

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-151231-3

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

Antragsteller	DATAPLOT GmbH Gutenbergstraße 15 D-24558 Henstedt-Ulzburg
description of samples	-white glossy selfadhesive foil consisting of PVC, glued on steel panels-
name of the material	„SOFOGLMET100 – EMBLEM Solvent Film Glossy Monomeric EasyTac 100“ „SOFOGLMGG2 – EMBLEM Solvent Film Glossy Monomer Grey Glue“ „SOFOGLP5 Serie – EMBLEM Solvent Film Glossy Polymer V Serie“
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	30.09.2020
result	The examined products 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 with a density of $\geq 5890 \text{ kg/m}^3$, a melting point of $\geq 1000^\circ\text{C}$ and a thickness of $\geq 0,6\text{mm}$.

This test report includes 5 pages and 8 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This test report must not be published and copied without preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.

1. Description of test material in condition as delivered

- PN 21974:** „SOFOGLP5 Serie – EMBLEM Solvent Film Glossy Polymer V Serie“
-white, glossy selfadhesive foil consisting of PVC-
characteristic values determined by the test laboratory:
whole thickness: about 0,31 mm
whole area weight: about 296 g/m²
thickness of selfadhesive foil: about 0,14 mm
area weight of selfadhesive foil: about 118 g/m²
- PN 21972:** „SOFOGLMGG2 – EMBLEM Solvent Film Glossy Monomer Grey Glue“,
as PN 21974, however with following values:
characteristic values determined by the test laboratory:
whole thickness: about 0,34 mm
whole area weight: about 275 g/m²
thickness of selfadhesive foil: about 0,15 mm
area weight of selfadhesive foil: about 141 g/m²
- PN 21948:** „SOFOGLMET100 – EMBLEM Solvent Film Glossy Monomeric EasyTac 100“,
as PN 21974, however with following values:
characteristic values determined by the test laboratory:
whole thickness: about 0,30 mm
whole area weight: about 286 g/m²
thickness of selfadhesive foil: about 0,13 mm
area weight of selfadhesive foil: about 149 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, according to
DIN 4102-16: 2015-09, Punkt 4.4, d, l.

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

#6992:	PN 21972	flaming in transverse direction
#6993:	PN 21972	flaming in machine direction
#6997:	PN 21974	flaming in transverse direction
#6989:	PN 21948	flaming in transverse direction
#7106:	PN 21948	flaming in transverse direction
#7107:	PN 21948	flaming in transverse direction

4. Date of test CW 37 and CW 41 in 2015

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

	measurement	Result with the tested specimen						Dim.
		#6992	#6993	#6997	#6989	#7106	#7107	
		PN 21972		PN 21974	PN 21948			
	sample-number	transv. dir.	machine dir.	transv. dir.	transv. dir.	transv. dir.	transv. dir.	
	<u>flamed direction</u>							
1	<u>Number of specimen arrangement</u> acc. to. DIN 4102/T15, schedule 1	7	7	7	7	7	7	
2	<u>Maximum flame height</u> above bottom edge of the specimen	70	70	60	60	60	60	cm
3	<u>Time</u> ¹⁾	0:44	0:43	0:37	0:48	0:38	0:35	min:s
4	<u>Burn through / melting</u> <u>Time</u> ¹⁾	./.	./.	./.	./.	./.	./.	min:s
	<u>Observations on the back side of the specimen</u>							
5	<u>Flames / Glowing</u> <u>Time</u> ¹⁾	./.	./.	./.	./.	./.	./.	min:s
6	<u>Change of color</u> <u>Time</u> ¹⁾	./.	./.	./.	./.	./.	./.	min:s
7	<u>Falling of burning droplets</u> <u>Start</u> ¹⁾	./.	./.	./.	./.	./.	./.	min:s
8	<u>Extent</u> sporadic falling of burning droplets ²⁾	./.	./.	./.	./.	./.	./.	
9	continuous falling of burning droplets ²⁾	./.	./.	./.	./.	./.	./.	min:s
10	<u>Falling of burning droplets</u> <u>Start</u> ¹⁾	./.	./.	./.	./.	./.	./.	min:s
11	<u>Extent</u> sporadic falling of burning droplets ²⁾	./.	./.	./.	./.	./.	./.	
12	continuous falling of burning droplets ²⁾	./.	./.	./.	./.	./.	./.	
13	<u>Afterflame time at the bottom of the sieve (max.)</u>	./.	./.	./.	./.	./.	./.	min:s
14	<u>Impairment of the burner by dropping or falling material:</u> <u>Time</u> ¹⁾	./.	./.	./.	./.	./.	./.	min:s
15	<u>Premature end of test</u> Final occurrence of burning at the specimen ¹⁾	./.	./.	./.	./.	./.	./.	min:s
16	Time of eventually end of test ¹⁾	./.	./.	./.	./.	./.	./.	min:s
17	<u>Afterflame after end of test</u> <u>Time</u> ¹⁾	./.	./.	./.	./.	./.	./.	min:s
18	Number of specimen	./.	./.	./.	./.	./.	./.	
19	Front side of specimen ²⁾	./.	./.	./.	./.	./.	./.	
20	Back side of specimen ²⁾	./.	./.	./.	./.	./.	./.	
21	flame length	./.	./.	./.	./.	./.	./.	cm

	measurement Test number	Result with the tested specimen						Dim.
		#6992	#6993	#6997	#6989	#7106	#7107	
22	<u>Afterglow after end of test</u> Time ¹⁾	./.	./.	./.	./.	./.	./.	min:s
23	Number of specimen	./.	./.	./.	./.	./.	./.	
	<u>Place of appearance</u>	./.	./.	./.	./.	./.	./.	
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	<u>Density of smoke</u> ≤ 400 % * min	18	21	7	15	17	18	% * min
29	> 400 % * min ⁴⁾	./.	./.	./.	./.	./.	./.	% * min
30	Diagram: encl. no.	1	2	3	4	5	6	
31	<u>Residual lengths: individual value</u> ³⁾							
	Specimen 1	43	47	44	44	44	42	cm
	Specimen 2	41	44	43	42	41	36	cm
	Specimen 3	44	44	46	44	40	43	cm
	Specimen 4	41	48	45	46	44	42	cm
32	<u>Average value, individual test</u> ³⁾	42	46	45	44	42	41	
33	<u>Photo of specimen in enclosure no.</u>	1	2	3	4	5	6	
34	<u>Flue gas temperature</u>	105	105	105	102	114	116	°C
35	Maximum of average value Time ¹⁾	09:57	09:51	09:54	09:57	09:12	10:00	min:s
36	Diagram: encl. no.	1	2	3	4	5	6	
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
		#6992	#6993	#6997	#6989	#7106	#7107	
	<u>sample-number</u>	PN 21972		PN 21974	PN 21948			
		transv. dir.	machine dir.	transv. dir.	transv. dir.	transv. dir.	transv. dir.	
1	residual length	42	46	45	44	42	41	cm
2	max. smoke temperature	105	105	105	102	114	116	°C
3	density of smoke - integral	18	21	7	15	17	18	%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 7 & 8)

8. Special remarks

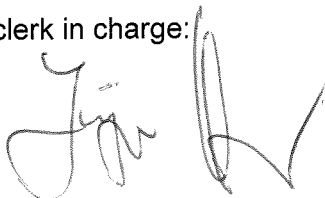
- This report is only valid for the material as described under paragraph 1. In combination with other materials or with additional coatings or grounds etc. the burning behaviour may differ.
- This test report is not valid for the exposure to outdoor climate conditions.
- This test report is not valid, 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, 07.09.2016

clerk in charge:



(Dipl.-Ing. (FH) Jürgen Hammer)

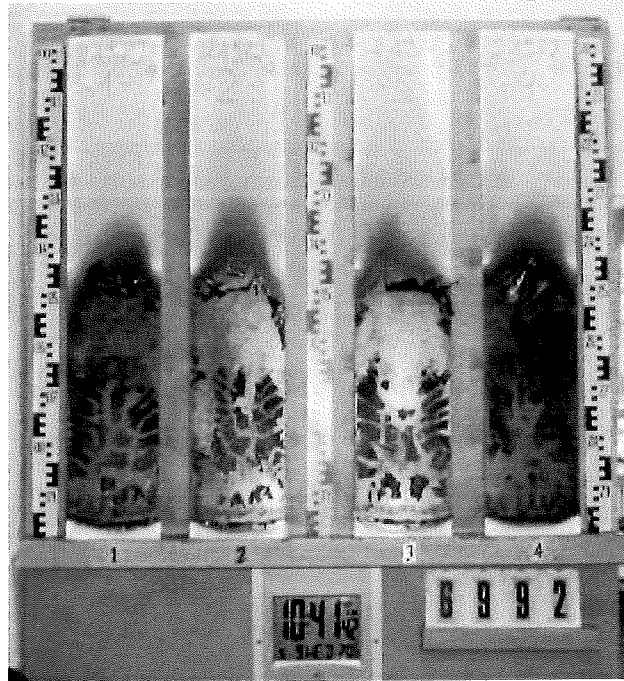


Head of the test laboratory:

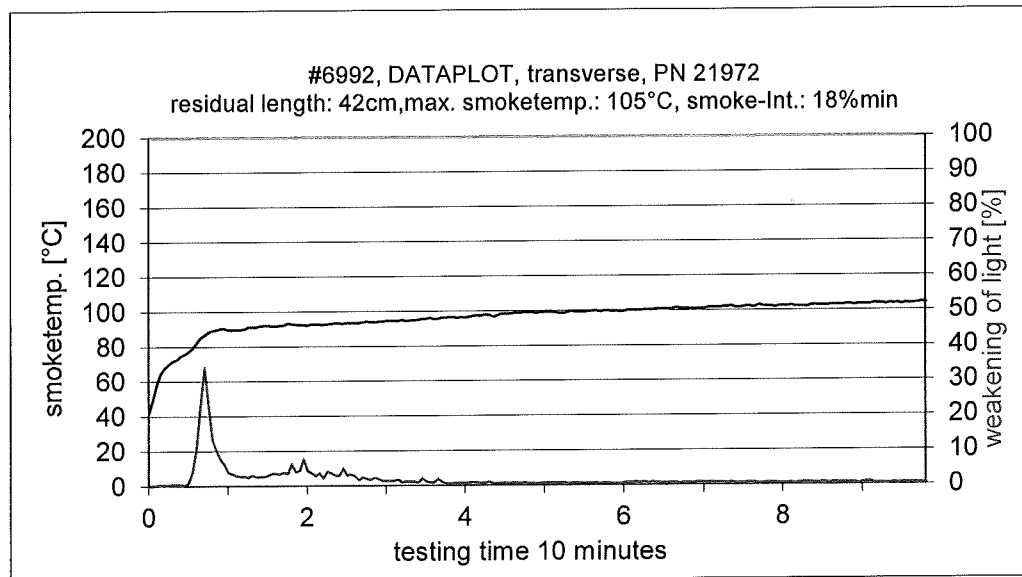


(Dipl.-Ing.(FH) Andreas Hoch)

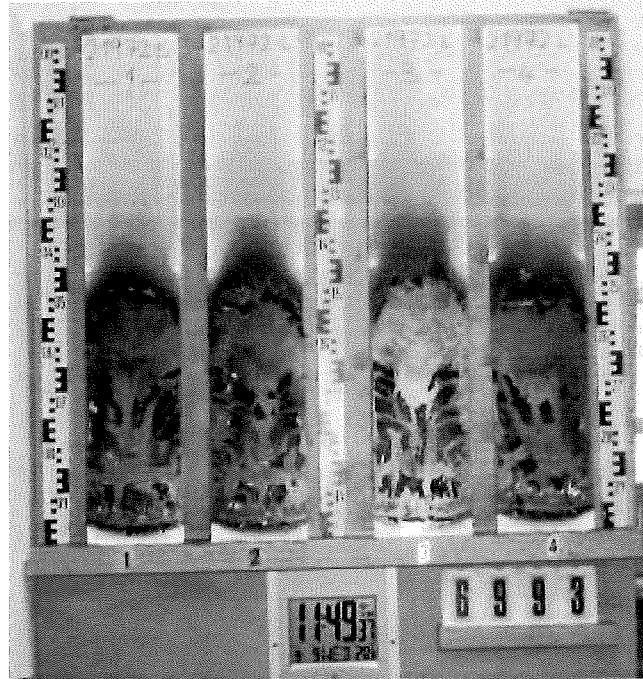
„Brandschacht“-test #6992



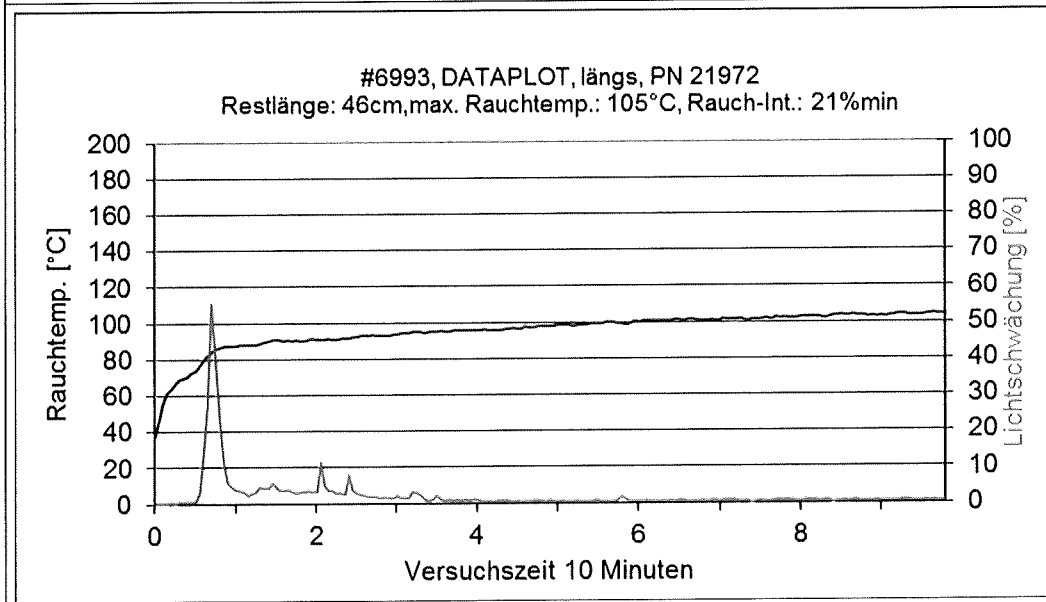
measurement



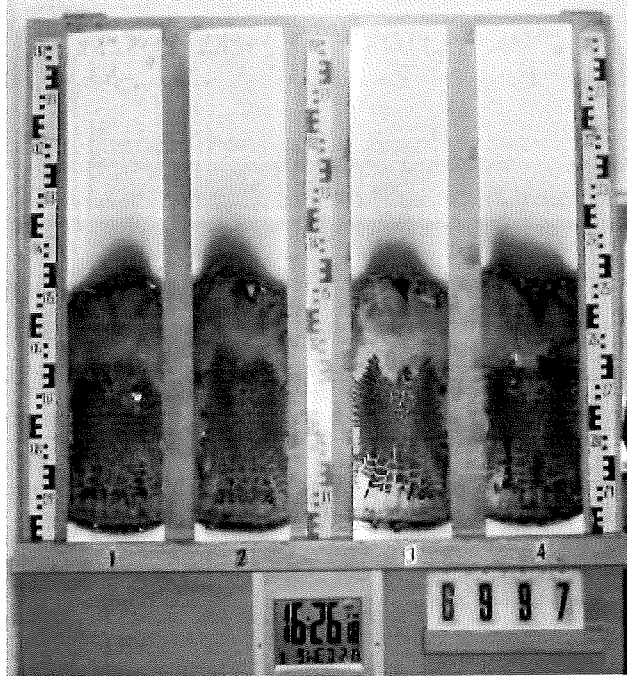
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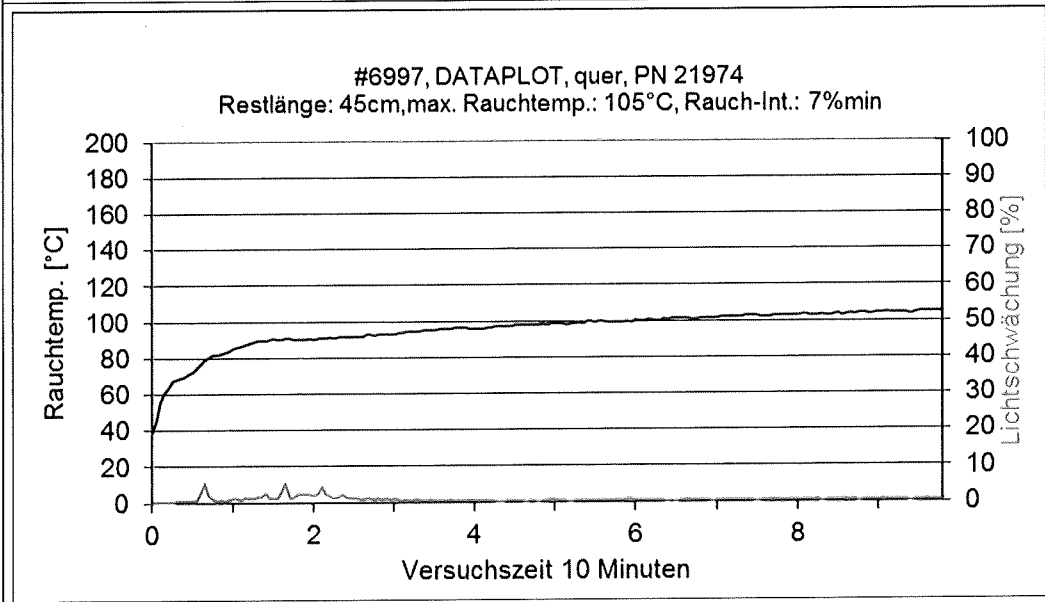
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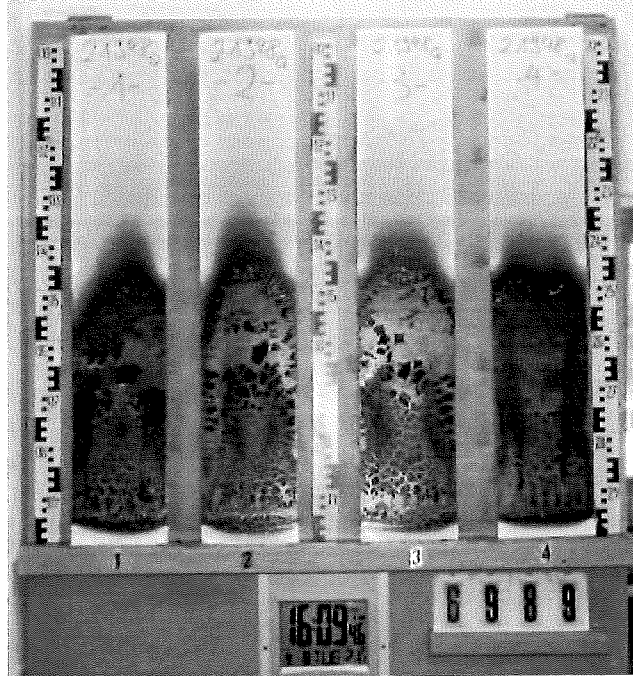
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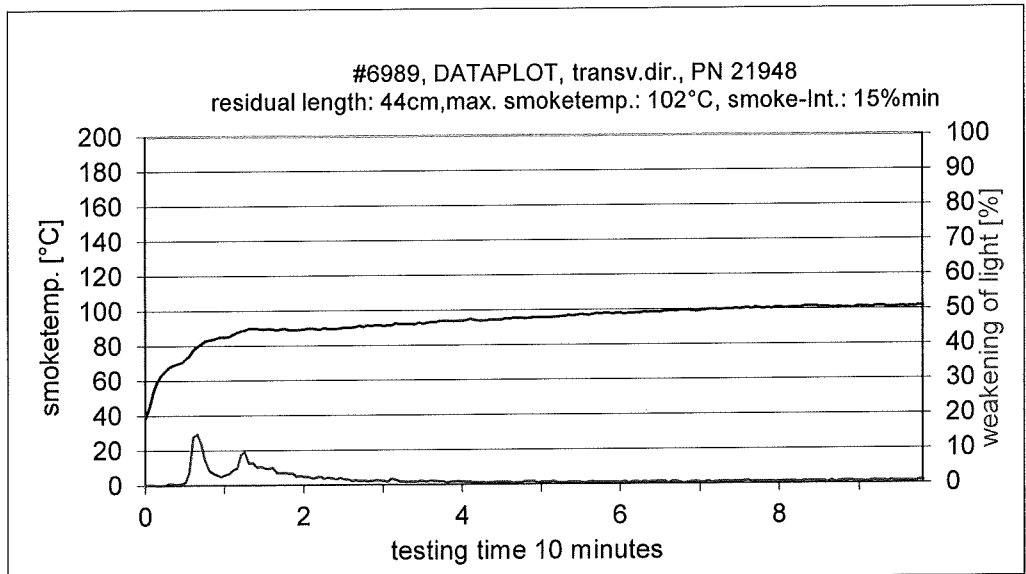
measurement



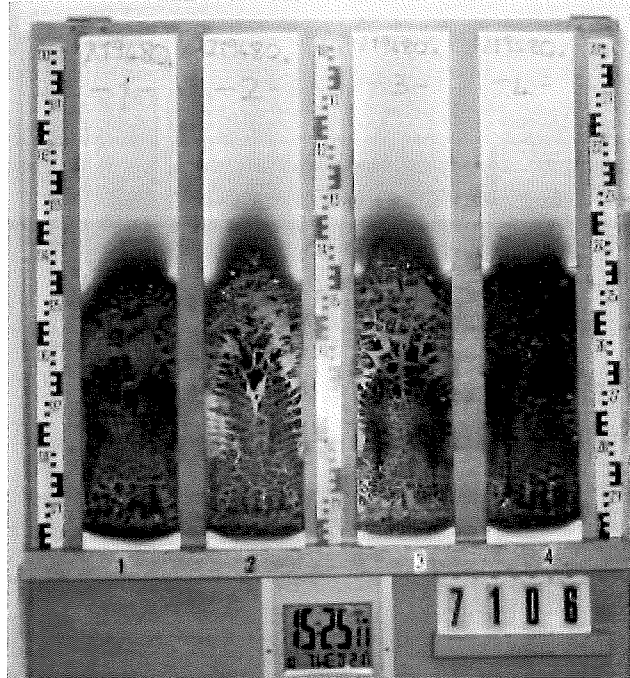
„Brandschacht“-test #6989



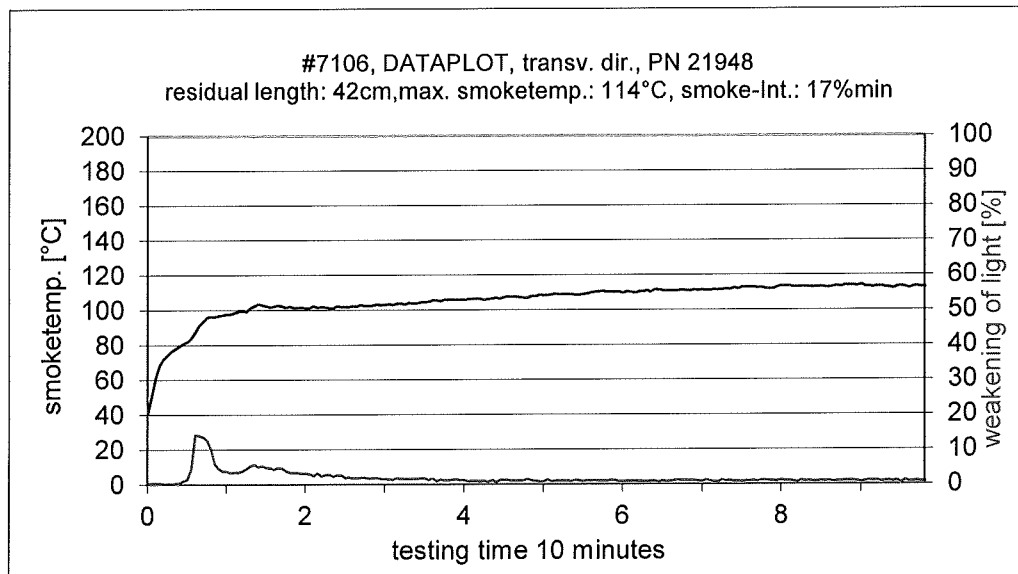
measurement



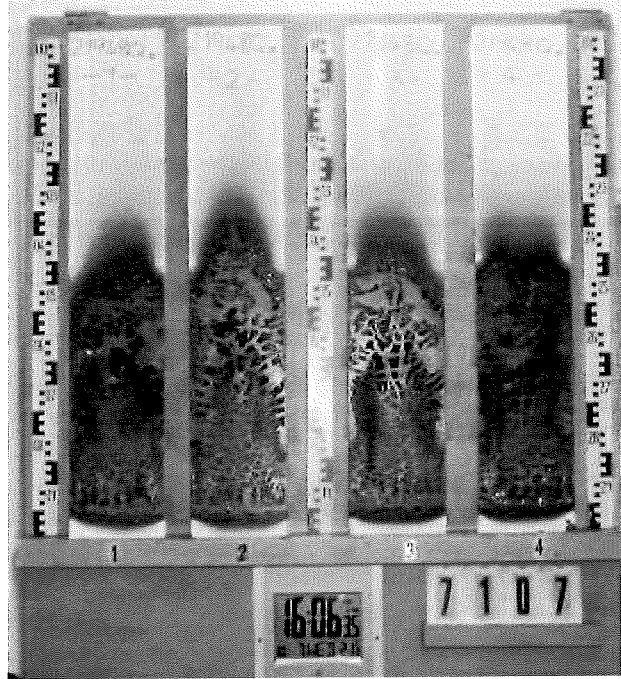
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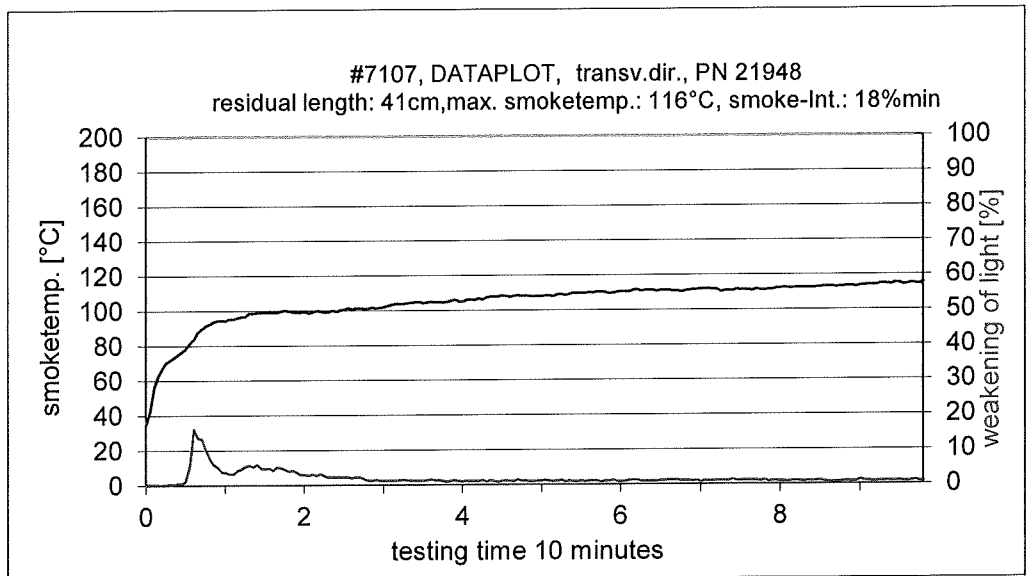
measurement



„Brandschacht“-test #7107



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

The selfadhesive foil was glued on steel panels with a thickness of 0,88mm, according to
DIN 4102-16: 2015-09, Punkt 4.4, d, l.
Flaming in machine direction and in transverse direction.

4. Date of test CW 37 in 2015

5. Results

PN 21972: machine 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 ¹⁾	1	1	1	1	-/-	--	-/-	--	--	--	--	--	s
reaching the mark of measurement ¹⁾²⁾	-/-	-/-	-/-	-/-	-/-	--	-/-	--	--	--	--	--	s
max. flame height	1	1	2	1	1	--	2	--	--	--	--	--	cm
time	1	1	1	1	1	--	1	--	--	--	--	--	
self cessation of the flames end of afterflame ¹⁾	3	2	3	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 2 cm x width 1 cm													

PN 21972: transverse 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 ¹⁾	1	--	--	--	--	--	-/-	--	--	--	--	--	s
reaching the mark of measurement ¹⁾²⁾	-/-	--	--	--	--	--	-/-	--	--	--	--	--	s
max. flame height	1	--	--	--	--	--	2	--	--	--	--	--	cm
time	1	--	--	--	--	--	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 cm x width 1 cm													

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

PN 21948:	edge-test						surface-test						Dim
samples no.	1	2	3	4	5	6	1	2	3	4	5	6	
ignition ¹⁾	1	1	--	--	--	--	-/-	-/-	--	--	--	--	s
reaching the mark of measurement ¹⁾²⁾	-/-	-/-	--	--	--	--	-/-	-/-	--	--	--	--	s
max. flame height	2	1	--	--	--	--	2	2	--	--	--	--	cm
time	1	1	--	--	--	--	1	1	--	--	--	--	
self cessation of the flames end of afterflame ¹⁾	2	1	--	--	--	--	-/-	-/-	--	--	--	--	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 2 cm x width 1 cm													

PN 21974:	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	1	1	--	--	--	--	2	2	--	--	--	--	cm
time	1	1	--	--	--	--	1	1	--	--	--	--	
self cessation of the flames end of afterflame ¹⁾	3	-/-	--	--	--	--	-/-	-/-	--	--	--	--	s
end of glowing ¹⁾	13	-/-	--	--	--	--	-/-	-/-	--	--	--	--	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 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.