Prüfinstitut Hoch
Lerchenweg 1
D-97650 Fladungen
Tel.: 09778–7480-200, Fax: 09778–7480-209
notified body no.: 1508 Mitglied der
hoch.fladungen@t-online.de www.brandverhalten.de

Hoch
Fladungen

Prüfinstitut für das Brandverhalten von Bauprodukten, Dipl.-Ing. (FH) Andreas Hoch
Bauaufsichtlich anerkannte Prüf-, Überwachungs- und Zertifizierungsstelle

TEST REPORT

for the proof of Fire behaviour according to DIN 4102, part 1
original test and aging test after 2-years weathering

Nr. PZ-Hoch-091033-2

Translation of the German test report – no guarantee for translation of technical terms

Company:	**PATI S.p.A.** Via Beltramini, 50/52 I-31020 San Zenone degli Ezzelini TV
Description of samples:	ETFE-film (lucent)
Name of the material:	**"PATI – F – LINE ETFE"**
sampling:	by the company itself
Content of request:	Proof of flammability to classify building materials to class B1 "schwerentflammbar" according to DIN 4102, part 1
validity of test report:	March 31st 2015*)
Result:	**The examined product meets also after 2-years weathering the requirements of class B1 for "schwerentflammbare" (hardly flammable) building materials according to DIN 4102, part 1 (May 1998) , suspended freely or with distance of >40 mm to same or other plain materials.**

This test report includes 4 pages and 5 enclosures.

Remark: If the above mentioned building material is not used as product according to MBO § 2, Abs. 9, Ziffer1, 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 prescribed proofs of conformity
- for non regular building products for the needed proofs of applicability.

This test report must not be published and copied without preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.
*) prolongation on request.

1. Description of test material in condition as delivered

PN 10638: ETFE-film (lucent)

name of the material: **"PATI – F – LINE ETFE"**

characteristic values determined by the test laboratory:
area weight: about 350 g/m² thickness: about 0,22 mm

The testing laboratory is not provided with further details concerning composition of the tested building materials. Samples are deposited.

2. Preparation of samples:

The samples were kept in climate chamber 23/50 until they reached constant weight.

3. Arrangement of samples: freely suspended
#9662: flaming in machine direction
#9665: flaming in transverse direction
#2720: flaming in transverse direction after 2-years weathering

4. Date of test week 45 in 2009 and week 14 in 2012

5. Results: The test has been examined according to DIN 4102 (Mai 1998)

line No.	Measurement / Test number	Result with the tested specimen #9662 machine direction	#9665 transv. direction	#2720 transv. direction	---	Dim.
	Original test / 1st aging test	original test		1st aging test		
1	Number of specimen arrangement acc. to. DIN 4102/T15, schedule 1	1	1	1	---	
2	Maximum flame height above bottom edge of the specimen	50	40	50		cm
3	Time [1]	0:09	0:06	0:10	---	min:s
4	Burn through / melting Time [1]	0:09	0:07	0:08	---	min:s
	Observations on the back side of the specimen					
	Flames / Glowing	./.	./.	./.	---	
5	Time [1]	./.	./.	./.	---	min:s
	Change of color	./.	./.	./.	---	
6	Time [1]	./.	./.	./.	---	min:s
	Falling of burning droplets	./.	./.	./.		
7	Start [1]				---	min:s
	Extent				---	
8	sporatic falling of burning droplets [2]	./.	./.	./.	---	
9	continuous falling of burning droplets [2]	./.	./.	./.	---	min:s
	Falling of burning droplets	./.	./.	./.		
10	Start [1]					min:s
	Extent	./.	./.	./.		
11	sporatic falling of burning droplets [2]					
12	continuous falling of burning droplets [2]	./.	./.	./.	---	
13	Afterflame time at the bottom of the sieve (max.)	./.	./.	./.	---	min:s
	Impairment of the burner by dropping or falling material:					
14	Time [1]	./.	./.	./.	---	min:s

line No.	Measurement / Test number	Result with the tested specimen #9662 machine direction	#9665 transv. direction	#2720 transv. direction	---	Dim.
	Premature end of test					
15	Final occurance of burning at the specimen [1]	./.	./.	./.	---	min:s
16	Time of eventually end of test [1]	./.	./.	./.	---	min:s
	Afterflame after end of test					
17	Time [1]	./.	./.	./.	---	min:s
18	Number of specimen	./.	./.	./.	---	
19	Front side of specimen [2]	./.	./.	./.	---	
20	Back side of specimen [2]	./.	./.	./.	---	
21	flame length	./.	./.	./.	---	cm
	Afterglow after end of test	./.	./.	./.	---	
22	Time [1]	./.	./.	./.	---	min:s
23	Number of specimen	./.	./.	./.	---	
	Place of appearance	./.	./.	./.	---	
24	Lower half of the specimen [2]	./.	./.	./.	---	
25	Upper half of the specimen [2]	./.	./.	./.	---	
26	Front side of specimen [2]	./.	./.	./.	---	
27	Back side of specimen [2]	./.	./.	./.	---	
	Density of smoke					
28	≤ 400 % * min	2	3	2	---	% * min
29	> 400 % * min [4]	./.	./.	./.	---	% * min
30	Diagram: encl. no.	1	2	3	---	
31	Residual lengths: individual value [3] Specimen 1	73	73	68	---	cm
	Specimen 2	72	68	71	---	cm
	Specimen 3	73	70	69	---	cm
	Specimen 4	71	66	68	---	cm
32	Average value, individual test [3]	**72**	**69**	**69**	**---**	
33	Photo of specimen in enclosure no.	1	2	3	---	
	Flue gas temperature					
34	Maximum of average value	119	126	124	---	°C
35	Time [1]	09:49	08:50	09:49	---	min:s
36	Diagram: encl. no.	1	2	3	---	
37	Remarks: - none -					

1) indication of times: from the begin of testing procedure
2) checked off if applicable
3) indication of carrier/foam layer separated in case of fire-proofing agents
4) very strong development of smoke

6. Explanations concerning the testing procedure:

There were no additional tests proceeded because of the residual length of more than 45 cm.

7. Summary of results and additional establishments to Fire Behaviour:

lineno	Measurement test-no.	Result with the tested specimen #9662 machine direction	#9665 transverse direction	#2720 transverse direction	---	dimension
	Original test / 1st aging test	original test		1st aging test		
1	residual length	72	69	69	---	cm
2	max. smoke temperature	**119**	**126**	**124**	---	°C
3	density of smoke – integral	2	3	2	---	%min
4	remarks: -none-					

According to DIN 4102, part 1, "schwerentflammbare" (hardly flammable) building materials must meet the requirements of class B2.
Pursuant to additional tests in the ignitability apparatus this can be determined (appendix 4, 5).

8. 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 grounds etc. the burning behaviour may differ.
- This test report is not valid for the exposure to outdoor climate conditions after 5 years.
- This test report is not valid, as soon as the fabric 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, im particular private proprietary rights.
- For legal interests only the German original version is relevant.
- 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

9. Validity: This test report is valid until the mentioned date on page 1. The test report becomes invalid in case the standards on which the tests are based are changed.

Fladungen, April 18th 2012

clerk in charge:

(Dipl.-Ing. (FH) Jürgen Hammer)

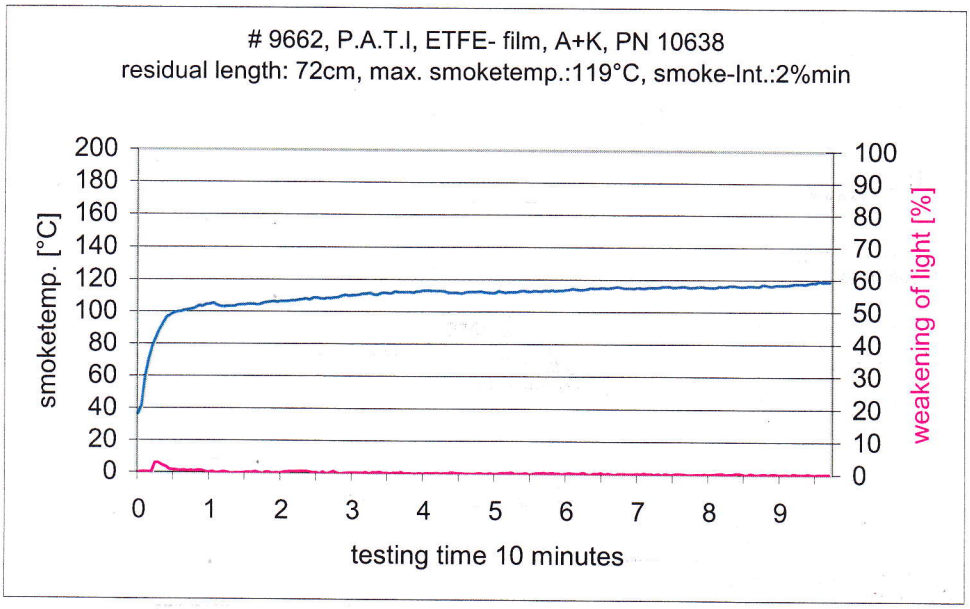
ANERKANNTE PRÜF-, ÜBERWACHUNGS- UND ZERTIFIZIERUNGSSTELLE Hoch FLADUNGEN

Head of the test laboratory:

(Dipl.-Ing.(FH) Andreas Hoch)

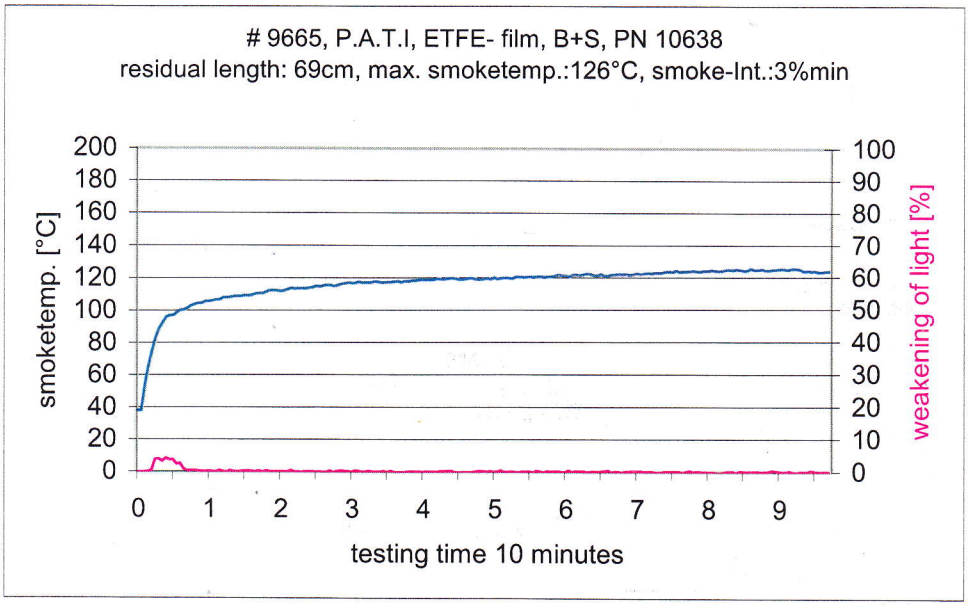
„Brandschacht“-test #9662

measurement

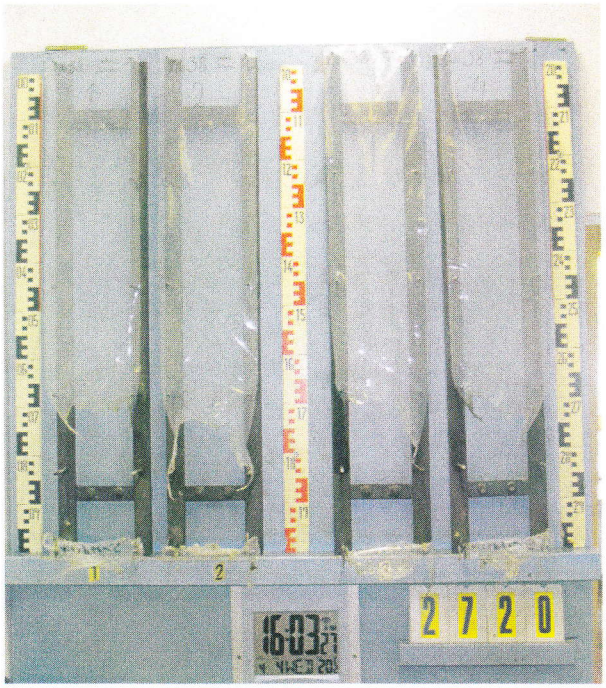


„Brandschacht"-test #9665

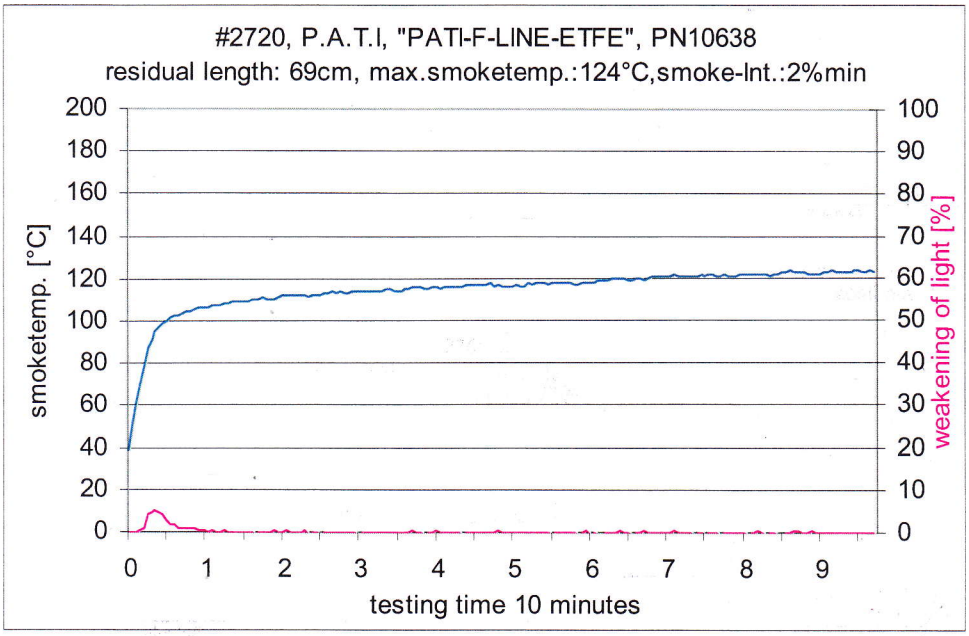
measurement



„Brandschacht"-test #2720



measurement



Test for normal flammability
classifying B2 according to DIN 4102

1. Description of test material in condition as delivered look at page 2
2. Preparation of samples:

   Out of the material there have been cut samples for the ignitability apparatus. The samples were kept in a climate 23/50 until they reached constant weight.
3. Arrangement of samples: freely suspended

   flaming in machine direction and in transverse direction
4. Date of test week 45 in 2009 and week 14 in 2012
5. Results:

PN 10638: original test	edge-test						surface-test						Dim
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition[1)]	5	5	4	2	2	--	4	5	--	--	--	--	s
reaching the mark of measurement[1)2)]	./.	./.	./.	./.	./.	--	./.	./.	--	--	--	--	s
max. flame height	4	4	4	6	6	--	6	5	--	--	--	--	cm
time	8	10	10	10	12	--	13	10	--	--	--	--	
self cessation of the flames end of afterflame[1)]	10	13	13	13	14	--	15	14	--	--	--	--	s
end of glowing[1)]	./.	./.	./.	./.	./.		./.	./.					
flames were extinguished after[1)]	./.	./.	./.	./.	./.	--	./.	./.	--	--	--	--	s
smoke development (visual)	moderate						moderate						
dropping of burning material during 20 s[1)]	./.	./.	./.	./.	./.	--	./.	./.	--	--	--	--	s
Appearance after test: burned out till max. height 6 cm x width 3 cm													

[1)] time mentioned from the beginning of the test
[2)] during 20 Sec
./. no appearance
- no information

PN 10638: 1st aging test unweatherd side in machine direction	**surface-test**						**edge-test**						Dim
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition[1)]	6	5	6	6	6	--	2	--	--	--	--	--	s
reaching the mark of measurement[1)2)]	./.	./.	./.	./.	./.	--	./.	--	--	--	--	--	s
max. flame height	8	10	10	5	8	--	7	--	--	--	--	--	cm
time	11	13	8	10	13	--	10	--	--	--	--	--	
self cessation of the flames end of afterflame[1)]	16	15	13	15	15	--	14	--	--	--	--	--	s
end of glowing[1)]	./.	./.	./.	./.	./.		./.	--	--	--	--	--	
flames were extinguished after[1)]	./.	./.	./.	./.	./.	--	./.	--	--	--	--	--	s
smoke development (visual)	moderate						moderate						
dropping of burning material during 20 s[1)]	./.	./.	./.	./.	./.	--	./.	--	--	--	--	--	s
Appearance after test: burned out till max. height 8,1 cm x width 2,6 cm													

PN 10638: 1st aging test additional tests	**edge-test**						**surface-test**						Dim
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition[1)]	1	2	1	--	--	--	5	6	6	--	--	--	s
reaching the mark of measurement[1)2)]	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
max. flame height	6	6	6	--	--	--	7	8	7	--	--	--	cm
time	8	7	8	--	--	--	8	8	10	--	--	--	
self cessation of the flames end of afterflame[1)]	10	12	13	--	--	--	13	16	15	--	--	--	s
end of glowing[1)]	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	
flames were extinguished after[1)]	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
smoke development (visual)	moderate						moderate						
dropping of burning material during 20 s[1)]	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
Appearance after test: burned out till max. height 8,1 cm x width 2,6 cm													

[1)] time mentioned from the beginning of the test
[2)] during 20 Sec
./. no appearance
- no information

6. Remarks and explanations to the testing procedure: - none –

7. Opinion concerning the dropping of burning material:
The test for normal flammability shows no dropping burning material.