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

FIRE LABS
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PÜZ-Stelle (LBO): BRA09
Notified Body no.: 1507

TEST REPORT

Reference	FLT 3386312 (Translation of the German test report - no guarantee for translation of technical terms)
Sponsor	Convertec Veredelungstechnologie GmbH Heideweg 2-4 D – 77880 Sasbach
Order	2012-01-11 **Arrived** 2012-01-12
Description of samples	On one side coated rigid PVC-film, named: "**ConverJet PopUp PVC 310 FH W**", "**ConverJet PopUp PVC 310 FH S**", "**ConverJet PopUp PVC 430 FH W**" and "**ConverJet PopUp PVC 430 FH S**". (for details see page 2)
Delivered	2012-01-12
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	2017-02-28
Sampling	The samples were sent to the laboratory

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 6 enclosures.

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1 Description of test material

1.1 Test material (according to the sponsor):
The delivered materials are rigid PVC-films with a white coating on one side, printable surface for water- or solvent-based printing medias in a nominal thickness of 0.31 mm or 0.43 mm. The coated foils are intended to be used indoor as printable advertising spaces and were named with the following trade names:
- "ConverJet PopUp PVC 310 FH W"
- "ConverJet PopUp PVC 310 FH S"
- "ConverJet PopUp PVC 430 FH W"
- "ConverJet PopUp PVC 430 FH S".

1.2 Description of the delivered material
For the tests the laboratory received, provide by the sponsor, 4 different samples of one side coated plastic films with 3 m length and 0.91 m width each. The coated films did not show printing or other additional coatings.
Characteristic values: see table 1;
colour: white;
other specifications are not known to the laboratory, samples are stored;
photos: see enclosures.

2 Preparation of samples

For the small burner test ("Brennkastenprüfung") samples for edge exposure (dimensions 190 mm x 90 mm) and samples for surface exposure (dimensions 230 mm x 90 mm) were cut in longitudinal and transverse direction of the material.

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

All samples were kept in a climate chamber acc. DIN 50014-23/50-2 until they reached constant weight before testing.

3 Arrangement of samples

The tests in the fire shaft test ("Brandschacht") have been performed acc. DIN 4102-1 and -16 (building materials class B1). The small burner tests ("Brennkasten") have been performed acc. DIN 4102-1, chapter 6.2.4.2 (building materials class B2).

Arrangement of all samples: single layered, freely suspended.

Examination period: February 2012

4 Results

- table 1 Material characteristics
- table 2 Test results class B1 ("Brandschacht")
- table 3,4,5 Test results class B2 ("Brennkasten"), see enclosure 5, 6

4.1 Material characteristics
Table 1

Type	Manufacturer's data	Measured values		
	Nominal thickness [mm]	Mass per unit area [g/m²]	Thickness (m.v.) [mm]	[s]
"ConverJet PopUp PVC 310 FH W"	0,31	424	0,280	0,006
"ConverJet PopUp PVC 310 FH S"	0,31	457	0,298	0,002
"ConverJet PopUp PVC 430 FH W"	0,43	591	0,415	0,007
"ConverJet PopUp PVC 430 FH S"	0,43	619	0,418	0,007

m.v. mean value
s standard deviation

4.2 Results of the fire behaviour

4.2.1 Test results class B2 (Brennkasten)

All building materials class B1 (not easily flammable) must also meet the requirements of materials class B2 (flammable). The material, tested in "Brennkasten" acc. DIN 50 050 meets the requirements class B2. The material did not show burning particles/droplets during these tests. Flame impingement to front or rear side did not influence the fire behaviour.
Results: see enclosures 5 and 6

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	G	H	require-ments
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	40	50	40	50	40	40	40	40	*)
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	
	Back side of the specimens:									
5	Flames / glowing Time [1] .....min:s	./.	./.	./.	./.	./.	./.	./.	./.	
6	Discolouring Time [1] .....min:s	./.	./.	./.	./.	./.	./.	./.	./.	
	Falling of burning droplets									
7	Begin [1].....min	No	No	No	No	No	No	No	No	
	Extend:									
8	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	No	No	
10	Extend:	1	1	1	1	1	1			
	Sporadic falling of									
11	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	0:06	0:13	0:11	0:16	0:04	0:07	./.	./.	
	Impairment of the burner flames by dropping or falling Material									
14	Time [1] .....min:s	No	No	No	No	No	No	No	No	
	Premature end of test	No	No	No	No	No	No	No	No	
15	Final occurrence of burning at the specimen [1].....min	3	3	4	3	4	3	3	4	
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 "Brandschachtprüfung" (part 2)										
line no.		Test results								
		A	B	C	D	E	F	G	H	require-ments
	Afterflame after end of test	No	No	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	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	64,1	58,1	62,4	75,5	55,8	67,6	27,2	37,3	
29	≥ 400 % min (very strong smoke density)									
30	Diagram fig. no.	1	3	5	7	9	11	13	15	
	Residual length									
31	Individual value .....cm	55 65 65 55	62 63 55 64	62 56 60 50	66 59 55 58	45 55 55 65	62 55 67 58	55 60 55 63	65 67 67 60	> 0
32	Average value .....cm	**60**	**61**	**57**	**59**	**55**	**60**	**58**	**64**	≥ 15
33	Photo of the test specimen fig. no.	2	4	6	8	10	12	14	16	
	Flue gas temperature									
34	Maximum of average value.°C	117	120	116	118	117	119	116	114	≤ 200
35	Time [1] .....min:s	9:48	9:56	9:56	9:46	8:42	9:58	8:14	9:50	
36	Diagram fig. no.	1	3	5	7	9	11	13	15	
37	Remarks: line 13: Afterflame time at the bottom of the sieve < 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.									

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

Specimen	Test-No.	Type	Samples orientation
A	386312-001	"ConverJet PopUp PVC 310 FH W"	longitudinal
B	386312-002		transversal
C	386312-003	"ConverJet PopUp PVC 310 FH S"	longitudinal
D	386312-004		transversal
E	386312-005	"ConverJet PopUp PVC 430 FH W"	longitudinal
F	386312-006		transversal
G	386312-007	"ConverJet PopUp PVC 430 FH S"	longitudinal
H	386312-008		transversal

5 Assessment

According to the test results in section 4.2 the materials, described in section 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 did not occur 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 2017-02-28, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 28th of February 2012

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

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

This translation was issued the 15th of April 2014. In a case of doubt, the German version is valid solely.

Test specimen A

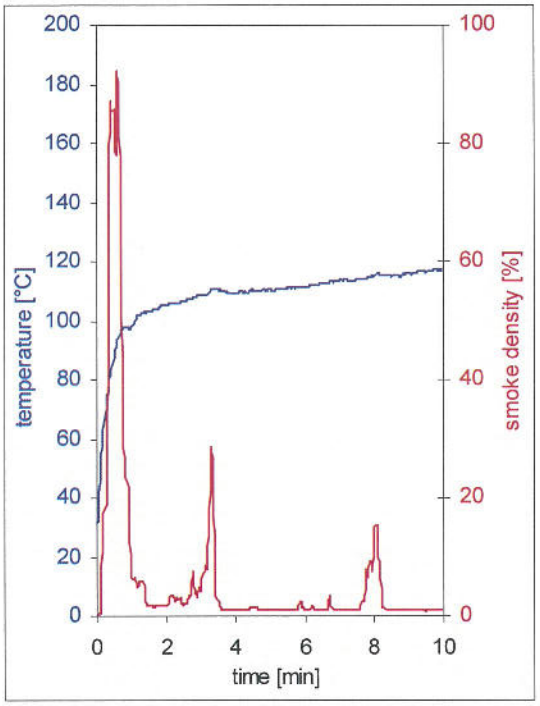

fig. 1
Graphs of the flue gas temperature and the smoke density

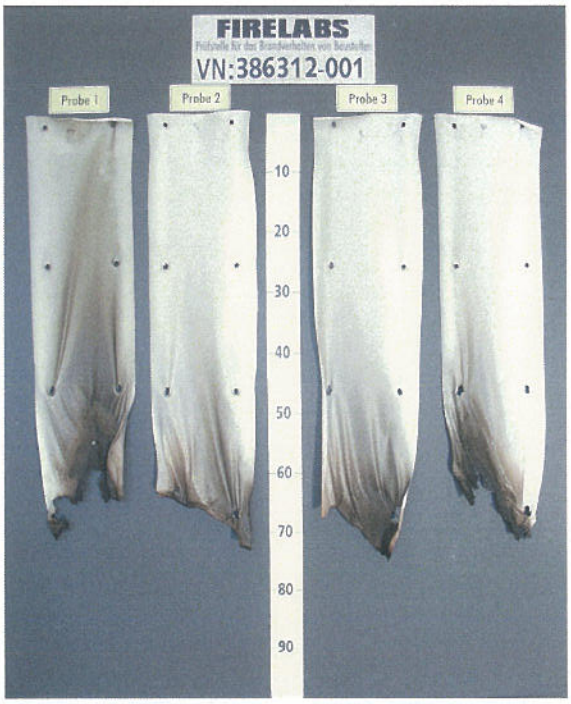

fig. 2
Photo of test specimen after the test

Test specimen B

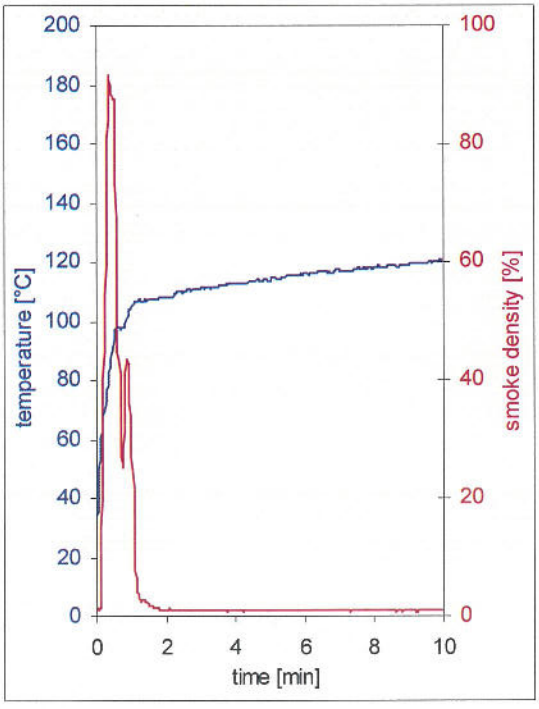

fig. 3
Graphs of the flue gas temperature and the smoke density

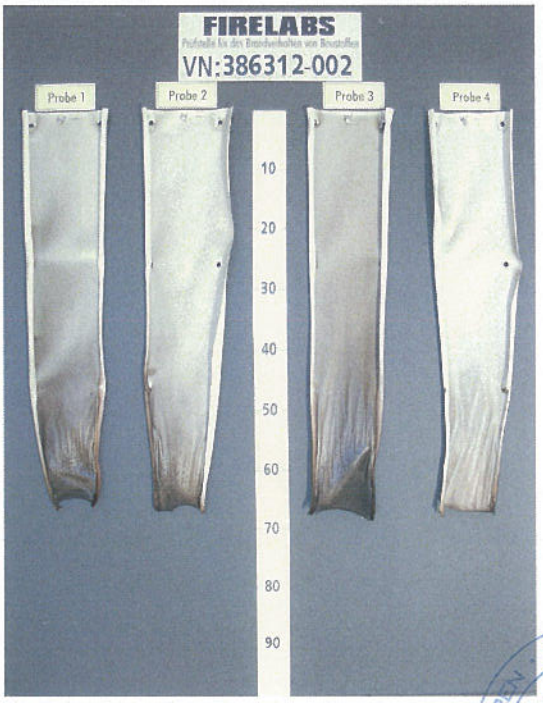

fig. 4
Photo of test specimen after the test

Test specimen C

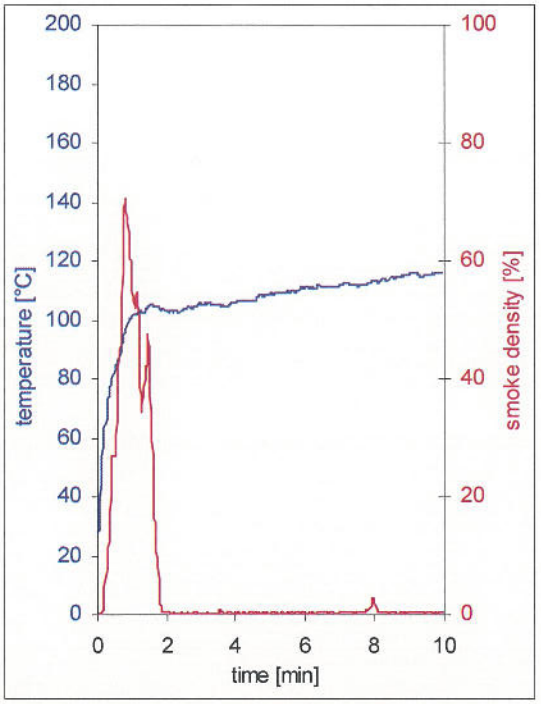

fig. 5
Graphs of the flue gas temperature and the smoke density

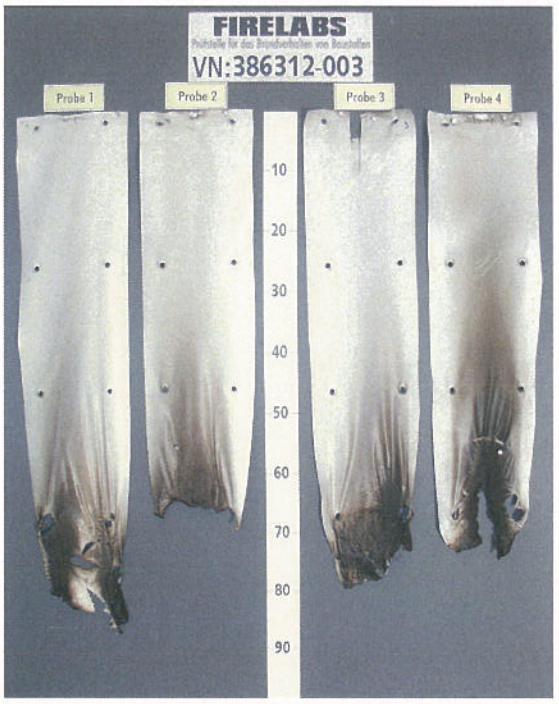

fig. 6
Photo of test specimen after the test

Test specimen D

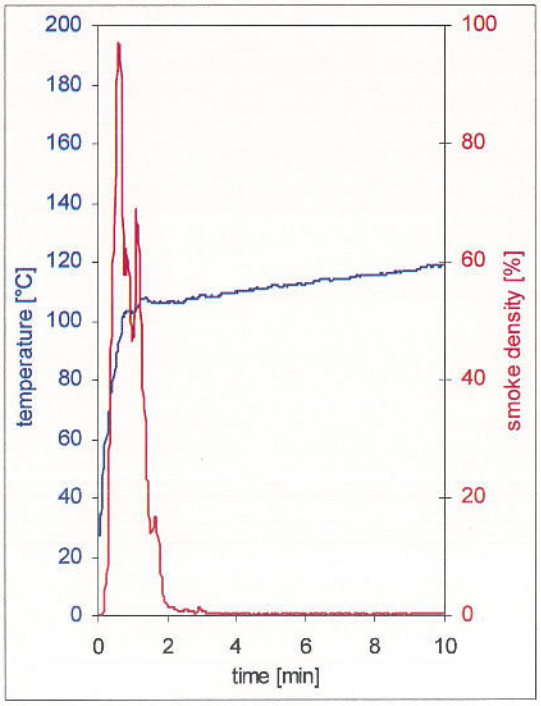

fig. 7
Graphs of the flue gas temperature and the smoke density

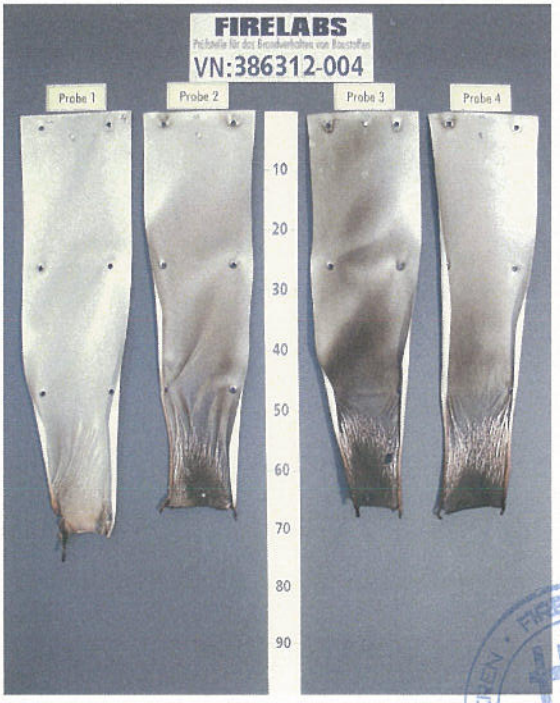

fig. 8
Photo of test specimen after the test

Test specimen E

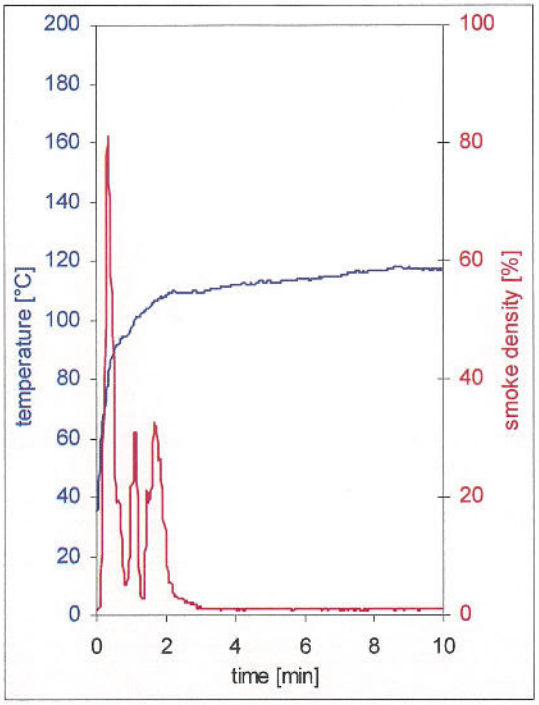

fig. 9
Graphs of the flue gas temperature and the smoke density

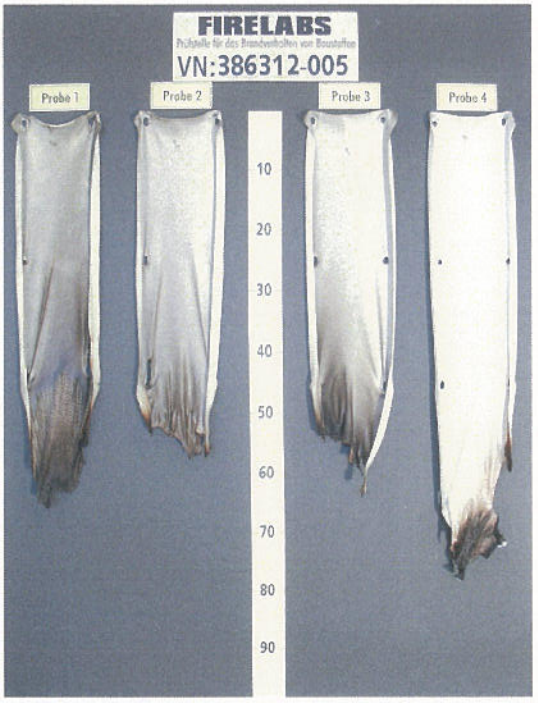

fig. 10
Photo of test specimen after the test

Test specimen F

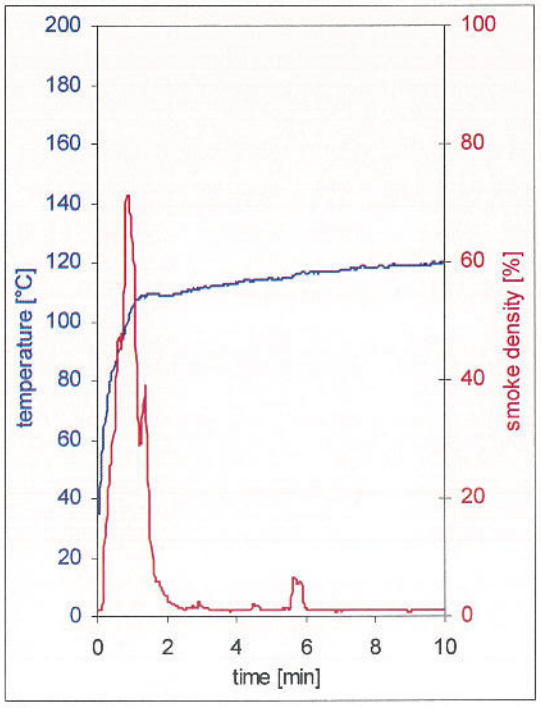

fig. 11
Graphs of the flue gas temperature and the smoke density

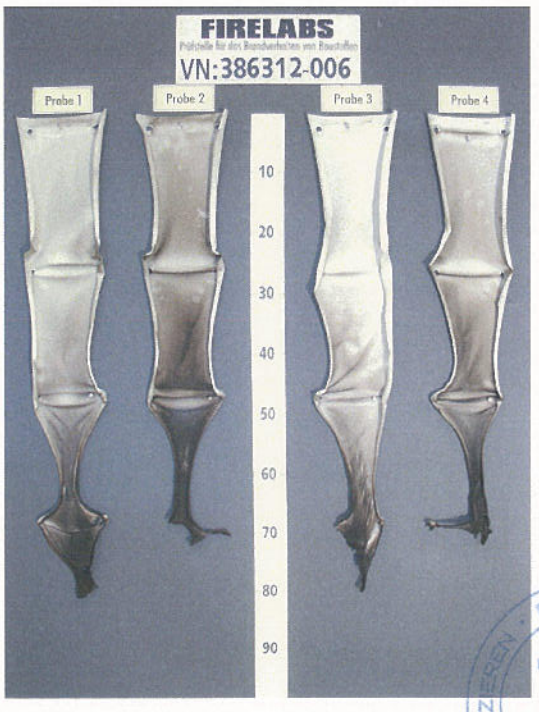

fig. 12
Photo of test specimen after the test

Test specimen G

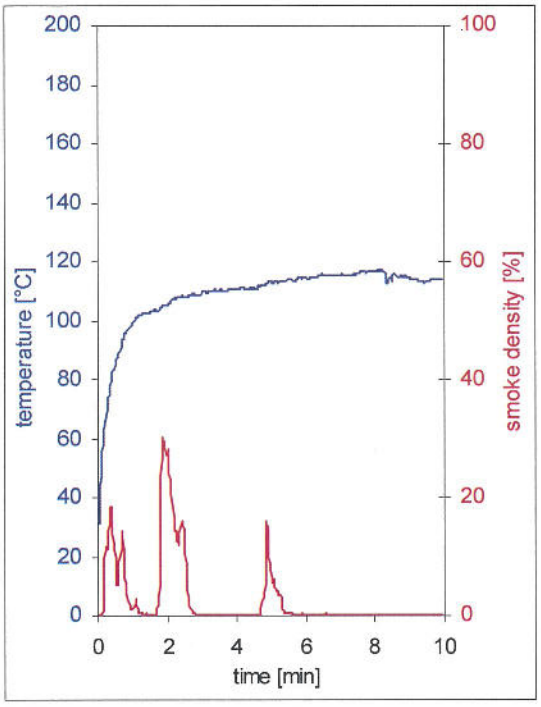

fig. 13
Graphs of the flue gas temperature and the smoke density

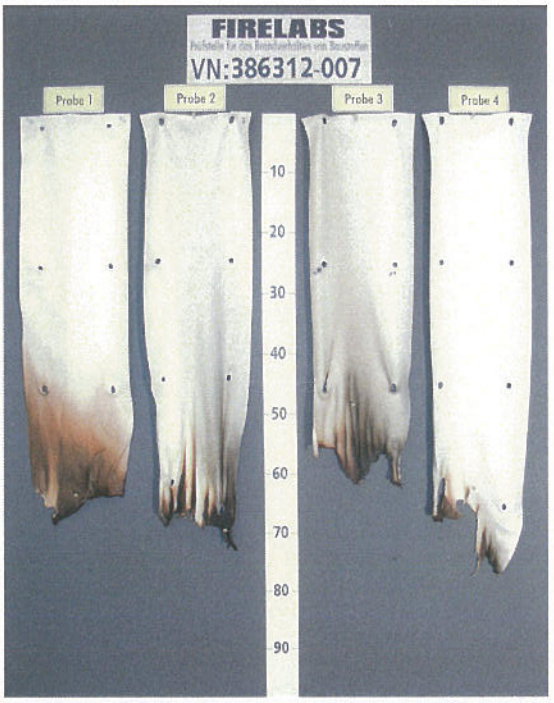

fig. 14
Photo of test specimen after the test

Test specimen H

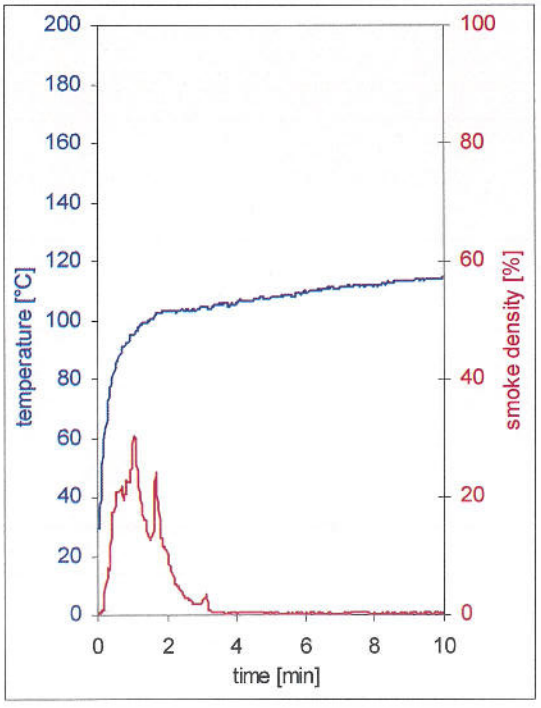

fig. 15
Graphs of the flue gas temperature and the smoke density

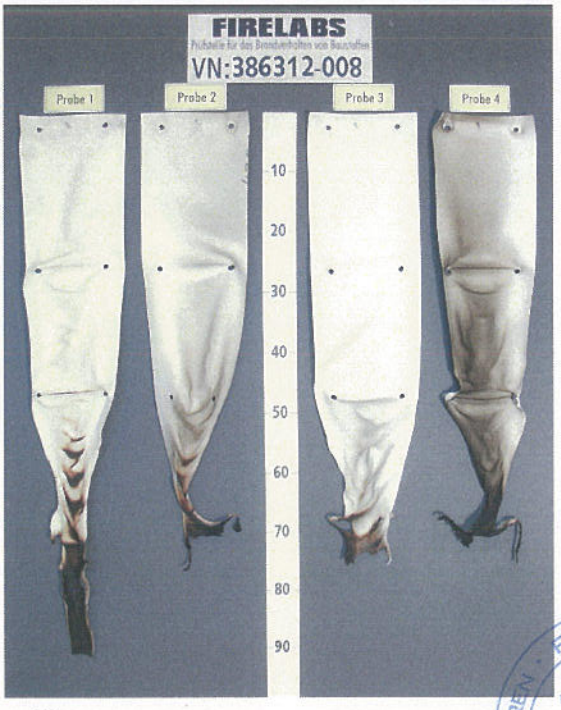

fig. 16
Photo of test specimen after the test

Test results class B2 (Brennkasten)

Table 3 - "ConverJet PopUp PVC 310 FH W"

	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	1	1	1	1	1	5	5	1	1	1	1	1	5	5	s	-
Maximum flame height	5	6	6	5	5	4	4	6	5	6	6	5	5	5	cm	-
Time of the maximum	20	20	20	20	20	15	15	10	12	15	13	13	15	15	s	-
Flame tip reached the 150 mm test mark	55	50	50	57	53	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flame has extinguished before reaching the test mark	./.	./.	./.	./.	./.	16	16	12	14	18	14	16	16	16	s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	[1]
Smoke density (visual)	intense							intense							-	-
Afterburning time	55	60	55	60	56	./.	./.	./.	./.	./.	./.	./.	./.	./.	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. 7 cm and approx. 1.5 cm in width, above sooted until top edge of the sample.																

Table 4 - "ConverJet PopUp PVC 310 FH S"

	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	1	1	1	1	1	6	6	1	1	1	1	1	6	6	s	-
Maximum flame height	5	5	5	5	5	5	6	3	4	7	7	7	6	6	cm	-
Time of the maximum	15	15	15	15	15	15	15	9	10	11	12	10	9	8	s	-
Flame tip reached the 150 mm test mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flame has extinguished before reaching the test mark	16	27	23	17	16	16	16	11	12	13	14	13	10	13	s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	[1]
Smoke density (visual)	intense							intense							-	-
Afterburning time	./.	7	3	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	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. 6 cm and approx. 1.5 cm in width, above sooted until top edge of the sample.																

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

Table 5 - "ConverJet PopUp PVC 430 FH W"

	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	1	1	1	1	1	9	8	1	1	1	1	1	9	8	s	-
Maximum flame height	4	5	4	5	5	5	5	5	5	5	6	6	5	5	cm	-
Time of the maximum	20	15	18	15	15	15	15	15	15	15	15	15	15	15	s	-
Flame tip reached the 150 mm test mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flame has extinguished before reaching the test mark	21	16	19	16	16	16	16	17	16	16	16	16	16	16	s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	[1]
Smoke density (visual)	intense							intense							-	-
Afterburning time	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	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. 5 cm and approx. 1.5 cm in width, above sooted until top edge of the sample.																

Table 6 - "ConverJet PopUp PVC 430 FH S"

	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	1	1	1	1	1	9	8	1	1	1	1	1	7	8	s	-
Maximum flame height	5	5	4	5	5	5	5	5	6	5	6	5	5	5	cm	-
Time of the maximum	15	18	7	15	12	15	15	13	14	15	14	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	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	-
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. 5 cm and approx. 1.5 cm in width, above sooted until top edge of the sample.																

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