

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-220063

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	Nimbus Group GmbH Sieglerstraße 41 D-70469 Stuttgart
description of samples	panel consisting of grey or white polyester fleece in 2 different thicknesses, with built-in part consisting of plastic injection molding (polycarbonate)
name of the material	„Disk’n Dots SLIM” and „Disk’n Dots BIG”
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	31.01.2027
result	The examined products meet <ul style="list-style-type: none">• in grey or white polyester fleece• in a thickness of 25mm until 50mm 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 >40 mm to same or other plain materials. The examined products show burning droplets.

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This test report must not be published and copied without preceding agreement of the test laboratory and if agreed, only during validity and unchanged concerning appearance and contents.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 34545: „Disk'n Dots SLIM“ colour: white / thickness: about 25mm

-panel consisting of white polyester fleece, with built-in part consisting of plastic injection molding (polycarbonate)-

The exteriors are thermal-bonded.

front side: flat surface with cover plate on the built-in part

back: with thread of the built-in part

characteristic values determined by the test laboratory:

thickness of panel: about 25 mm

diameter of built-in part: about 75mm

whole area weight: about 2,1 kg/m² (determined by a "Brandschacht"-sample with 1 built-in part)

PN 34546: „Disk'n Dots BIG“ colour: white / thickness: about 50mm

-as PN 34545, however in a thickness of 50mm-

characteristic values determined by the test laboratory:

thickness of panel: about 51 mm

diameter of built-in part: about 75mm

whole area weight: about 3,3 kg/m² (determined by a "Brandschacht"-sample with 1 built-in part)

PN 34547: „Disk'n Dots BIG“ colour: grey / thickness: about 50mm

-as PN 34546, however in grey colour

characteristic values determined by the test laboratory:

thickness of panel: about 51 mm

diameter of built-in part: about 75mm

whole area weight: about 3,4 kg/m² (determined by a "Brandschacht"-sample with 1 built-in part)

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.

Position of the built-in part:

At lower part of the sample, about 30cm away from the bottom edge.

3. **Arrangement of samples** mounting: freely suspended

#5118:	„Disk'n Dots BIG“	white	50mm	flaming the front side
#5119:	„Disk'n Dots BIG“	white	50mm	flaming the back
#5120:	„Disk'n Dots BIG“	grey	50mm	flaming the front side
#5121:	„Disk'n Dots SLIM“	white	25mm	flaming the front side
#5122:	„Disk'n Dots BIG“	grey	50mm	flaming the front side
#5123:	„Disk'n Dots BIG“	grey	50mm	flaming the front side

4. **Date of test** CW 04 in 2022

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

line no.	Measurement	Result with the tested specimen						Dim.
	Test number	#5118	#5119	#5120	#5121	#5122	#5123	
	variant	BIG	BIG	BIG	SLIM	BIG	BIG	
	colour	50mm weiß	50mm weiß	50mm grau	25mm weiß	50mm grau	50mm grau	
	flaming the front side / back	front	back	front				
1	Number of specimen arrangement acc. to. DIN 4102/T15, schedule 1	7	7	7	7	7	7	
2	Maximum flame height above bottom edge of the specimen	50	50	60	50	50	50	cm
3	Time ¹⁾	0:10	0:29	0:38	1:20	0:08	0:10	min:s
4	Burn through / melting Time ¹⁾	0:45	0:45	0:55	0:22	0:51	0:50	min:s
5	Observations on the back side of the specimen Flames / Glowing Time ¹⁾	---	---	---	---	---	---	min:s
6	Change of color Time ¹⁾	./.	./.	./.	./.	./.	./.	min:s
7	Falling of burning droplets Start ¹⁾	./.	./.	./.	./.	./.	./.	min:s
8	Extent sporadic falling of burning droplets ²⁾	---	---	---	---	---	---	
9	continuous falling of burning droplets ²⁾	---	---	---	---	---	---	min:s
10	Falling of burning droplets Start ¹⁾	X 3:05/8:35	X 0:57	X 0:48/4:15	X 1:32/5:25	X 1:40	X 0:52	min:s
11	Extent sporadic falling of burning droplets ²⁾	X	X	X	X	X	X	
12	continuous falling of burning droplets ²⁾	---	---	---	---	---	---	
13	Afterflame time at the bottom of the sieve (max.)	0:47/1:01	3:13	1:22/0:33	0:38/1:15	0:25	2:56	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

line no.	Measurement	Result with the tested specimen						Dim.
	Test number	#5118	#5119	#5120	#5121	#5122	#5123	
	variant colour	BIG 50mm weiß	BIG 50mm weiß	BIG 50mm grau	SLIM 25mm weiß	BIG 50mm grau	BIG 50mm grau	
17	<u>Afterflame after end of test</u> 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	<u>Afterglow after end of test</u> Time ¹⁾	./.	./.	./.	./.	./.	./.	min:s
23	Number of specimen	./.	./.	./.	./.	./.	./.	
24	<u>Place of appearance</u> 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	80	47	45	32	15	43	% * min
29	> 400 % * min ⁴⁾	./.	./.	./.	./.	./.	./.	% * min
30	Diagram: incl. no.	1	2	3	4	5	6	
31	<u>Residual lengths: individual value</u> ³⁾ Specimen 1 Specimen 2 Specimen 3 Specimen 4	43 47 41 34	47 43 40 45	37 44 40 42	63 59 40 47	37 48 45 53	40 44 42 48	cm cm cm cm
32	<u>Average value, individual test</u> ³⁾	41	44	41	52	46	44	
33	<u>Photo of specimen in enclosure no.</u>	1	2	3	4	5	6	
34	<u>Flue gas temperature</u>	121	112	113	114	114	117	°C
35	Maximum of average value Time ¹⁾	08:50	06:08	10:00	08:01	09:45	09:33	min:s
36	Diagram: incl. 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 o.	measurement	Result with the tested specimen						dim
	test-no.	#5118	#5119	#5120	#5121	#5122	#5123	
	variant colour	BIG 50mm weiß	BIG 50mm weiß	BIG 50mm grau	SLIM 25mm weiß	BIG 50mm grau	BIG 50mm grau	
	flaming the front side / back	front	back	front				
1	residual length	41	44	41	52	46	44	cm
2	max. smoke temperature	121	112	113	114	114	117	°C
3	density of smoke - integral	80	47	45	32	15	43	%min
4	remarks: During the "Brandschacht-tests" the materials showed burning droplets for longer than 20 seconds.							

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, 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, 31.01.2022

clerk in charge:



(Dipl.-Ing.(FH) Jürgen Hammer)



Head of the test laboratory:



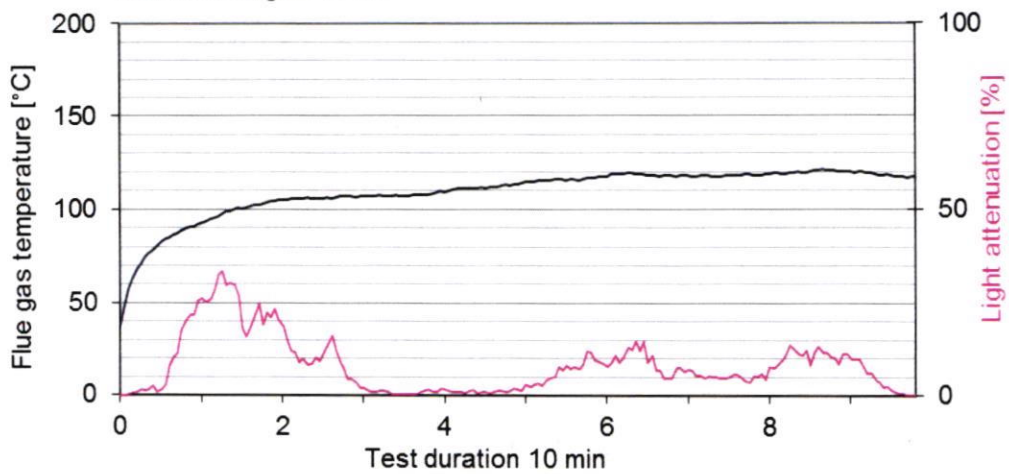
(Dipl.-Ing.(FH) Andreas Hoch)

„Brandschacht“-test #5118

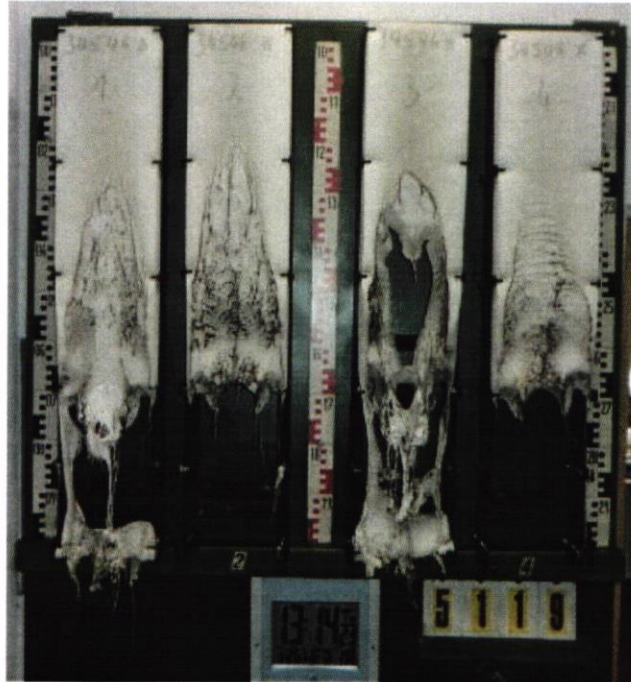


measurement

#5118, PN34546: NIMBUS, "Disk'n Dots BIG" Seite A
Max. flue temperature: 121°C, Smoke density integral: 80%/min
Residual length: 41 cm

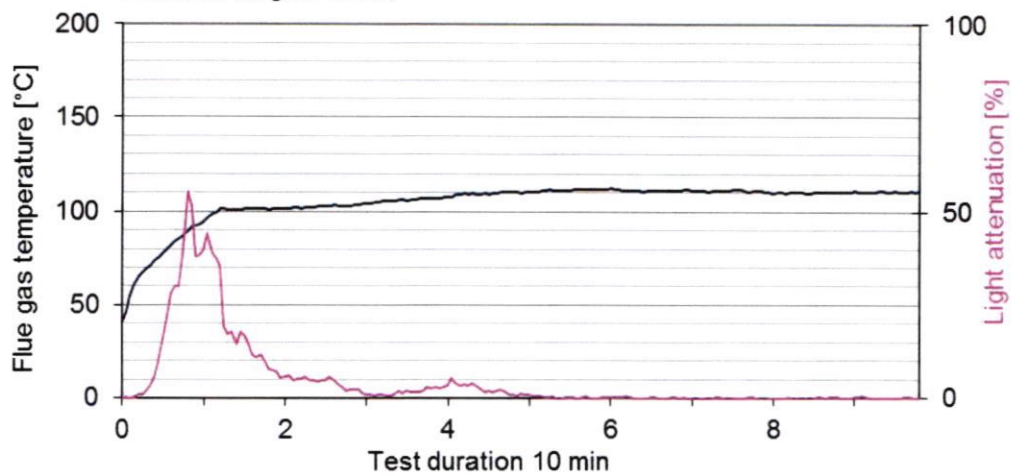


„Brandschacht“-test #5119

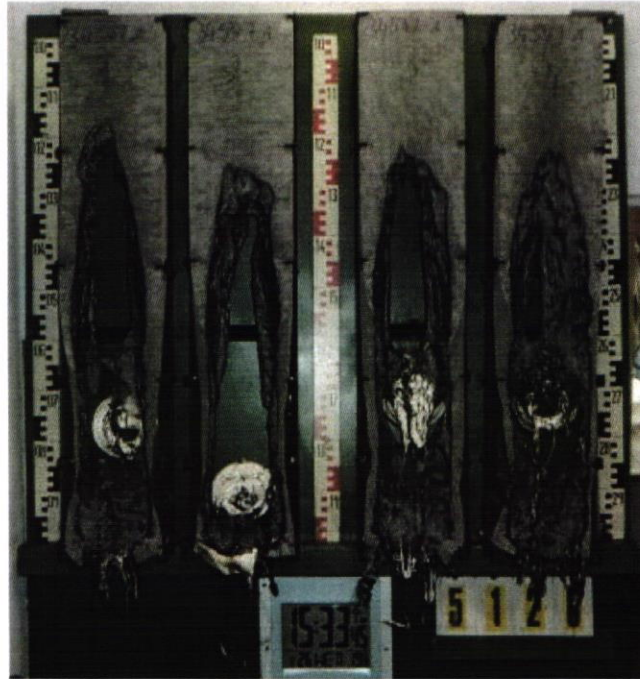


measurement

#5119, PN34546: NIMBUS, "Disk'n Dots BIG", Seite B
Max. flue temperature: 112°C, Smoke density integral: 47%min
Residual length: 44 cm

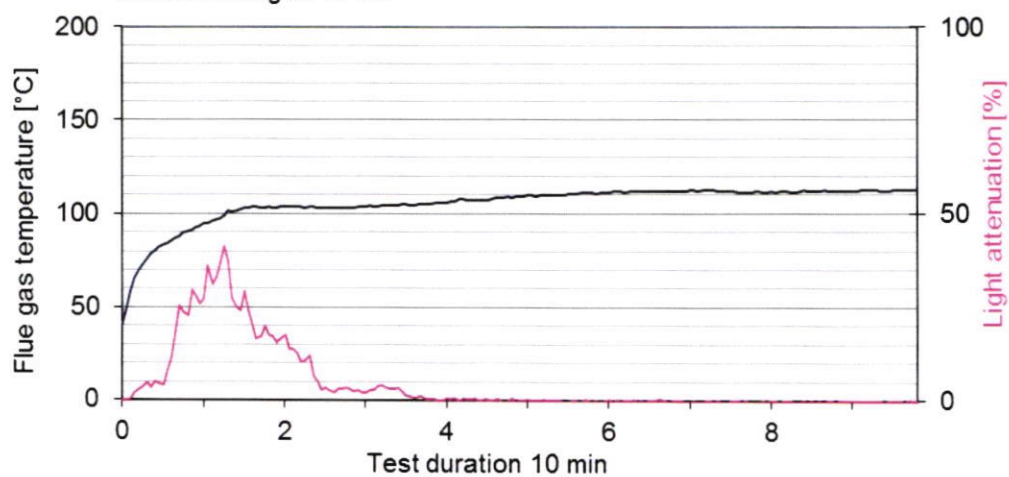


„Brandschacht“-test #5120

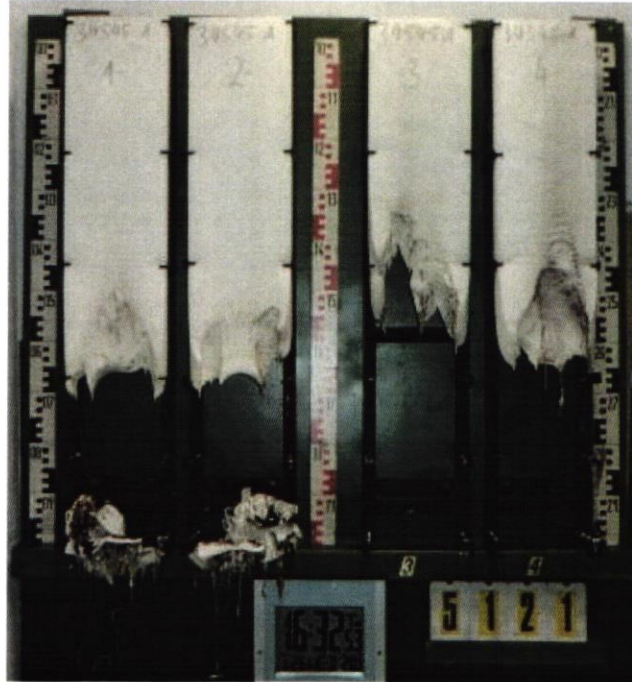


measurement

#5120, PN34547: NIMBUS, "Disk'n Dots BIG", grau, Seite A
Max. flue temperature: 113°C, Smoke density integral: 45%min
Residual length: 41 cm

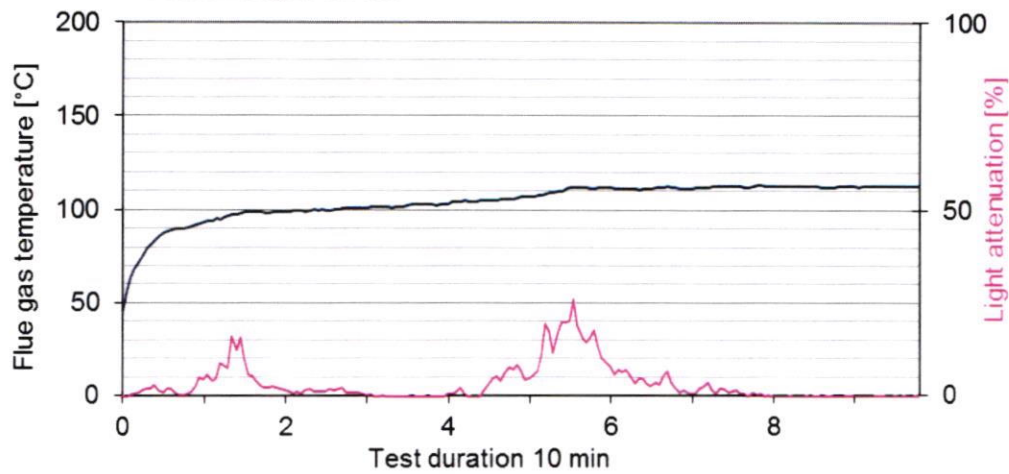


„Brandschacht“-test #5121

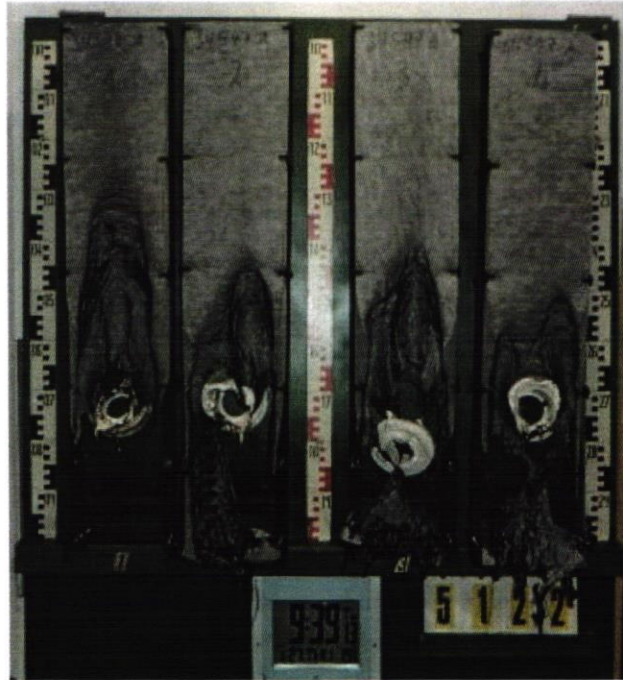


measurement

#5121, PN34545: NIMBUS, "Disk'n Dots SLIM", Seite A
 Max. flue temperature: 114°C, Smoke density integral: 32%min
 Residual length: 52 cm

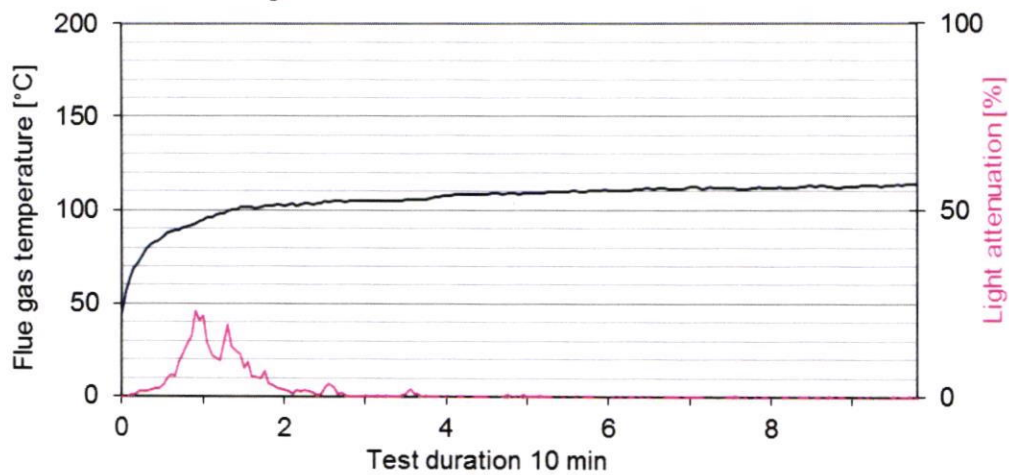


„Brandschacht“-test #5122

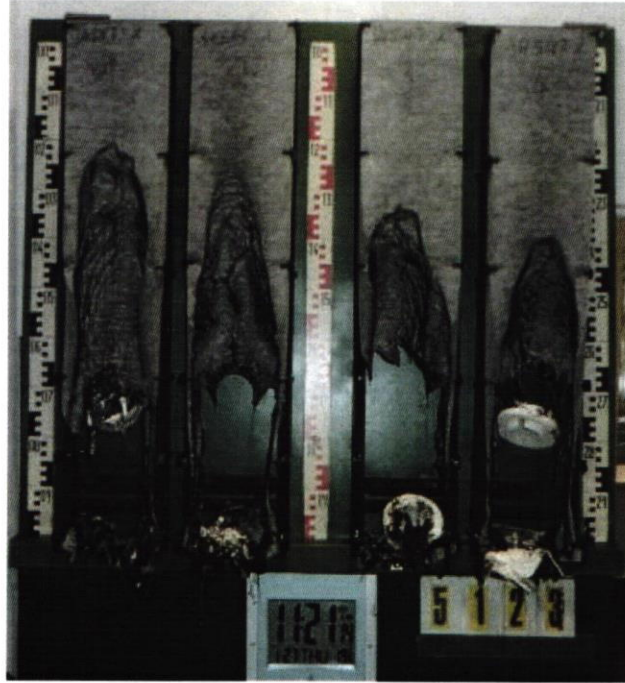


measurement

#5122, PN34547: NIMBUS, "Disk'n Dots BIG", Seite A
Max. flue temperature: 114°C, Smoke density integral: 15%min
Residual length: 46 cm

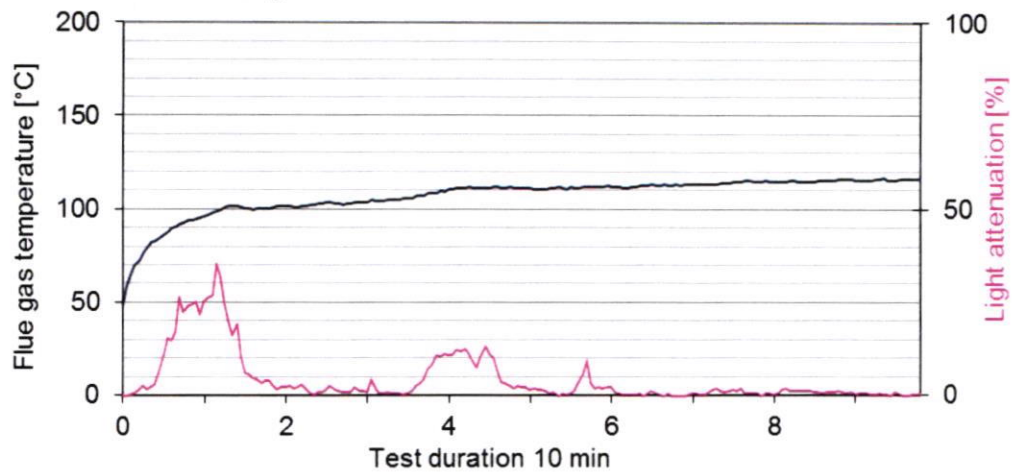


„Brandschacht“-test #5123



measurement

#5123, PN34547: NIMBUS, "Disk'n Dots BIG", Seite A
Max. flue temperature: 117°C, Smoke density integral: 43%min
Residual length: 44 cm



**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 the fleece and the built-in part
4. Date of test CW 04 in 2022
5. Results

PN 34545: flaming the fleece	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	1	--	2	2	--	--	--	--	s
reaching the mark of measurement ¹⁾²⁾	./.	./.	./.	./.	./.	--	./.	./.	--	--	--	--	s
max. flame height	6	4	5	5	6	--	5	5	--	--	--	--	cm
time	7	6	9	8	8	--	10	10	--	--	--	--	
self cessation of the flames end of afterflame ¹⁾	8	7	10	9	9	--	12	12	--	--	--	--	s
end of glowing ¹⁾	./.	./.	./.	./.	./.	--	./.	./.	--	--	--	--	s
flames were extinguished after ¹⁾	./.	./.	./.	./.	./.	--	./.	./.	--	--	--	--	
smoke development (visual)	moderate						little						./.
dropping of burning material during 20 s ¹⁾	./.	./.	./.	./.	./.	--	./.	./.	--	--	--	--	s
Appearance after test: burned out till max. height 8 cm x width 2 cm													

PN 34545: flaming the built-in part	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	--	--	--	--	--	12	--	--	--	--	--	s
reaching the mark of measurement ¹⁾²⁾	./.	--	--	--	--	--	./.	--	--	--	--	--	s
max. flame height	3	--	--	--	--	--	2	--	--	--	--	--	cm
time	15	--	--	--	--	--	15	--	--	--	--	--	
self cessation of the flames end of afterflame ¹⁾	15	--	--	--	--	--	15	--	--	--	--	--	s
end of glowing ¹⁾	./.	--	--	--	--	--	./.	--	--	--	--	--	s
flames were extinguished after ¹⁾	./.	--	--	--	--	--	./.	--	--	--	--	--	s
smoke development (visual)	moderate						little						
dropping of burning material during 20 s ¹⁾	./.	--	--	--	--	--	./.	--	--	--	--	--	s
Appearance after test: burned out till max. height 8cm x width 2cm													

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

PN 34546: additional tests	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	--	--	--	12	3	3	--	--	--	s
reaching the mark of measurement ¹⁾²⁾	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
max. flame height	4	4	3	--	--	--	2	3	3	--	--	--	cm
time	4	4	15	--	--	--	15	8	7	--	--	--	
self cessation of the flames end of afterflame ¹⁾	5	5	15	--	--	--	15	9	8	--	--	--	s
end of glowing ¹⁾	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
flames were extinguished after ¹⁾	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
smoke development (visual)	little						little						
dropping of burning material during 20 s ¹⁾	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
Appearance after test: burned out till max. height 6cm x width 2,5cm													

PN 34547: additional tests	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	--	--	--	11	3	3	--	--	--	s
reaching the mark of measurement ¹⁾²⁾	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
max. flame height	5	3	3	--	--	--	2	3	3	--	--	--	cm
time	6	4	15	--	--	--	15	6	6	--	--	--	
self cessation of the flames end of afterflame ¹⁾	7	5	15	--	--	--	15	7	7	--	--	--	s
end of glowing ¹⁾	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
flames were extinguished after ¹⁾	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
smoke development (visual)	little						little						
dropping of burning material during 20 s ¹⁾	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
Appearance after test: burned out till max. height 7cm x width 3cm													

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 burning dripping material.