

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-120987

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

<b>company</b>	<b>ENDUTEX – Revestimentos Texteis S.A.S.</b> Rua da Baiona 22 4795-784 Vilarinho STS – Portugal
<b>description of samples</b>	polyester fabric coated with pvc (mesh-fabric) / colour: white
<b>name of the material</b>	„PRINT MS 40 FR“
<b>sampling</b>	by the company itself
<b>content of request</b>	Proof of flammability to classify building materials to class B1 “schwerentflammbar” according to DIN 4102, part 1
<b>validity of test report</b>	31.08.2017 <sup>*)</sup>
<b>result</b>	<b>The examined product meets 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 &gt;40 mm to same or other plain materials.</b>

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This test report must not be published and copied without preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.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

<sup>\*)</sup> Verlängerung auf Antrag

PO6-04-FB05 eng Rev01

member of   
notified body no.: 1508

By the DAkkS according to DIN EN ISO/IEC 17025 accredited test laboratory.  
The accreditation is valid for the testing methods specified in the certificate.



**DAkkS**  
Deutsche  
Akkreditierungsstelle  
D-PL-11005-01-00

## 1. Description of test material in condition as delivered

### PN 15647: "PRINT MS 40 FR "

polyester fabric coated with pvc (mesh-fabric) / colour: white

There is no difference between side A and side B.

characteristic values determined by the test laboratory:

area weight: about 313 g/m<sup>2</sup>      thickness: about 0,53 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

mounting: freely suspended

#3155      flaming side A in warp direction  
#3157      flaming side B in weft direction  
#3223      flaming side B in weft direction  
#3224      flaming side B in weft direction

## 4. Date of test CW 31 and CW 34 in 2012

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

line no	Measurement	Result with the tested specimen				Dim.
	Test number	#3155	#3157	#3223	#3224	
	flaming direction / side	warp / A	weft / B	weft / B	weft / B	
1	<u>Number of specimen arrangement</u> acc. to. DIN 4102/T15, schedule 1	1	1	1	1	
2	<u>Maximum flame height above bottom</u> edge of the specimen	50	50	50	50	cm
3	Time <sup>1)</sup>	0:16	0:29	0:22	0:07	min:s
4	<u>Burn through / melting</u> Time <sup>1)</sup>	0:04	0:04	0:04	0:04	min:s
	<u>Observations on the back side of the specimen</u>					
5	Flames / Glowing Time <sup>1)</sup>	./.	./.	./.	./.	min:s
6	Change of color Time <sup>1)</sup>	./.	./.	./.	./.	min:s
7	<u>Falling of burning droplets</u> Start <sup>1)</sup>	---	---	---	---	min:s
8	<u>Extent</u> sporadic falling of burning droplets <sup>2)</sup>	---	---	---	---	
9	continuous falling of burning droplets <sup>2)</sup>	./.	./.	./.	./.	min:s
10	<u>Falling of burning droplets</u> Start <sup>1)</sup>	X 0:54	X 1:02	X 2:14	X 1:46	min:s
11	<u>Extent</u> sporadic falling of burning droplets <sup>2)</sup>	./.	./.	./.	./.	
12	continuous falling of burning droplets <sup>2)</sup>	X	X	X	X	

line no.	Measurement	Result with the tested specimen				Dim.
		#3155	#3157	#3223	#3224	
	Test number	#3155	#3157	#3223	#3224	
	flaming direction / side	warp / A	weft / B	weft / B	weft / B	
13	Afterflame time at the bottom of the sieve (max.)	0:07	0:21	0:16	0:15	min:s
14	Impairment of the burner by dropping or falling material: Time <sup>1)</sup>	./.	./.	./.	./.	min:s
15	Premature end of test Final occurrence of burning at the specimen <sup>1)</sup>	./.	./.	./.	./.	min:s
16	Time of eventually end of test <sup>1)</sup>	./.	./.	./.	./.	min:s
17	Afterflame after end of test Time <sup>1)</sup>	./.	./.	./.	./.	min:s
18	Number of specimen	./.	./.	./.	./.	min:s
19	Front side of specimen <sup>2)</sup>	./.	./.	./.	./.	
20	Back side of specimen <sup>2)</sup>	./.	./.	./.	./.	
21	flame length	./.	./.	./.	./.	cm
22	Afterglow after end of test Time <sup>1)</sup>	./.	./.	./.	./.	min:s
23	Number of specimen	./.	./.	./.	./.	
	Place of appearance	./.	./.	./.	./.	
24	Lower half of the specimen <sup>2)</sup>	./.	./.	./.	./.	
25	Upper half of the specimen <sup>2)</sup>	./.	./.	./.	./.	
26	Front side of specimen <sup>2)</sup>	./.	./.	./.	./.	
27	Back side of specimen <sup>2)</sup>	./.	./.	./.	./.	
28	Density of smoke ≤ 400 % * min	44	42	27	24	% * min
29	> 400 % * min <sup>4)</sup>	./.	./.	./.	./.	% * min
30	Diagram: incl. no.	1	2	3	4	
31	Residual lengths: individual value <sup>3)</sup>					
	Specimen 1	67	66	67	68	cm
	Specimen 2	58	57	64	63	cm
	Specimen 3	67	54	64	65	cm
	Specimen 4	59	61	67	67	cm
32	Average value, individual test <sup>3)</sup>	63	60	66	66	
33	Photo of specimen in enclosure no.	1	2	3	4	
34	Flue gas temperature	122	122	116	112	°C
35	Maximum of average value Time <sup>1)</sup>	10:00	10:00	10:00	10:00	min:s
36	Diagram: incl. no.	1	2	2	4	
37	Remarks: - none -					

<sup>1)</sup> indication of times: from the begin of testing procedure

<sup>2)</sup> checked off if applicable

<sup>3)</sup> indication of carrier/foam layer separated in case of fire-proofing agents

<sup>4)</sup> very strong development of smoke

**6. Explanations concerning the testing procedure**

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

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

line no.	Measurement	Result with the tested specimen				dimension
	test-no.	#3155 warp / A	#3157 weft / B	#3223 weft / B	#3224 weft / B	
1	residual length	63	60	66	66	cm
2	max. smoke temperature	<b>122</b>	<b>122</b>	<b>116</b>	<b>112</b>	°C
3	density of smoke - integral	44	42	27	24	%min
4	remarks: During the test #3157 the product showed burning droplets. There were performed two additional tests. During these both tests the product showed no burning droplets. Therefore the product is classified as a non burning dripping material.					

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**

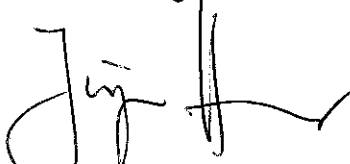
- This report is only valid for the material as described under paragraph 1. In combination with other materials or with additional coatings or grounds etc. the burning behaviour may differ.
- This test report is not valid for the exposure to outdoor climate conditions.
- This test report is not valid,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

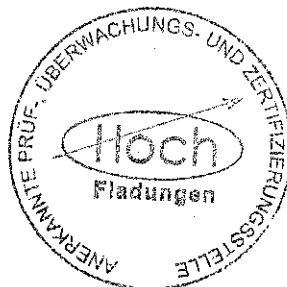
This test report is valid until the mentioned date on page 1. The test report becomes invalid in case the standards on which the tests are based are changed.

Fladungen, 30.08.2012


clerk in charge:



(Dipl.-Ing. (FH) Jürgen Hammer)

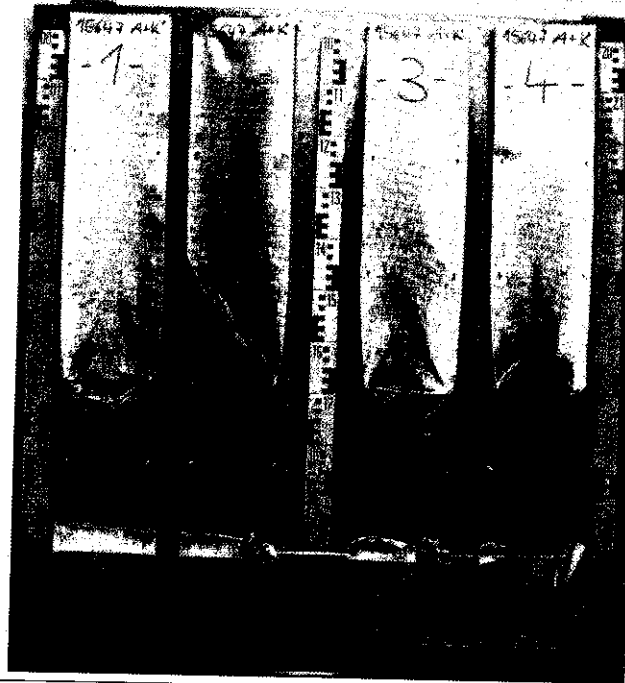


Head of the test laboratory:

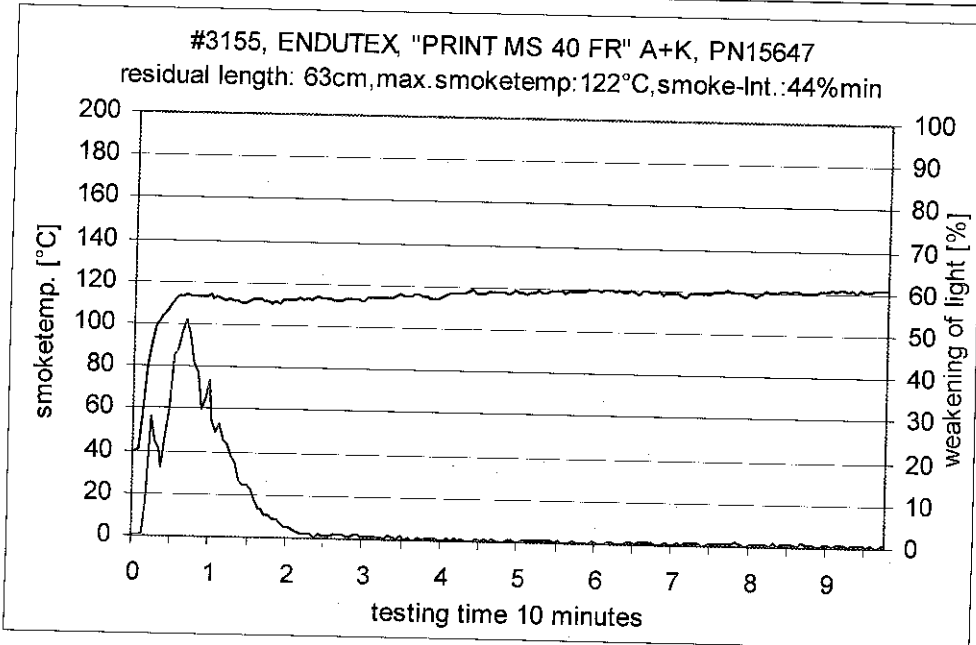


(Dipl.-Ing.(FH) Andreas Hoch)

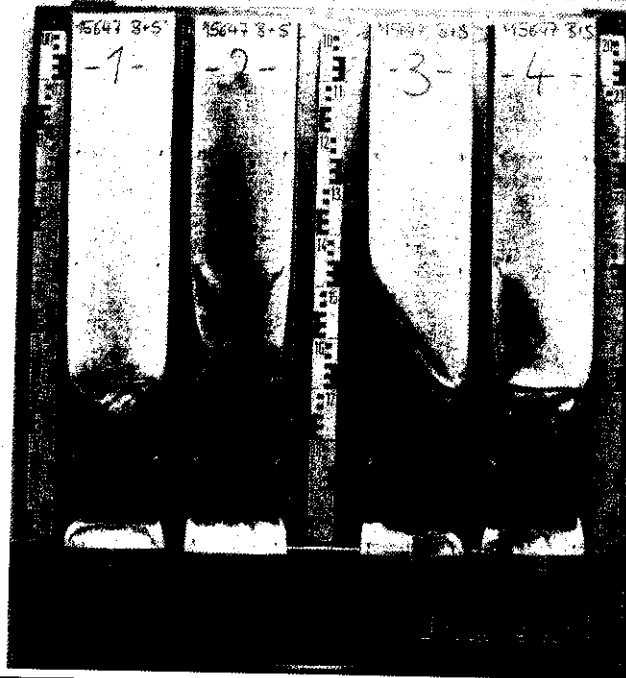
**„Brandschacht“-test #3155**



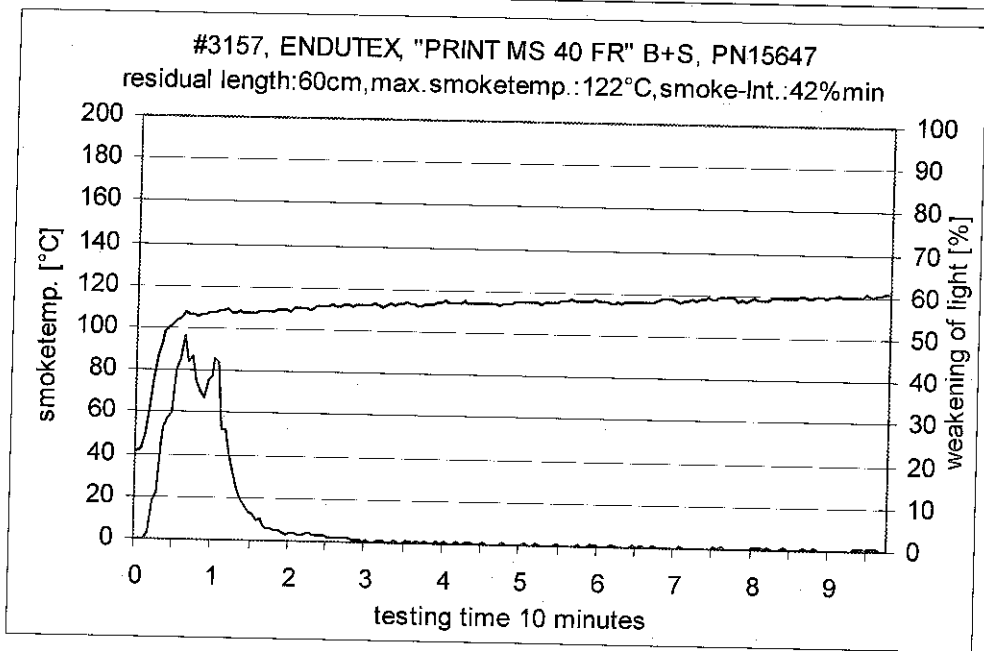
**measurement**



**„Brandschacht“-test #3157**



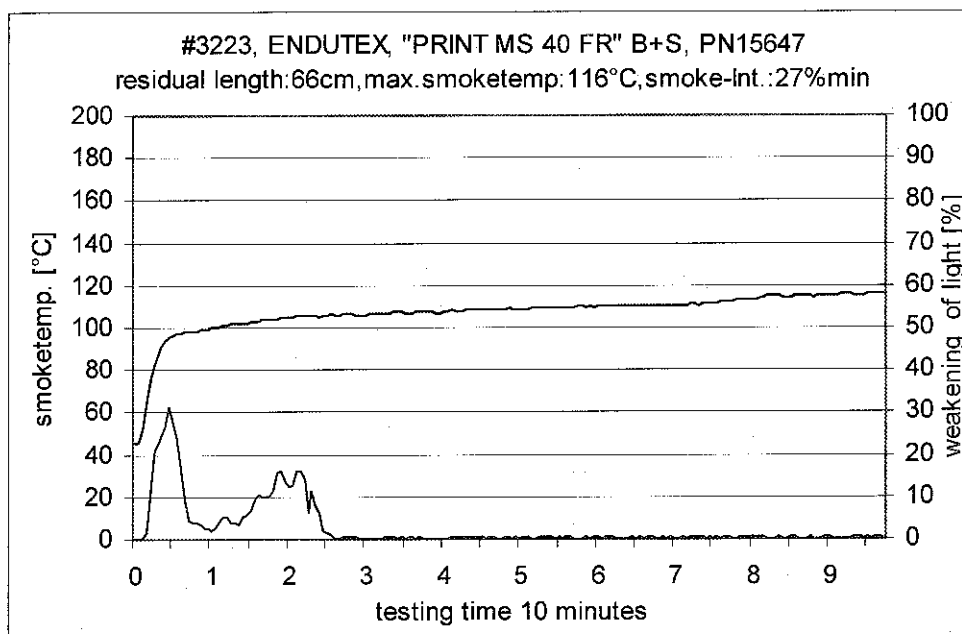
**measurement**



**„Brandschacht“-test #3223**



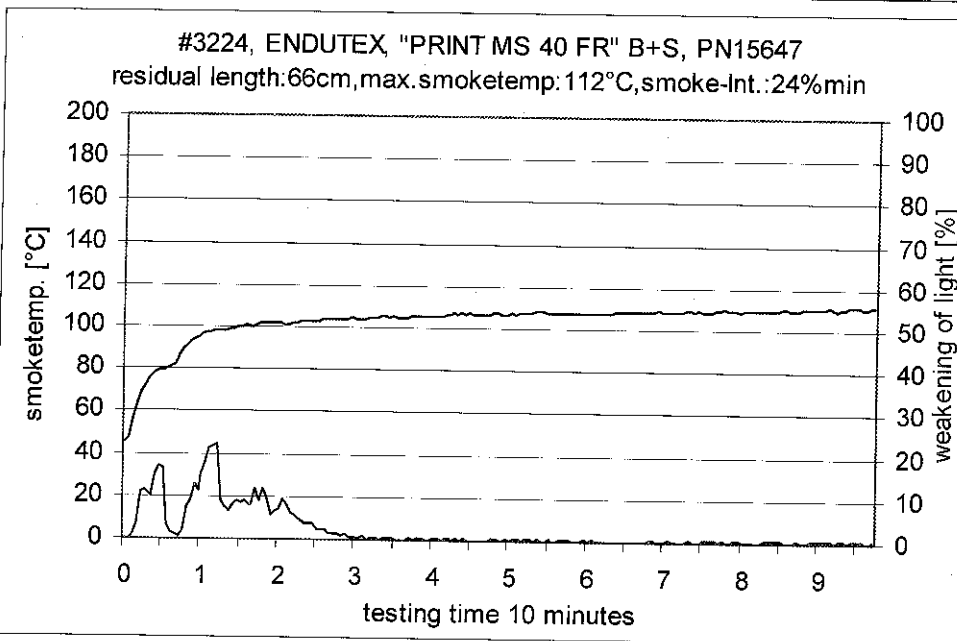
**measurement**



**„Brandschacht“-test #3224**



**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 warp and weft direction

4. Date of test CW 31 in 2012

5. Results

PN 15647: flaming in warp direction	surface-test						edge-test						Dim
	1	2	3	4	5	6	1	2	3	4	5	6	
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition <sup>1)</sup>	2	2	2	2	2	--	1	1	--	--	--	--	s
reaching the mark of measurement <sup>1)2)</sup>	-/-	-/-	-/-	-/-	-/-	--	-/-	-/-	--	--	--	--	s
max. flame height	10	12	11	12	10	--	9	10	--	--	--	--	cm
time	13	14	13	15	11	--	8	10	--	--	--	--	
self cessation of the flames end of afterflame <sup>1)</sup>	15	16	16	17	15	--	10	11	--	--	--	--	s
end of glowing <sup>1)</sup>	16	-/-	17	-/.	-/-	--	-/-	-/-	--	--	--	--	s
smoke development (visual)	very heavy						very heavy						/.
dropping of burning material during 20 s <sup>1)</sup>	-/-	-/-	-/-	-/-	-/-	--	-/-	-/-	--	--	--	--	s
Appearance after test: burned out till max. height 10,2 cm x width 1,7 cm													

PN 15647: flaming in weft direction	edge-test						surface-test						Dim
	1	2	3	4	5	6	1	2	3	4	5	6	
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition <sup>1)</sup>	1	1	--	--	--	--	2	2	--	--	--	--	s
reaching the mark of measurement <sup>1)2)</sup>	-/-	-/-	--	--	--	--	-/-	-/-	--	--	--	--	s
max. flame height	11	11	--	--	--	--	10	10	--	--	--	--	cm
time	13	15	--	--	--	--	12	11	--	--	--	--	
self cessation of the flames end of afterflame <sup>1)</sup>	15	16	--	--	--	--	16	16	--	--	--	--	s
end of glowing <sup>1)</sup>	-/-	-/-	--	--	--	--	17	-/-	--	--	--	--	s
flames were extinguished after <sup>1)</sup>	-/-	-/-	--	--	--	--	-/-	-/-	--	--	--	--	s
smoke development (visual)	very heavy						very heavy						
dropping of burning material during 20 s <sup>1)</sup>	-/-	-/-	--	--	--	--	-/-	-/-	-/-	--	--	--	s
Appearance after test: burned out till max. height 10,5 cm x width 1,8cm													

<sup>1)</sup> time mentioned from the beginning of the test <sup>2)</sup> 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.