

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



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Brandverhalten
von Baustoffen
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PÜZ-Stelle (LBO): BRA09

Reference: FLT 3681219 (Translation of the German Prüfzeugnis - no guarantee for translation of technical terms)

Sponsor: Neschen Coating GmbH
Hans-Neschen-Straße 1
D - 31675 Bückeberg

Order 2019-01-07 **Arrived** 2019-01-09

Description of samples: Uncoated, transparent, self-adhesive plastic film
"NESCHEN PP easy dot transparent" and
"UVprint PP easy dot transparent".
(for details see page 2)

Delivered: 2019-01-09

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 when bonded on one side to glass surfaces.
(for details see page 5)

Validity: 2024-01-31

Sampling: The samples were sent to the laboratory by the sponsor.

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 shall not be used as the sole proof if the examined building material is used as product in 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 underlie building supervisory procedures:

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

This test certificate includes 5 pages and 2 enclosures.

Approved testing, inspection and certification body

This test report must not be published and copied preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.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.

TEST CERTIFICATE



1 Description of test material in condition as delivered

1.1 Description (according to the sponsor)

The delivered material is a self-adhesive film consisting of 60 µm thick polypropylene film with a textured coating on one side and a self-adhesive backing consisting of a water-based acrylic adhesive on the rear side. The adhesive layer was covered with a protective paper.

The self-adhesive film is intended to be used inside buildings, also printed and glued to glass surfaces and was named with the trade name "NESCHEN PP easy dot transparent" and "UVprint PP easy dot transparent" by the sponsor.

1.2 Description of the delivered samples

For the tests, a sample roll of an uncoated, transparent, self-adhesive plastic film of approx. 20 m length and 1.60 m width was provided to the laboratory by the sponsor. The self-adhesive surface of the film was covered with a protective paper. The sample was labelled with "NESCHEN PP easy dot transparent UV" and batch V 18/117.

Colour: Transparent film, white protective paper

Total weight: 190 g/m²

Total thickness: ca. 0.2 mm

Characteristic values: see paragraph 4.1; photos: see enclosures

Other specifications are not known by the laboratory, a sample is stored.

2 Preparation of samples

From material delivered 2 specimens were assembled. The samples (dimensions 1000 mm x 190 mm) of test specimen A were cut in longitudinal and for test specimen B in transversal direction of the film. The paper liner was removed and the film samples were bonded onto 3 mm thick single glass panes of the same size

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 and bonded on one side to single-pane glass with the same dimensions (thickness 3 mm) in the same procedure.

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 tests in the fire shaft ("Brandschacht") have been performed acc. DIN 4102-1 and -16 (building materials class B1). The small burner tests ("Brennkastenprüfungen") have been performed acc. DIN 4102-1, chapter 6.2.5 (building materials class B2).

Examination period: February 2019

4 Results

- section 4.1 Material characteristics
- section 4.2.1 Test results of the small burner tests
- section 4.2.2 Test results of the tests in the fire shaft

4.1 Material characteristics

Table 1

Characteristics			Manufacturer's data	Measured values (m.v.)
Polypropylene film	Thickness	[µm]	60	./.
Self-adhesive Polypropylene film	Thickness	[mm]	./.	0.11 (s=0.003)
	Weight per unit area	[g/m ²]	./.	67
Protective paper	Thickness	[mm]	./.	0.10 (s=0.004)
	Weight per unit area	[g/m ²]	./.	123

./. not received/not measured

m.v. mean value

s standard deviation



4.2 Results of the fire behaviour

4.2.1 Test results class B2 (Brennkasten)

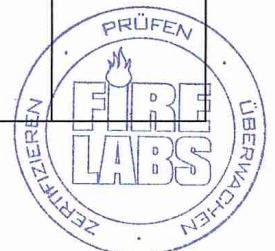
All building materials class B1 must also meet the requirements of materials class B2 (flammable). The material, tested in "Brennkasten" acc. DIN 50 050 meets the requirements of building materials of class B2; the material did not show burning particles / droplets during these tests. (Results: see enclosure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

4.2.2 Test results class B1 (Brandschacht)

Table 3

Test results "Brandschachtprüfung" (part 1)						
line no.		Specimen				requirements
		A	B	C	D	
1	<u>Number of specimen arrangement</u> acc. DIN 4102 –15 Table 1	7	7	-	-	
2	<u>Maximal flame height</u> above bottom edge cm	40	40	-	-	*)
3	Time ¹⁾ min	4	4	-	-	
4	Burning / melting through Time ¹⁾ min	./.	./.	-	-	
5	<u>Back side of the specimens:</u> Flames / glowing Time ¹⁾ min:s	./.	./.	-	-	
6	Discolouring Time ¹⁾ min:s	./.	./.	-	-	
7	<u>Falling of burning droplets</u> Begin ¹⁾ min	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:s	No	No	-	-	
11	Extend: Sporadic falling of burning parts					
12	Continuous falling of burning parts					
13	Afterflame time at the bottom of thesieve (max.) min:s	./.	./.	-	-	
14	<u>Impairment of the burner flames by dropping or falling Material</u> Time ¹⁾ min:s	No	No			
15	<u>Premature end of test</u> Final occurrence of burning at the specimen ¹⁾ min	No	No	-	-	
16	Time of eventually end of test ¹⁾ min:s	./.	./.	-	-	

1) Indication of time: from the beginning of testing procedure
 - Not tested
 ./. Not occurred
 *) No cause for complaint



Test results (part 2)						
line no.		Specimen				requirements
		A	B	C	D	
17	<u>Afterflame after end of test</u> Time min:s	No	No	-	-	
18	Number of specimen					
19	Front side of specimen					
20	Back side of specimen					
21	Flame length cm					
22	<u>Afterglow after end of test</u> Time min:s	No	No	-	-	
23	Number of specimen			-	-	
24	<u>Place of appearance:</u> Lower half of specimen			-	-	
25	Upper half of specimen			-	-	
26	Front side of specimen			-	-	
27	Back side of specimen			-	-	
28	<u>Smoke density</u> ≤ 400 % min	3.3	2.3	-	-	
29	≥ 400 % min (very strong smoke density)	./.	./.	-	-	
30	Diagram fig. no.	1	3	-	-	
31	<u>Residual length</u> Individual values cm	63 64 62 63	61 60 61 62	- - - -	- - - -	> 0
32	Average value cm	63	61	-	-	≥ 15
33	Photo of the test specimen fig. no.	2	4	-	-	
34	<u>Flue gas temperature</u> Maximum of average value...°C	105	103	-	-	≤ 200
35	Time ¹⁾ min:s	9:58	10:00	-	-	
36	Diagram fig. no.	1	3	-	-	
37	<u>Remarks:</u> line 32: There were no additional tests proceeded because of the residual length of > 45 cm (DIN 4102-16: 2015-09, 5.2 b)).					

Test specimen A (VN 681219-001): Samples in longitudinal direction

Test specimen B (VN 681219-002): Samples in transversal direction

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



5 Assessment

According to the test results in section 4.2 the material, described in section 1 and 4.1, fulfils the requirements of a building material class B1 according to DIN 4102-1, if the materials are bonded on one side to single-pane glass, at a distance of the material compound 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 by outdoor weathering)

is not proved with this test certificate.

6 Special remarks

This test 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 valid as soon as the product is used as a building product in the sense of the "Landesbauordnungen" (state building requirements, 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.

In General Building Inspectorates procedures this test certificate can be based for

- regulated building materials for the required proof of accordance
- for not regulated building materials for the required proof of applicability

The explanations given in DIN 4102-1 appendix D, in particular with regard to an external production control have to be considered.

This test certificate is valid until 2024-01-31, provided the test methods, classification rules and technology do not change during this period.

Borkheide, 14th of February 2019



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

This translation was issued on 14th of February 2019, in a case of doubt the German version is valid solely.

Test specimen A

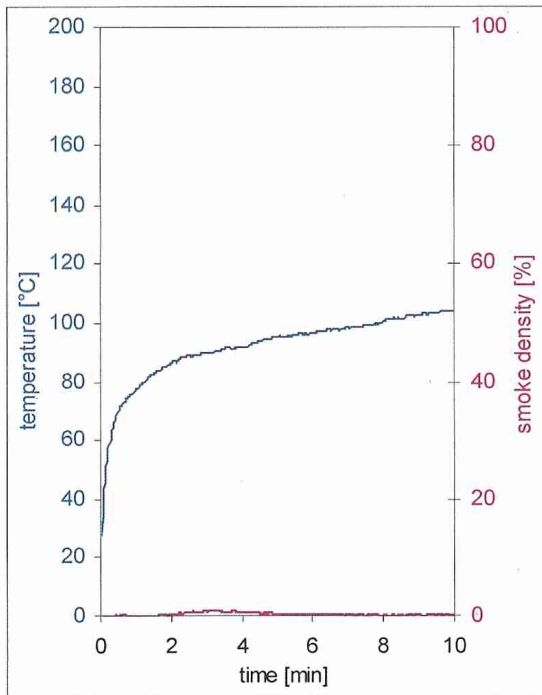


fig. 1
Graphs of the flue gas temperature and the smoke density

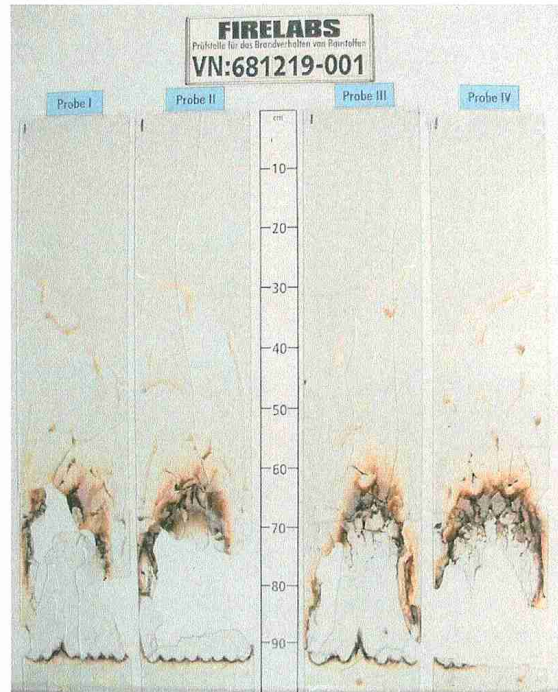


fig. 2
Photo of the test specimen after the test

Test specimen B

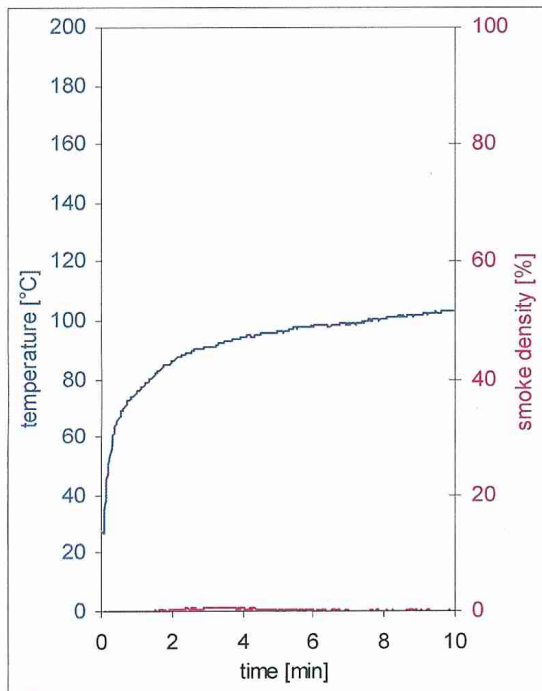


fig. 3
Graphs of the flue gas temperature and the smoke density

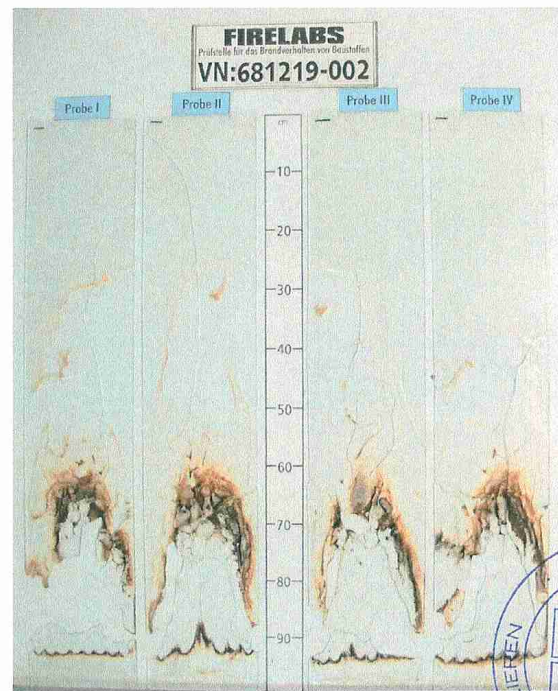


fig. 4
Photo of the test specimen after the test



Test results small burner test

Table 2

Sample-No.	longitudinal direction							transversal direction							dim.	requirements
	1	2	3	4	5	6	-	1	2	3	4	5	6	-		
Ignition of the sample	./.	./.	./.	./.	./.	./.	-	./.	./.	./.	./.	./.	./.	-	s	-
Maximum flame height	1	1	1	1	1	1	-	1	1	1	1	1	1	-	cm	-
Time of the maximum	15	15	15	15	15	15	-	15	15	15	15	15	15	-	s	-
Flame tip reached the 150 mm mark	./.	./.	./.	./.	./.	./.	-	./.	./.	./.	./.	./.	./.	-	s	≥ 20
Flame extinguished	16	16	16	16	16	16	-	16	16	16	16	16	16	-	s	-
Ignition of filter paper	./.	./.	./.	./.	./.	./.	-	./.	./.	./.	./.	./.	./.	-	s	1)
Smoke density (visual)	very low							very low							-	-
Afterburning time	./.	./.	./.	./.	./.	./.	-	./.	./.	./.	./.	./.	./.	-	s	-
Flames were extinguished after	./.	./.	./.	./.	./.	./.	-	./.	./.	./.	./.	./.	./.	-	s	-

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

- the film surface was sintered up to a max. height of 3.5 cm and a width of approx. 2 cm, above unchanged.

Samples 1: Edge flame exposure

Samples 2-6: Surface flame exposure

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

