

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

Reference:	FLT 3733920	(Translation of the German Prüfzeugnis - no guarantee for translation of technical terms)
Sponsor:	Com2C GmbH & Co. KG Industrieweg 1 D - 32457 Porta Westfalica	
Test order:	2020-09-16	Arrived: 2020-09-17
Description of samples:	On one side coated film made of rigid PVC, named "PopUp 410 UVESS SM W FR". (for details see page 2)	
Delivered:	2020-09-17	
Content of request:	Proof of flammability to classify building materials to class B1 "schwerentflammbar" according to DIN 4102-1	
Assessment:	The examined material meets the requirements of class B1 for "schwerentflammbare" (not easily flammable) building materials according to DIN 4102-1 if used in one layer, suspended freely or with distance of >40 mm to the same or other plain materials. (for details see page 5)	
Validity:	2025-10-31	
Sampling:	The samples have been sent to the laboratory by the manufacturer.	

Remark: If the above-mentioned building material is not used as product according to MBO § 2, there is no need for a general building supervisory test certificate.

This test certificate is not regarded as the sole proof if the tested building material is used as building product within the meaning of state building prescriptions (MBO § 17).

This test certificate 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 certificate can serve as a basis for building supervisory procedures for:

- regulated building products for the pre scribed proofs of conformity
- non-regulated building products for the needed proofs of applicability.

This test certificate comprises 5 pages and 4 appendices.

Approved testing, inspection and certification body

This test certificate must not be published and copied preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents. Agreement of the test laboratory has to be given in any case if norms in which the tests are based or other technical standards have changed.



Prüfstelle für das
Brandverhalten
von Baustoffen
Dipl.-Ing. Uwe Kühnast

Steinstrasse 18
D - 14822 Borkheide
Fon: +49 33845 90901
Fax: +49 33845 90909
Mail: info@firelabs.de
PÜZ-Stelle (LBO): BRA09

TEST CERTIFICATE



1 Description of test material

1.1 Test material (according to the manufacturer)

The delivered material is a rigid PVC-film coated on one side with an acrylic-based printable coating (referred to as Inkjet-coating) with a nominal thickness of 410 µm. The coated film is intended to be used indoor as printable advertising space or for decorative purposes and was named with the trade name "PopUp 410 UVESS SM W FR".

1.2 Description of the delivered samples

For the tests the laboratory received a sample roll of a one-sided colour-coated plastic film of approx. 6 m in length and 1.07 m in width. The sample was labelled with the manufacturer's article name and batch.

Colour of the film: white.

Colour of the coating: white.

Characteristic values: see passage 4.1; photos: see enclosures 1 - 3.

Further details are not known to the laboratory, information about the manufacturer and a retain sample have been deposited.

2 Preparation of samples

For the small burner tests ("Brennkastenprüfungen") samples for edge flame exposure (dimensions 190 mm x 90 mm) and samples for surface flame exposure (dimensions 230 mm x 90 mm) were cut in longitudinal and transverse direction of the film.

For the tests in the fire shaft ("Brandschacht") 6 specimens were assembled. The samples (dimensions 1000 mm x 190 mm) for test specimens A, B and E have been cut in longitudinal direction, the samples for test specimens C, D and F in transverse direction of the film.

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 small burner tests ("Brennkasten") have been performed acc. DIN 4102-1, chapter 6.2.5 (building materials class B2). The tests in the fire shaft ("Brandschacht") have been performed acc. DIN 4102-1 and -16 (building materials class B1) without edge protection. All tests were carried out in single layer, freely suspended from the coated surface and the uncoated surface.

Period of testing: October, November 2020

4 Results

- section 4.1 Material characteristics
- section 4.2.1 Test results class B2
- section 4.2.2 Test results class B1

4.1 Material characteristics

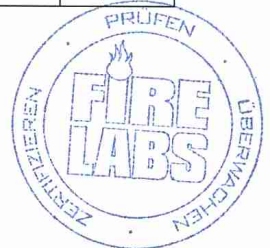
Table 1

Trade name	Manufacturer's data		Measured values		
	Weight per unit area [g/m ²]	Thickness [mm]	Weight per unit area [g/m ²]	Thickness (m.v.) [mm] [mm]	
PopUp 410 UVESS SM W FR	584	0,41	567	0,42	0,005

m.v. mean value

s standard deviation (n=10)

./ not received/not measured



4.2 Results of the fire behaviour

4.2.1 Test results class B2 (Brennkasten)

All building materials class B1 must also meet the requirements of materials class B2 (flammable). The material, tested in "Brennkasten" acc. DIN 50 050 meets the requirements of building materials class B2; the material did not show burning particles/droplets during these tests (results: see enclosure 4, table 2).

4.2.2 Test results class B1 ("Brandschacht")

Table 3

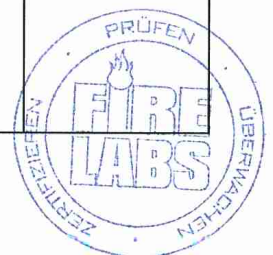
Test results "Brandschachtprüfung" (part 1)								
line no.		Test results						requirements
		A	B	C	D	E	F	
1	<u>Number of specimen arrangement</u> acc. DIN 4102 –15 Table 1	1	1	1	1	1	1	
2	<u>Maximal flame height</u> above bottom edge cm	60	90	30	50	60	90	*)
3	Time ¹⁾ min	2	1	2	2	1	1	
4	<u>Burning / melting through</u> Time ¹⁾ min	1	1	1	1	1	1	
5	<u>Back side of the specimens:</u> <u>Flames / glowing</u> Time ¹⁾ min:s	./.	./.	./.	./.	./.	./.	
6	<u>Discolouring</u> Time ¹⁾ min:s	./.	./.	./.	./.	./.	./.	
7	<u>Falling of burning droplets</u> Begin ¹⁾ min	No	No	No	No	No	No	
8	Extend: Sporadic falling of burning droplets							
9	Continuous falling of burning droplets							
10	<u>Falling of burning parts</u> Begin ¹⁾ min	No	Yes 2	No	Yes 1	Yes 1	Yes 1	
11	Extend: Sporadic falling of burning parts		Yes		Yes	Yes	Yes	
12	Continuous falling of burning parts		No		No	No	No	
13	<u>Afterflame time at the bottom</u> <u>of the sieve (max.)</u> min:s	./.	0:10	./.	0:16	0:11	0:15	
14	<u>Impairment of the burner</u> <u>flames by dropping or falling</u> <u>Material</u> Time ¹⁾ min:s	No	No	No	No	No	No	
15	<u>Premature end of test</u> Final occurrence of burning at the specimen ¹⁾ min							
16	Time of eventually end of test ¹⁾ min:s	2	4	7	3	3	3	
		./.	./.	./.	./.	./.	./.	

¹⁾ Indication of time: from the beginning of testing procedure

- Not tested

./. Not occurred

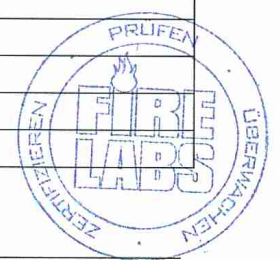
*) No cause for complaint



Test results "Brandschachtprüfung" (part 2)								
line no.		Measured values specimen						requirements
		A	B	C	D	E	F	
17	<u>Afterflame after end of test</u>	No	No	No	No	No	No	
18	Time min:s							
19	Number of specimen							
20	Front side of specimen							
21	Back side of specimen							
21	Flame length cm							
22	<u>Afterglow after end of test</u>	No	No	No	No	No	No	
23	Time min:s							
23	Number of specimen							
24	<u>Place of appearance:</u>							
24	Lower half of specimen							
25	Upper half of specimen							
26	Front side of specimen							
27	Back side of specimen							
28	<u>Smoke density</u>							
28	≤ 400 % min	86,3	130	50,4	56,8	76,2	90,6	
29	≥ 400 % min (very strong smoke density)	./.	./.	./.	./.	./.	./.	
30	Diagram fig. no.	1	3	5	7	9	11	
31	<u>Residual length</u>							
	Individual value cm	36	32	66	55	28	17	
		48	13	65	63	63	14	
		38	19	62	53	35	39	> 0
		57	16	69	56	51	50	
32	Average value cm	44	20	65	56	44	30	≥ 15
33	Photo of the test specimen fig. no.	2	4	6	8	10	12	
34	<u>Flue gas temperature</u>							
35	Maximum of average	115	113	117	113	115	118	≤ 200
		9:48	10:00	9:42	9:54	9:58	10:00	
36		1	3	5	7	9	11	
37	<p><u>Remarks:</u> line 13: Afterflame time at the bottom of the sieve < 20 sec. is not rated as "falling of burning parts or droplets".</p> <p>line 32: There were no additional tests proceeded in transverse direction because of the residual length of > 45 cm (DIN 4102-16: 2015-09, 5.2 b)).</p> <p>(Diagrams and photos see enclosure 1-3)</p>							

- 1) indication of time: from the beginning of testing procedure
- ./. not occurred
- *) no cause for complaint

Test specimen	Test-no.	Direction of samples	Tested surface
A	729720-001	longitudinal	coated
B	729720-002		uncoated
C	729720-003	transverse	coated
D	729720-004		uncoated
E	729720-005	longitudinal	coated
F	729720-006		uncoated



5 Assessment

According to the test results in section 4.2 the material, described in section 1 and 4.1, 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 are also fulfilled. No falling of burning parts or droplets occurred during these tests.

The verification

- for outdoor usage (ageing behaviour by outdoor weathering)
has not been proved.

6 Special remarks

This certificate 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 certificate is not regarded as the sole proof if the tested building material is used as building product within the meaning of state building prescriptions (MBO § 17).

This test certificate is no substitute for a General Building Inspectorate Certificate. This test certificate is granted without prejudice to the rights of third parties, or particular private proprietary rights.

This test certificate can serve as a basis for building supervisory procedures for:

- regulated building products for the pre scribed proofs of conformity
- non-regulated building products for the needed proofs of applicability.

The explanations given in DIN 4102-1 app. D, especially concerning an external production control have to be considered.

This test certificate is valid until 2025-10-31, provided that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 4th of December 2020



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

This translation was issued 6th of December 2020, in a case of doubt the German version is valid solely.

Test specimen A

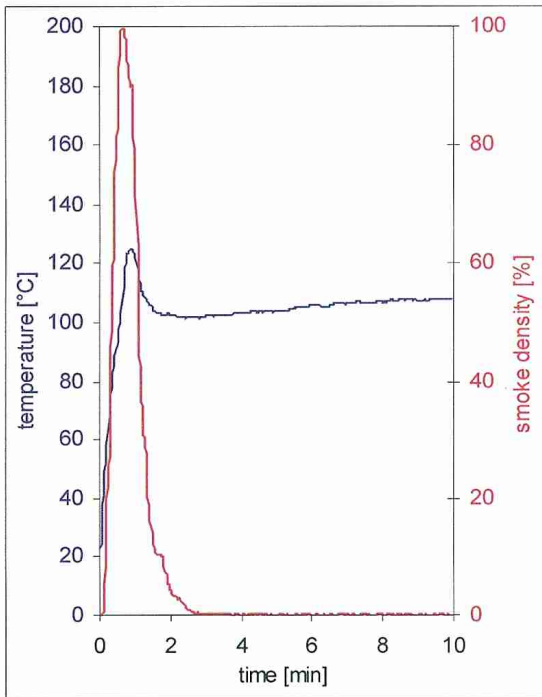


fig. 1
Graphs of the flue gas temperature and the smoke density

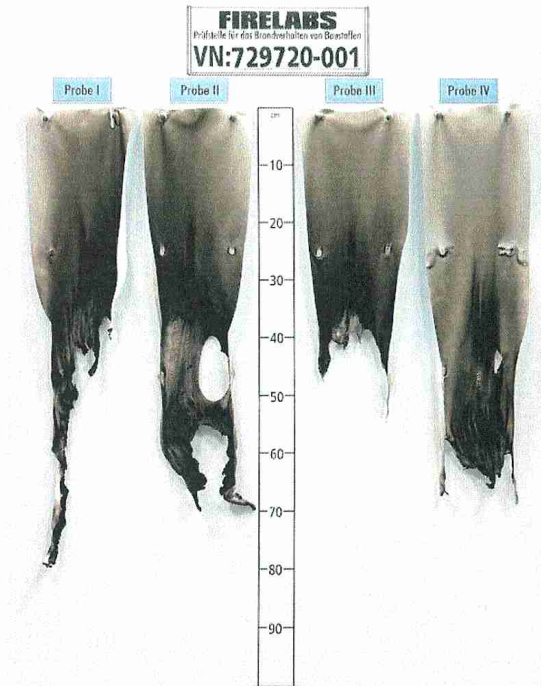


fig. 2
View of test specimen after the test

Test specimen B

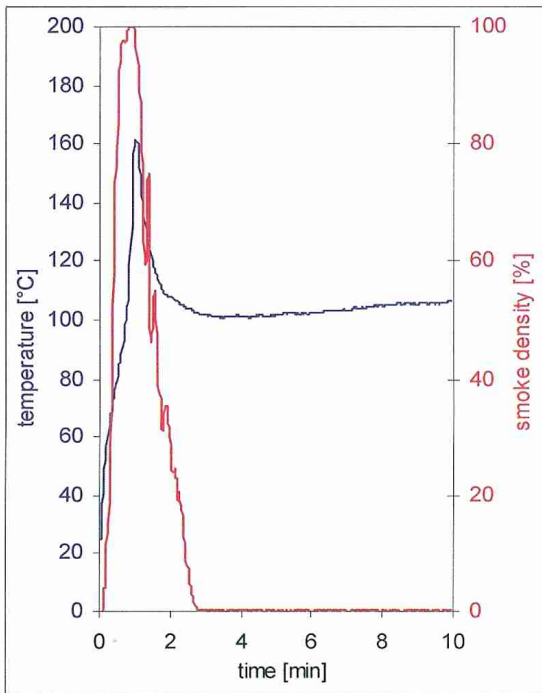


fig. 3
Graphs of the flue gas temperature and the smoke density

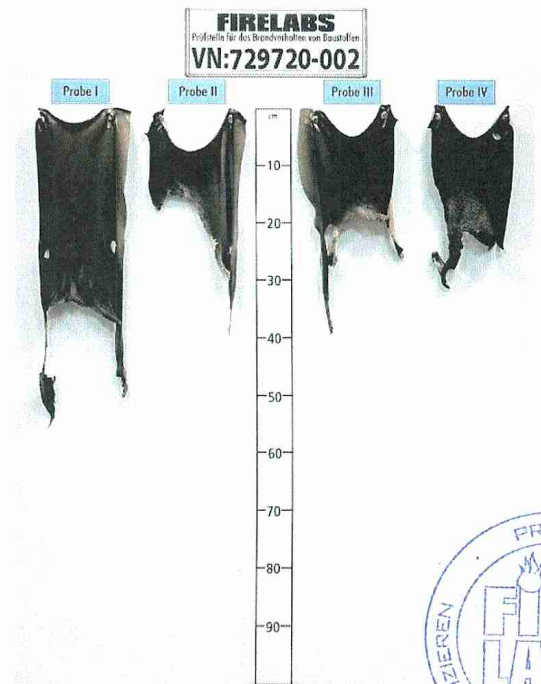


fig. 4
View of test specimen after the test



Test specimen C

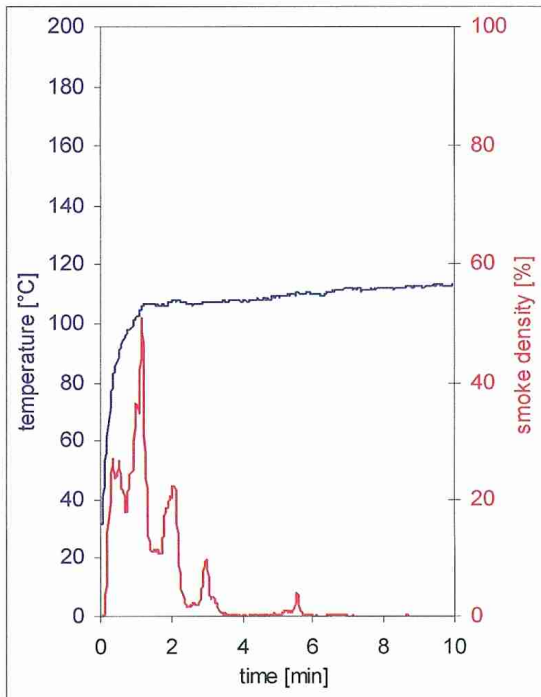


fig. 5
Graphs of the flue gas temperature and the smoke density

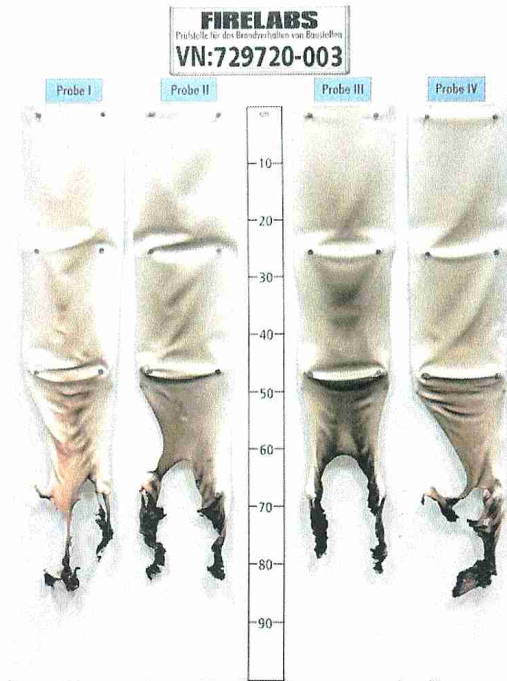


fig. 6
View of test specimen after the test

Test specimen D

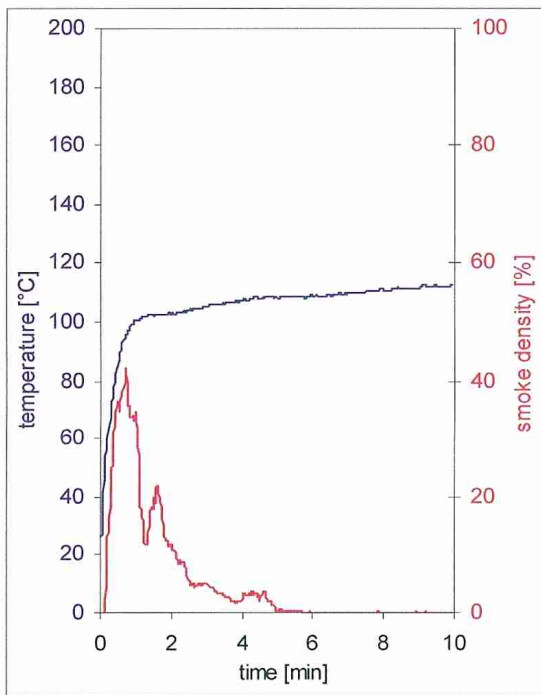


fig. 7
Graphs of the flue gas temperature and the smoke density



fig. 8
View of test specimen after the test

Test specimen E

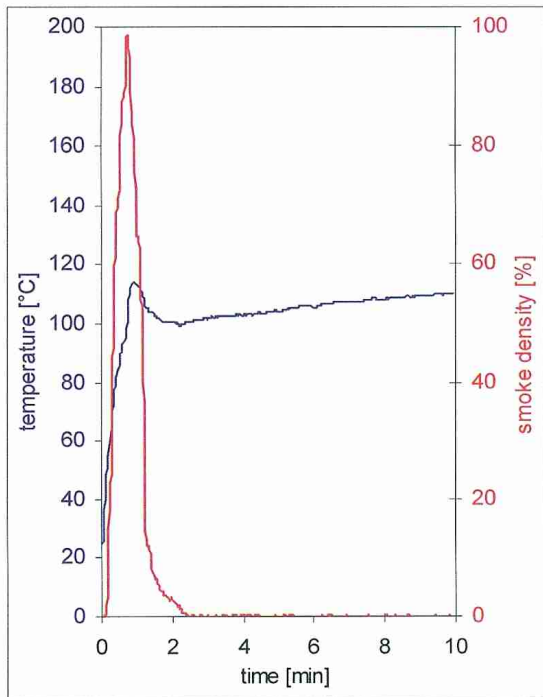


fig. 9
Graphs of the flue gas temperature and the smoke density

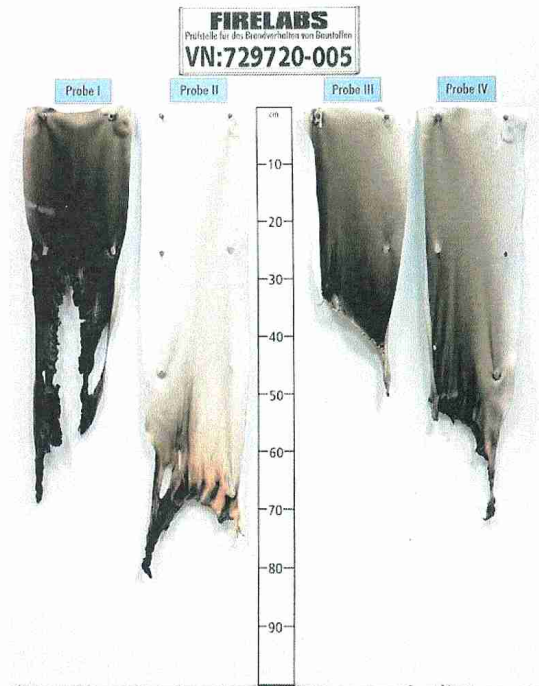


fig. 10
View of test specimen after the test

Test specimen F

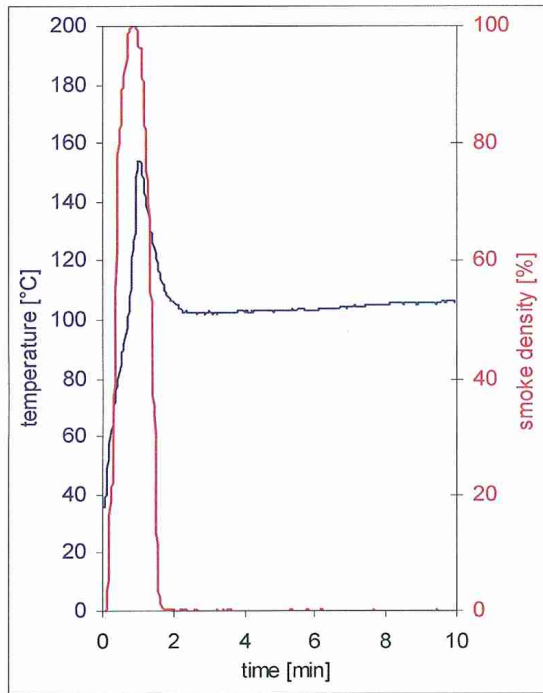


fig. 11
Graphs of the flue gas temperature and the smoke density



fig. 12
View of test specimen after the test

Test results small burner ("Brennkasten") tests

Table 2

PopUp 410 UVESS SM W FR	Longitudinal direction							Transverse direction							Dim.	Requirements
	1	2	3	4	5	6	7	1	2	3	4	5	6	7		
Sample-No.	1	2	3	4	5	6	7	1	2	3	4	5	6	7	n	-
Ignition of the sample	1	1	1	1	1	3	2	1	1	1	1	1	3	3	s	-
Maximum flame height	4	4	4	5	4	4	4	5	6	6	5	6	4	6	cm	-
Time of the maximum	12	11	13	12	15	11	15	8	10	13	10	11	15	15	s	-
Flame tip reached the 150 mm mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Self-extinguishing of flames	14	13	16	14	16	17	16	10	11	15	13	16	16	16	s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	1)
Smoke density (visual)	moderate							moderate							-	-
Afterburning time	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-
Flames were extinguished after	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-

View of the samples after the test (20 seconds after exposure the flame):

The samples were destroyed in the area of the flame exposure up to a max height of approx 7 cm and approx 1.5 cm in width, soot above until top edge of the samples.

Samples 1-5: edge flame exposure

Samples 6: surface flame exposure of uncoated surface

Samples 7: surface flame exposure of coated 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

