

Test laboratory for the fire behavior of building materials, Dipl.-Ing. (FH) Andreas Hoch
Testing, supervising and certifying body, authorized by the building supervision authority

TEST REPORT

PZ-Hoch-140899-2

for the proof of Fire behaviour according to DIN 4102, part 1

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

company	FUJIFILM Deutschland Niederlassung der FUJIFILM Europe GmbH Heesenstraße 31 40549 Düsseldorf, Germany
description of samples	-clear and matt selfadhesive foil consisting of PVC-
name of the material	„HighProtect Laminate Advanced gloss FR” „HighProtect Laminate Advanced matt FR”
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	30.06.2019
result	The examined product meet the requirements of class B1 for “schwerentflammbare” (hardly flammable) building materials according to DIN 4102, part 1 (May 1998) , if glued on steel substrates.

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This test report must not be published and copied without preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.

1. Description of test material in condition as delivered

PN 19821: "HighProtect Laminate Advanced gloss FR"

-clear selfadhesive foil consisting of PVC with protective film consisting of kraft paper-
characteristic values determined by the test laboratory:

whole area weight: about 193 g/m² whole thickness: about 0,17 mm

thickness of selfadhesive foil: about 0,09 mm

whole area weight of selfadhesive foil: about 105 g/m²

PN 19822: "HighProtect Laminate Advanced matt FR"

-matt selfadhesive foil consisting of PVC with protective film consisting of kraft paper-
characteristic values determined by the test laboratory:

whole area weight: about 198 g/m² whole thickness: about 0,18 mm

thickness of selfadhesive foil: about 0,08 mm

whole area weight of selfadhesive foil: about 98 g/m²

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.
The selfadhesive foil was glued on steel panels with a thickness of 0,88mm.

3. Arrangement of samples mounting: selfadhesive foil glued on steel panels

#5580 "HighProtect Laminate Advanced gloss FR"

#5581 "HighProtect Laminate Advanced matt FR"

#5606 "HighProtect Laminate Advanced matt FR"

#5608 "HighProtect Laminate Advanced matt FR"

4. Date of test CW 29 and CW 30 in 2014

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

	measurement	Result with the tested specimen				Dim.
		#5580	#5581	#5606	#5608	
	Test number					
	foil	gloss FR	matt FR			
1	<u>Number of specimen arrangement</u> acc. to. DIN 4102/T15, schedule 1	7	7	7	7	
2	<u>Maximum flame height above bottom</u>	70	70	70	70	cm
3	<u>edge of the specimen</u> Time ¹⁾	1:00	0:54	0:47	0:58	min:s
4	<u>Burn through / melting</u> Time ¹⁾	0:48 (foil)	0:45 (foil)	0:47 (foil)	0:47 (foil)	min:s
	<u>Observations on the back side of the specimen</u>					
5	Flames / Glowing Time ¹⁾	./.	./.	./.	./.	min:s
6	Change of color Time ¹⁾	./.	./.	./.	./.	min:s
7	<u>Falling of burning droplets</u> Start ¹⁾	./.	./.	./.	./.	min:s
8	<u>Extent</u> sporadic falling of burning droplets ²⁾	./.	./.	./.	./.	
9	continuous falling of burning droplets ²⁾	./.	./.	./.	./.	min:s

	measurement	Result with the tested specimen				Dim.
		#5580	#5581	#5606	#5608	
	Test number					
10	Falling of burning droplets Start ¹⁾	./.	./.	./.	./.	min:s
	Extent	./.	./.	./.	./.	
11	sporadic falling of burning droplets ²⁾	./.	./.	./.	./.	
12	continuous falling of burning droplets ²⁾	./.	./.	./.	./.	
13	Afterflame time at the bottom of the sieve (max.)	./.	./.	./.	./.	min:s
14	Impairment of the burner by dropping or falling material: Time ¹⁾	./.	./.	./.	./.	min:s
15	Premature end of test Final occurrence of burning at the specimen ¹⁾	./.	./.	./.	./.	min:s
16	Time of eventually end of test ¹⁾	./.	./.	./.	./.	min:s
17	Afterflame after end of test Time ¹⁾	./.	./.	./.	./.	min:s
18	Number of specimen	./.	./.	./.	./.	
19	Front side of specimen ²⁾	./.	./.	./.	./.	
20	Back side of specimen ²⁾	./.	./.	./.	./.	
21	flame length	./.	./.	./.	./.	cm
22	Afterglow after end of test 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⁾	./.	./.	./.	./.	
28	Density of smoke ≤ 400 % * min	3	3	3	3	% * min
29	> 400 % * min ⁴⁾	./.	./.	./.	./.	% * min
30	Diagram: encl. no.	1	2	3	4	
31	Residual lengths: individual value ³⁾					
	Specimen 1	45	44	45	43	cm
	Specimen 2	43	43	40	40	cm
	Specimen 3	45	42	44	43	cm
	Specimen 4	46	44	43	42	cm
32	Average value, individual test ³⁾	45	43	42	42	
33	Photo of specimen in enclosure no.	1	2	3	4	
34	Flue gas temperature	107	108	107	105	°C
35	Maximum of average value Time ¹⁾	09:45	09:57	10:00	09:39	min:s
36	Diagram: encl. no.	1	2	3	4	
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

-none-

7. Summary of results and additional establishments to Fire Behaviour

line no.	measurement test-no.	Result with the tested specimen					dim ensi on
		#5580	#5581	#5606	#5608	---	
	foil	gloss FR	matt FR				
1	residual length	45	43	42	42	---	cm
2	max. smoke temperature	107	108	107	105	---	°C
3	density of smoke - integral	3	3	3	3	--	%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 5).

8. Special remarks

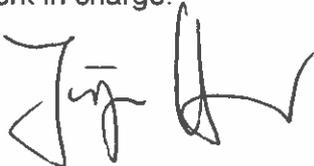
- This report is only valid for the material as described under paragraph 1. In combination with other materials or with additional coatings or grounds etc. the burning behaviour may differ.
- This test report is not valid for the exposure to outdoor climate conditions.
- This test report is not valid, 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, 06.08.2014

clerk in charge:



(Dipl.-Ing. (FH) Jürgen Hammer)

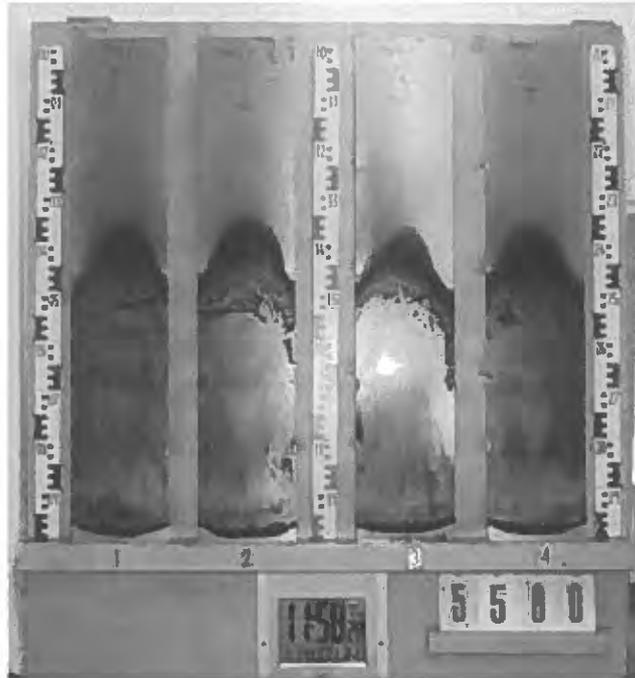


Head of the test laboratory:



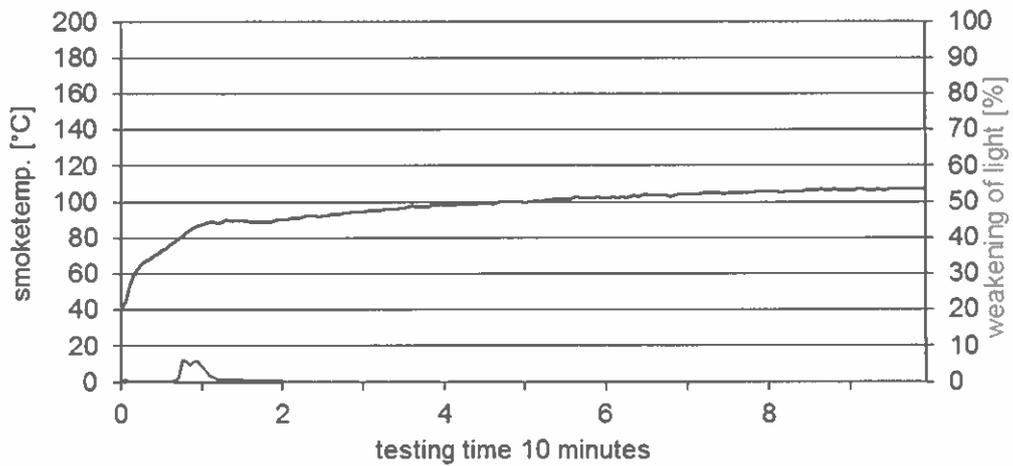
(Dipl.-Ing.(FH) Andreas Hoch)

„Brandschacht“-test #5580



measurement

#5580, FUJIFILM, "HighProtect Laminate...", PN 19821
residual length: 45cm, max. smoketemp.: 107°C, smoke-Int.: 3%/min

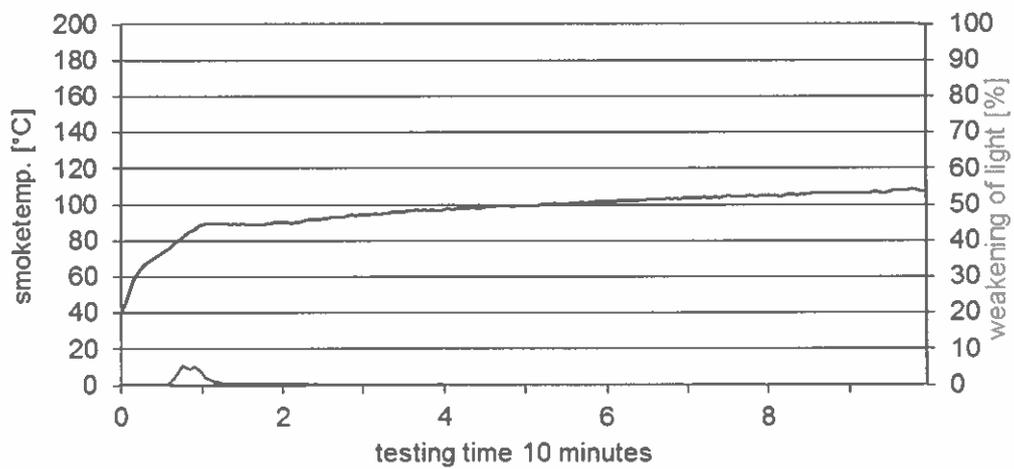


„Brandschacht“-test #5581



measurement

#5581, FUJIFILM, "HighProtect Laminate...", PN 19822
 residual length: 43cm, max. smoketemp.: 108°C, smoke-int.: 3%/min

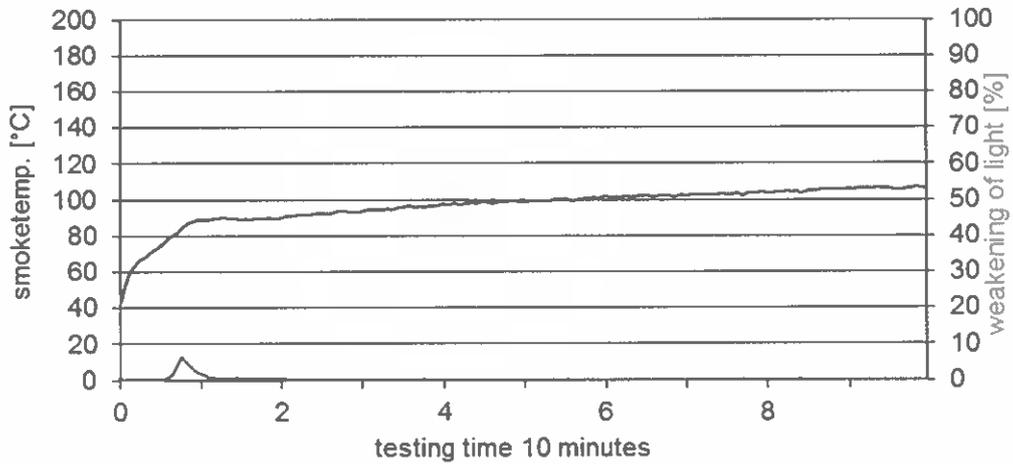


„Brandschacht“-test #5606



measurement

#5606, FUJIFILM, "HighProtect Laminate...", PN 19822
 residual length: 42cm, max. smoketemp.: 107°C, smoke-Int.: 3%/min

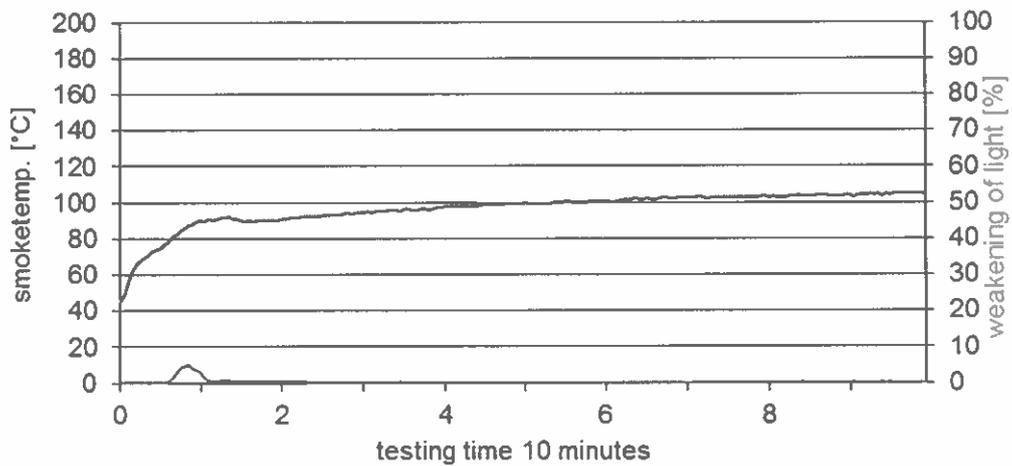


„Brandschacht“-test #5608



measurement

#5608, FUJIFILM, "HighProtect Laminate...", PN 19822
residual length: 42cm, max. smoketemp.: 105°C, smoke-Int.: 3%/min



**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

-glued on steel panels-

4. Date of test CW 28 in 2014

5. Results

PN 19821:	edge-test						surface-test						Dim
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition ¹⁾	1	1	1	-/-	-/-	--	-/-	-/-	--	--	--	--	s
reaching the mark of measurement ¹⁾²⁾	-/-	-/-	-/-	-/-	-/-	--	-/-	-/-	--	--	--	--	s
max. flame height	2	2	2	2	2	--	2	2	--	--	--	--	cm
time	1	1	1	-/-	-/-	--	-/-	-/-	--	--	--	--	
self cessation of the flames end of afterflame ¹⁾	2	2	2	-/-	-/-	--	-/-	-/-	--	--	--	--	s
end of glowing ¹⁾	-/-	-/-	-/-	-/-	-/-	--	-/-	-/-	--	--	--	--	s
smoke development (visual)	very little						very little						./.
dropping of burning material during 20 s ¹⁾	-/-	-/-	-/-	-/-	-/-	--	-/-	-/-	--	--	--	--	s
Appearance after test: burned out till max. height 1,5 cm x width 1 cm													

PN 19822:	edge-test						surface-test						Dim
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition ¹⁾	-/-	-/-	1	-/-	-/-	--	-/-	-/-	--	--	--	--	s
reaching the mark of measurement ¹⁾²⁾	-/-	-/-	-/-	-/-	-/-	--	-/-	-/-	--	--	--	--	s
max. flame height	2	2	2	2	1	--	2	2	--	--	--	--	cm
time	-/-	-/-	1	-/-	-/-	--	-/-	-/-	--	--	--	--	
self cessation of the flames end of afterflame ¹⁾	-/-	-/-	2	-/-	-/-	--	-/-	-/-	--	--	--	--	s
end of glowing ¹⁾	-/-	-/-	-/-	-/-	-/-	--	-/-	-/-	--	--	--	--	s
smoke development (visual)	very little						very little						./.
dropping of burning material during 20 s ¹⁾	-/-	-/-	-/-	-/-	-/-	--	-/-	-/-	--	--	--	--	s
Appearance after test: burned out till max. height 1,5 cm x width 1 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 dripping burning material.