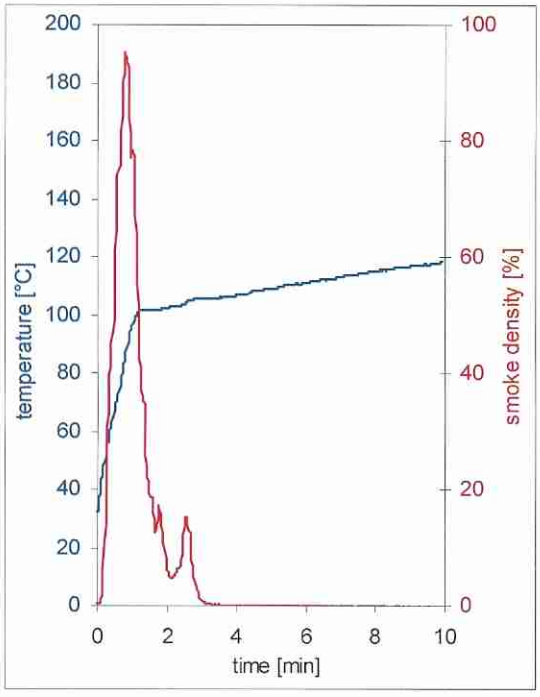

fig. 7
Graphs of the flue gas temperature and the smoke density

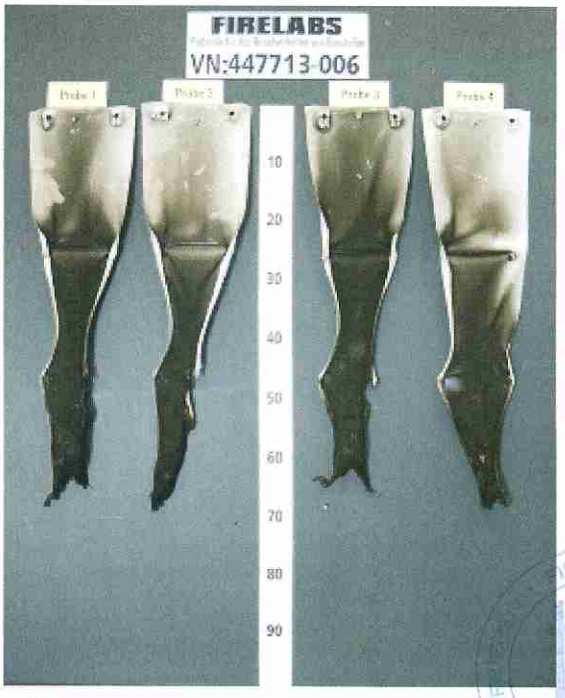

fig. 8
Photo of test specimen after the test

Test specimen E

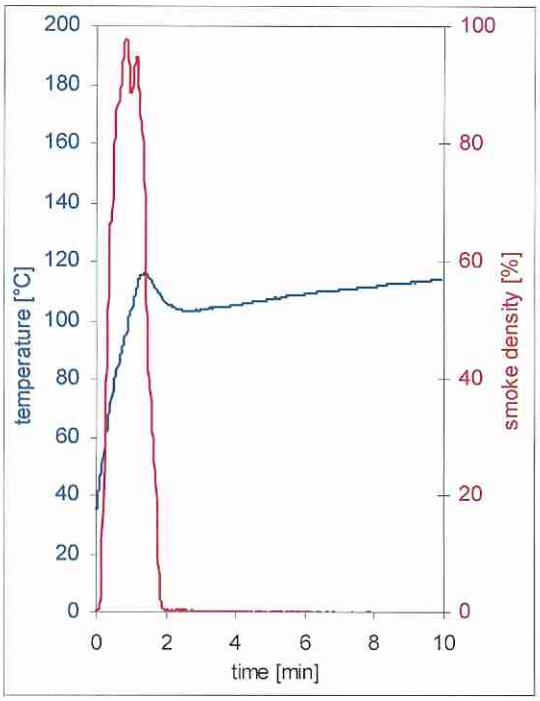

fig. 9
Graphs of the flue gas temperature and the smoke density

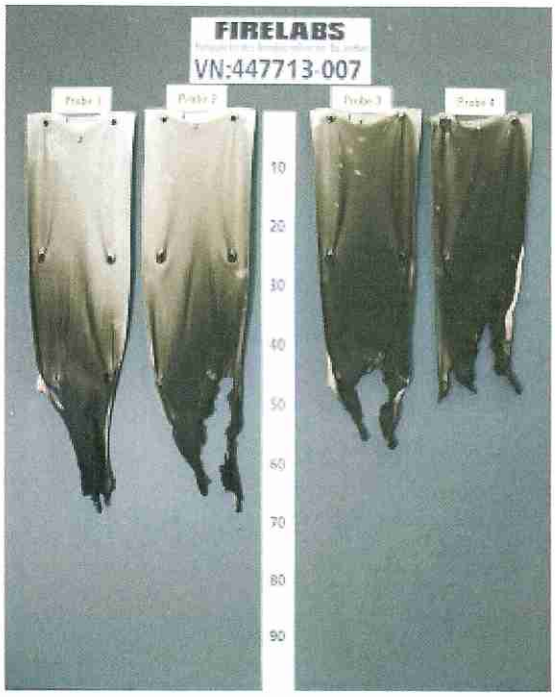

fig. 10
Photo of test specimen after the test

Test specimen F

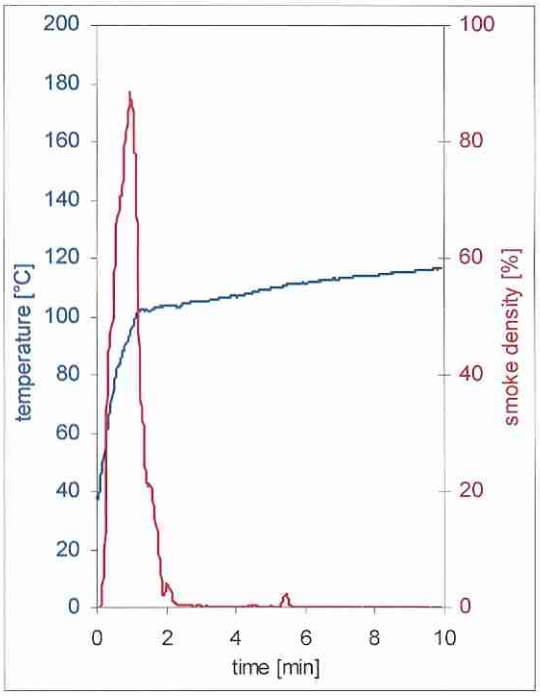

fig. 11
Graphs of the flue gas temperature and the smoke density

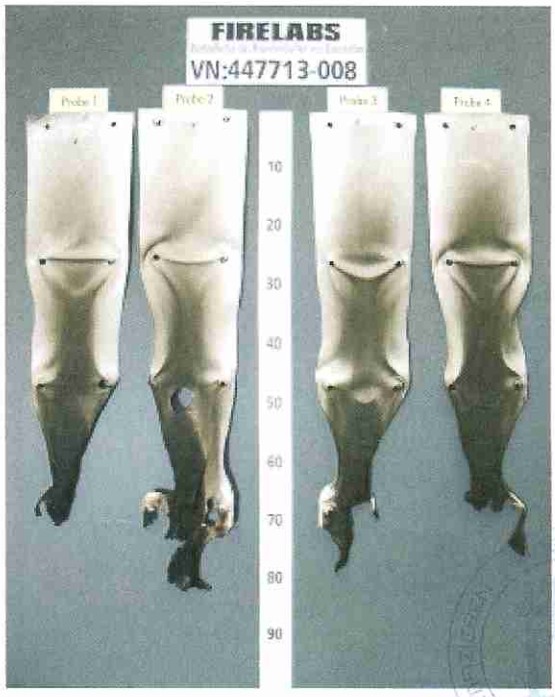

fig. 12
Photo of test specimen after the test (sample 4: rear side)

Test results class B2 (Brennkasten)

Table 2

	longitudinal direction							transversal direction							dim.	require-ments
Sample-No.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	-	-
Ignition of the sample	2	2	2	2	2	5	5	2	2	2	2	2	5	5	s	-
Maximum flame height	5	5	6	5	5	4	5	4	5	5	4	5	6	4	cm	-
Time of the maximum	15	14	14	15	15	13	15	13	10	13	14	12	15	13	s	-
Flame tip reached the 150 mm test mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flame has extinguished before reaching the test mark	16	16	16	16	16	15	16	16	16	16	16	16	16	16	s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	[1]
Smoke density (visual)	moderate							moderate							-	-
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: - in longitudinal and transversal direction max. length approx. 4 cm and approx. 2 cm in width,																

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