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OFFICIAL REPORT
ON FIRE RATING CLASSIFICATION

drawn up in conformity with article 5 of the interior Ministry order dated 21 november 2002

N° 14656-09/SP/1/A

VALIDITY 5 YEARS (until , june 23, 2014)

MATERIAL PRESENTED BY : NESCHEN AG
Hans-Neschen-straße 1
31675 Bückeburg
ALLEMAGNE

COMMERCIAL BRAND NAME : CO 200 Art.-Nr 150202…303 95-
Solvotex cotton premium light S

BRIEF DESCRIPTION: Fabric 100% cotton coated one side with PU fire retardant
Thickness : 0,30 mm
Mass per m² : 230 g.
Colour presented : white.

TYPE OF TESTS : Electric burner test.

CLASSIFICATION M1

DURABILITY OF CLASSIFICATION (appendix 22) : **no limited a priori.**

Taking into account the criteria resulting from the trials described in the test report appendix N° 14656-09/SP/1/A.
This official report only attest of characteristics of the sample puting through the tests and do not prejudge characteristics of the similars products.
It do not constitute a certification of products according to the order L. 115-27 of law consummation and law of june 3, 1994.

LE BOUCHET, **décember 15, 2011.**

Head of the "Fire testing"laboratory.

Hélène BARBIER

Official report of classification delivered in extension of PV N°14656-09

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

FIRE LABS
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PÜZ-Stelle (LBO): BRA09
Notified Body no.: 1507

TEST REPORT

Reference:	FLT 3378711	(Translation of the German test report - no guarantee for translation of technical terms)
Company:	Neschen AG Hans-Neschen-Straße 1 D - 31675 Bückeburg	
Order	2009-12-01 **Arrived**	2009-12-03
Description of samples:	On one side coated fabric made of cotton to be used as advertising space, for exhibition stand constructions or for decoration, named "**solvotex cotton premium light S**" and "**solvotex cotton premium heavy S**". (for details see page 2)	
Delivered:	2009-12-03	
Content of request:	Proof of flammability to classify building materials to class B1 "schwerentflammbar" according to DIN 4102-1	
Assessment:	The examined product meets the requirements of class B1 for "schwerentflammbare" (hardly 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 of report:	2015-01-31	
Sampling:	The material tested was delivered to the laboratory.	

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 Prufzeugnis (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 includes 5 pages and 5 enclosures.

1 Description of test material (according to the client)

The materials provided are fabrics made of cotton with different weights per area unit, with a printable coating ("Inkjet Coating") made of polyurethane. The fabrics are intend to be used indoor as advertising space, for exhibition stand constructions or for decoration purposes and were named with the commercial names:
"solvotex cotton premium heavy S" and "solvotex cotton premium light S".
For the tests the laboratory received samples of approx. 6 m² each of the coated fabric. The material was not printed.
Colour: white; characteristic values: see section 4.1; photos: see enclosures.
Other specifications are not known by the laboratory, samples are stored.

2 Preparation of samples

For the fire shaft test ("Brandschacht") 8 specimens were prepared. The samples (dimensions 1000 mm x 190 mm) for the specimen A, C ,E and G were cut in warp orientation, the samples for the specimen B, D, F and G were cut in weft orientation of the fabric (for details see page 4).

For the small burner test ("Brennkasten") samples for edge exposure (dimensions 190 mm x 90 mm) and samples for surface exposure (dimensions 230 mm x 90 mm) were cut in warp and weft orientation of the fabric.

Afterwards all samples kept in a climate chamber acc. DIN 50014-23/50-2 until they reached constant weight.

3 Test procedure

The tests in the fire shaft test (Brandschacht) have been performed acc. DIN 4102-1 and -16 (building materials class B1), the small burner tests (Brennkasten) have been performed acc. DIN 4102-1, chapter 6.2.4.2 (building materials class B2).
Arrangement of all samples: freely suspended

Examination period: January 2010.

4 Results

- Table 1 Material characteristics
- Tables 2.1,2.2 Test results class B2 (enclosures 5)
- Table 3 Test results class B1

4.1 Material characteristics

Table 1

Artikel-Bezeichnung:	manufacturer´s data		measured values		
	thickness [mm]	MA [g/m²]	MA [g/m²]	thickness (i.M.) [mm]	thickness (s) [mm]
"solvotex cotton premium heavy S"	-	230	228	0,34	0,004
"solvotex cotton premium light S"	-	370	389	0,56	0,005

m.v. mean value
s standard deviation
./. not received or not measured
MA mass per unit area

4.2 Results of the fire behaviour

4.2.1 Test results class B2 (Brennkasten)

According DIN 4102-1 all building materials class B1 must also meet the requirements of materials class B2 (low flammable).
The material, tested in "Brennkasten" acc. DIN 50 050 meets the requirements class B2; the materials did not show burning particles / droplets.
(Results: see enclosures 5)

4.2.2 Test results class B1 (Brandschacht)

Table 3

Test results (part 1)										
line no.		Test results of specimen								
		A	B	C	D	E	F	G	H	require-ments
1	Number of specimen arrangement acc. DIN 4102 –15 Table 1	1	1	1	1	1	1	1	1	
2	Maximal flame height above bottom edge ..... cm	70	70	70	70	70	70	70	70	*)
3	Time [1] ..... min	1	1	1	1	1	1	1	1	
4	Burning / melting through Time [1] .....min	1	1	1	1	1	1	1	1	
5	Back side of the specimens: Flames / glowing Time [1] .....min:s	./.	./.	./.	./.	./.	./.	./.	./.	
6	Discolouring Time [1] .....min:s	./.	./.	./.	./.	./.	./.	./.	./.	
7	Falling of burning droplets Begin [1].....min:s	No	No	No	No	No	No	No	No	
8	Extend: Sporadic falling droplets									
9	Continuous falling droplets									
10	Falling of burning parts Begin [1].....min:s	No	No	No	No	No	No	No	No	
11	Extend: Sporadic falling parts									
12	Continuous falling parts									
13	Afterflame time at the bottom of thesieve (max.). .....min:s	./.	./.	./.	./.	./.	./.	./.	./.	
14	Impairment of the burner flames by dropping or falling Material Time [1] .....min:s	No	No	No	No	No	No	No	No	
15	Premature end of test Final occurrence of burning at the specimen [1].....min	No 2	No 2	No 2	No 2	No 2	No 2	No 2	No 2	
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.		Test results of specimen								
		A	B	C	D	E	F	G	H	require-ments
	Afterflame after end of test	No	No	No	No	No	No	No	No	
17	Time .....min:s									
18	Number of specimen									
19	Front side of specimen									
20	Back side of specimen									
21	Flame length .....cm									
	Afterglow after end of test	No	No	No	No	No	No	No	No	
22	Time .....min:s									
23	Number of specimen									
	Place of appearance:									
24	Lower half of specimen									
25	Upper half of specimen									
26	Front side of specimen									
27	Back side of specimen									
	Smoke density									
28	≤ 400 % min	16,5	22,8	25,2	28,1	65,4	48,9	57,9	48,9	
29	≥ 400 % min (very strong smoke density)									
30	Diagram fig. no.	1	3	5	7	9	11	13	15	
	Residual length									
31	Individual value .....cm	44	38	38	37	37	40	38	40	
		43	45	39	38	38	39	40	39	> 0
		46	36	39	39	36	37	38	34	
		44	48	40	38	39	36	37	36	
32	Average value .....cm	44	41	39	38	37	38	38	37	≥ 15
33	Photo of the test specimen fig. no.	2	4	6	8	10	12	14	16	
34	Flue gas temperature									
35	Maximum of average value...°C	118	124	116	118	121	119	119	123	≤ 200
36	Time [1)].....min:s	9:34	9:48	9:46	8:20	0:50	9:48	9:58	9:52	
	Diagram fig. no.	1	3	5	7	9	11	13	15	
37	Remarks: none (Diagramme und Fotos siehe Anlagen 1 – 4)									

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

specimen A : "solvotex cotton premium light S"– warp orientation: VN 274109-001
specimen B : "solvotex cotton premium light S" – weft orientation: VN 274109-002
specimen C : "solvotex cotton premium light S"– warp orientation: VN 274109-003
specimen D : "solvotex cotton premium light S"– weft orientation: VN 274109-004
specimen E : "solvotex cotton premium heavy S"– warp orientation: VN 274209-001
specimen F : "solvotex cotton premium heavy S" – weft orientation: VN 274209-002
specimen G : "solvotex cotton premium heavy S"– warp orientation: VN 274209-003
specimen H : "solvotex cotton premium heavy S" – weft orientation: VN 274209-004

5 Assessment

Section 4.2 lists the results from testing of the material described in section 1, in comparison to the requirements of DIN 4102-1.
The tested material with the trade name:
"solvotex cotton premium light S" and
"solvotex cotton premium heavy S"
with a weight per unit area of 228 – 389 g/m², in a freely suspended application or used with a distance of > 40 mm to the same or other plain materials, fulfils the requirements of building materials class B1 according to DIN 4102-1.

The requirements of building materials class B2 are also fulfilled, no falling of burning parts or droplets occurred during these tests.

This test report is not valid for

- the exposure to outdoor climate conditions
- washing or cleaning with chemicals.

6 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 surfaces etc. the burning behaviour may differ.

This test report 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, 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, or particular private proprietary rights.

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

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

This test report is valid until the date mentioned on page 1, granted that the test methods, the classification rules and the technology do not change during this period.

Borkheide, 9th of November 2011

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

FIRELABS · PRÜFEN · ÜBERWACHEN · ZERTIFIZIEREN ·

In charge for testing
(Dipl.-Ing. Manfred Sailer)

Test specimen A

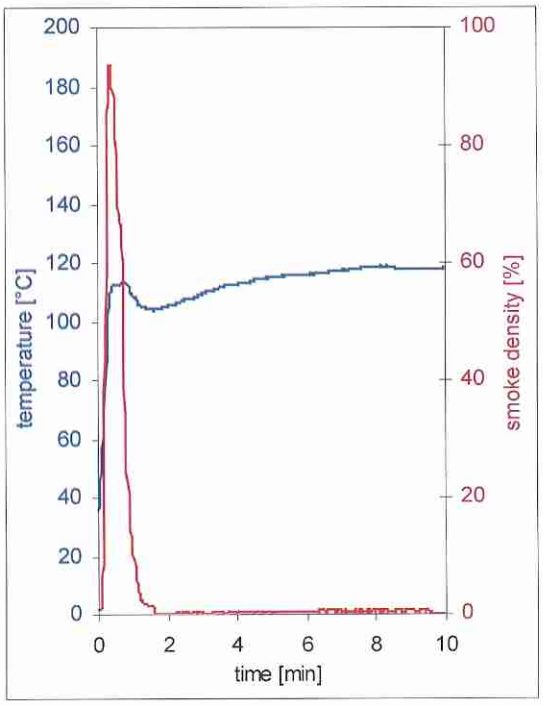

fig. 1
Graphs of the flue gas temperature and the smoke density

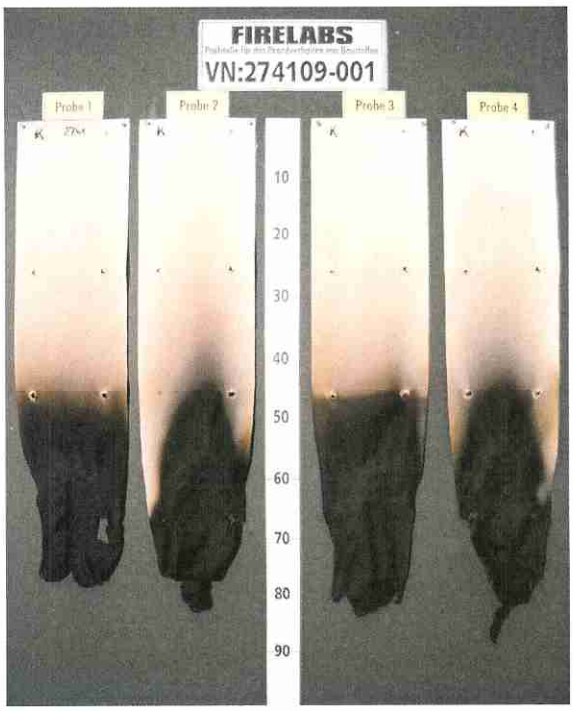

fig. 2
Photo of the test specimen after the test

Test specimen B

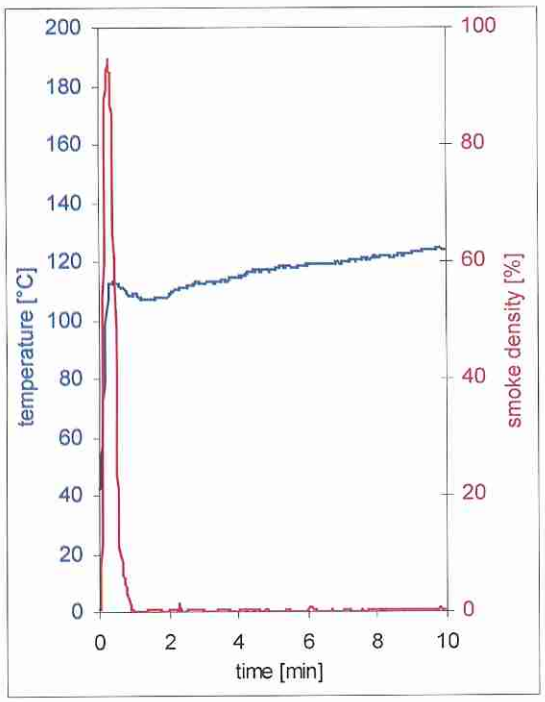

fig. 3
Graphs of the flue gas temperature and the smoke density

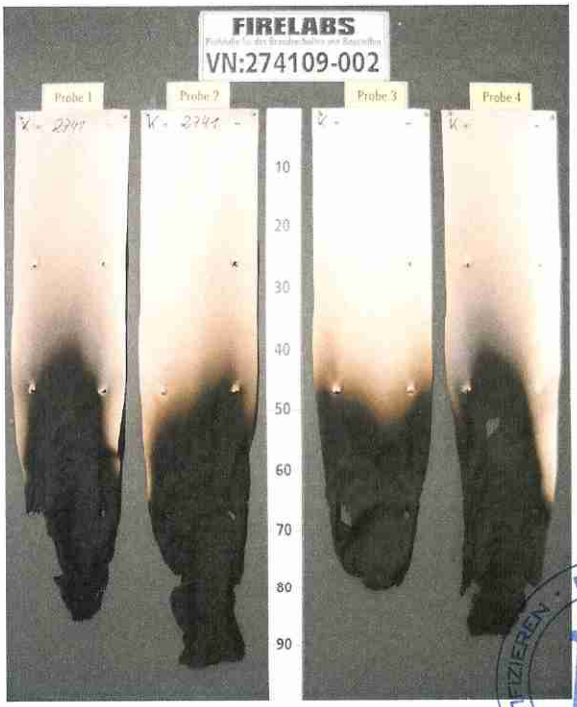

fig. 4
Photo of the test specimen after the test

Test specimen C

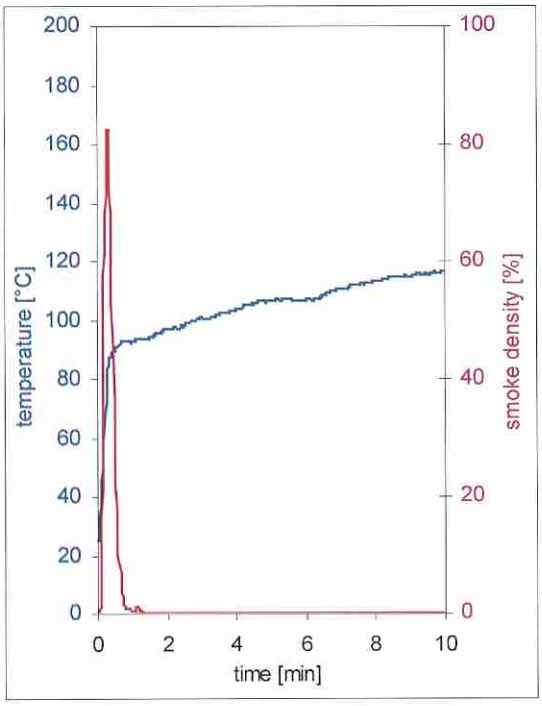

fig. 5
Graphs of the flue gas temperature and the smoke density

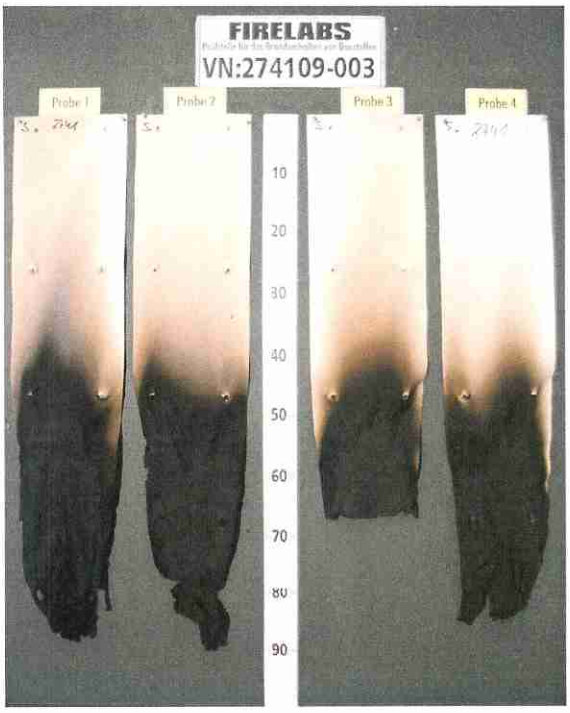

fig. 6
Photo of the test specimen after the test

Test specimen D

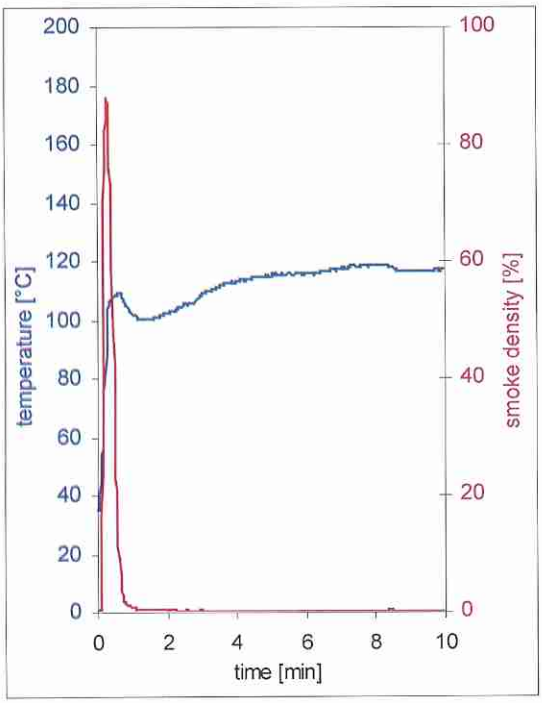

fig. 7
Graphs of the flue gas temperature and the smoke density

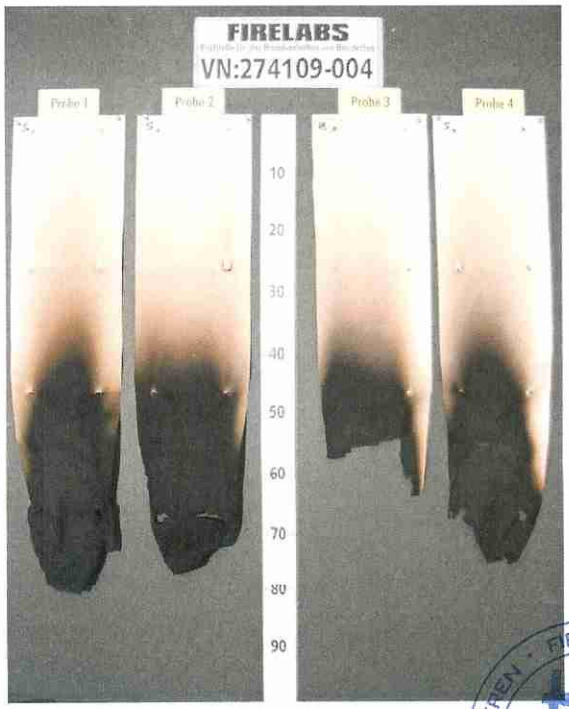

fig. 8
Photo of the test specimen after the test

Test specimen E

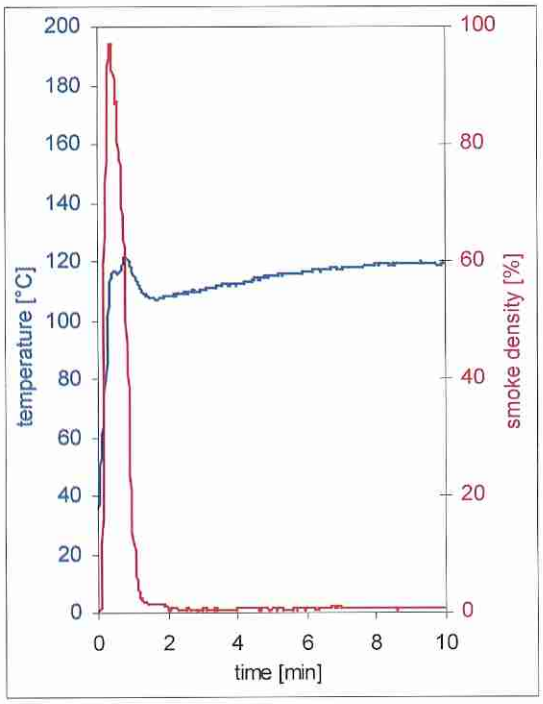

fig. 9
Graphs of the flue gas temperature and the smoke density

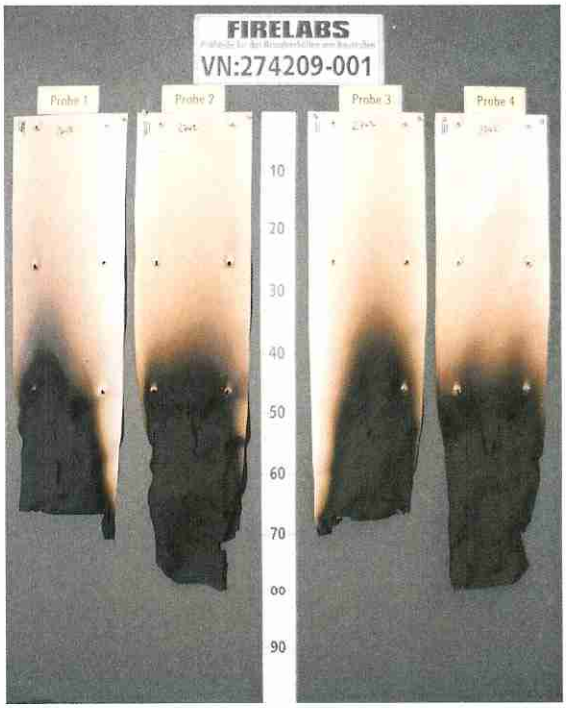

fig. 10
Photo of the test specimen after the test

Test specimen F

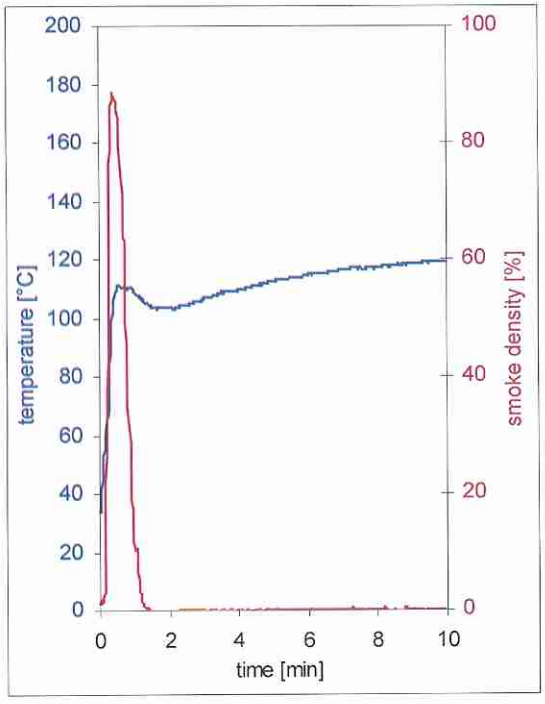

fig. 11
Graphs of the flue gas temperature and the smoke density

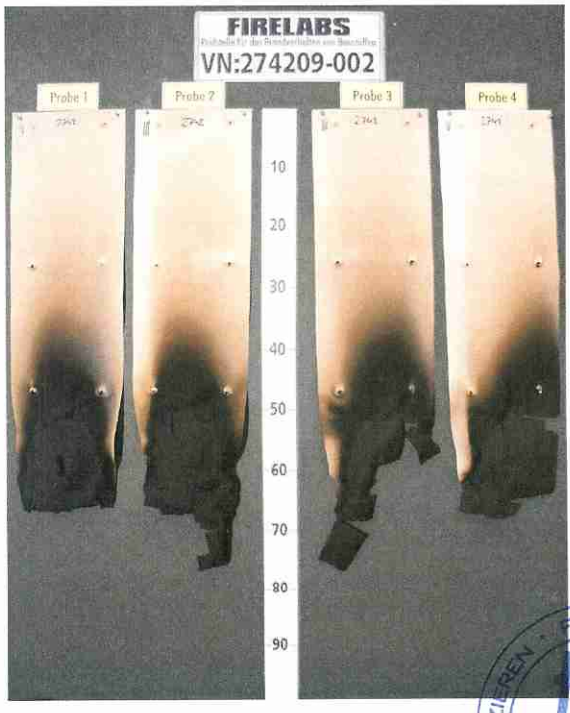

fig. 12
Photo of the test specimen after the test

Test specimen G

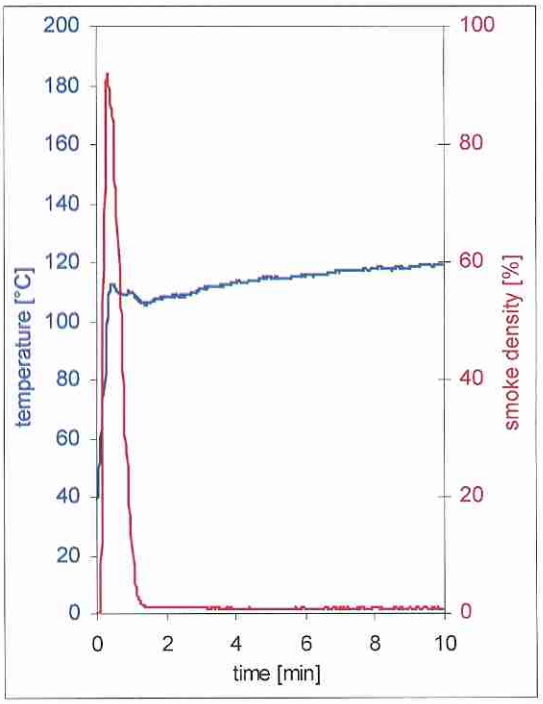

fig. 13
Graphs of the flue gas temperature and the smoke density

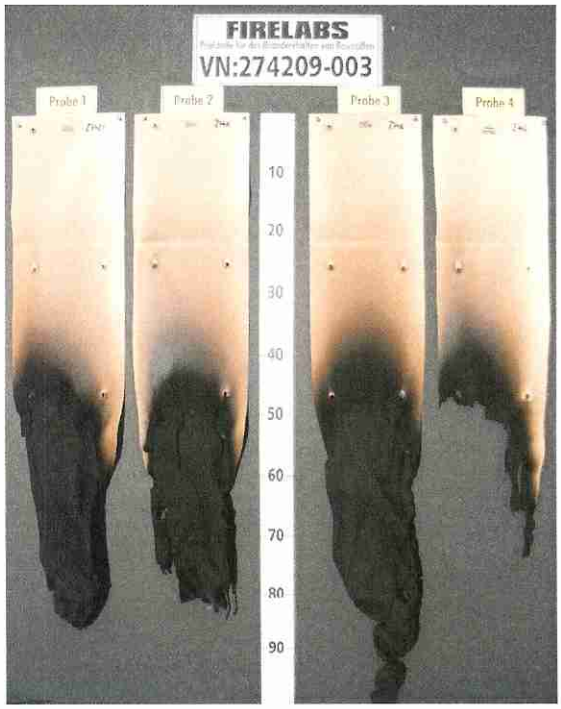

fig. 14
Photo of the test specimen after the test

Test specimen H

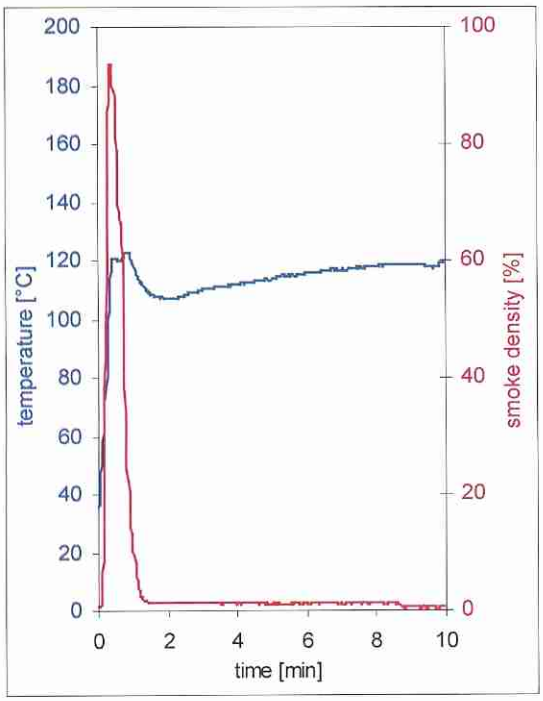

fig. 15
Graphs of the flue gas temperature and the smoke density

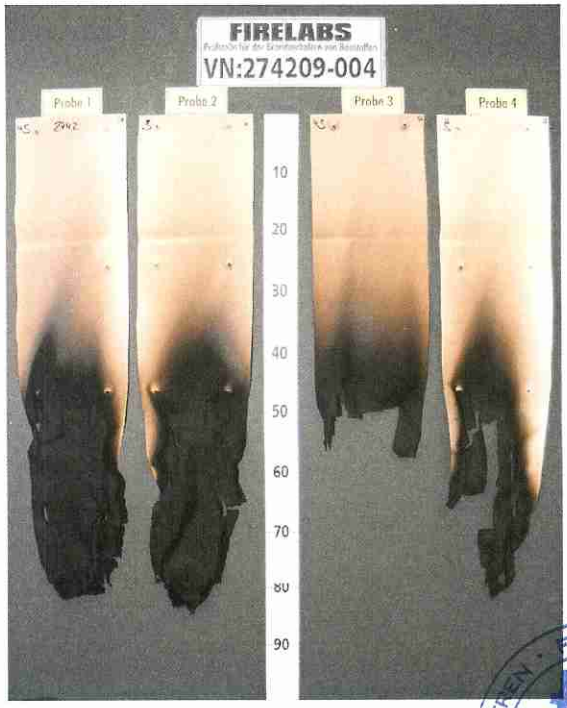

fig. 16
Photo of the test specimen after the test

Test results small burner test (Brennkasten)

Table 2.1 – "solvotex cotton premium light S"

Substrate	warp orientation						weft orientation						dim.	require-ments
Sample-No.	1	2	3	4	5	6	1	2	3	4	5	6	-	-
Ignition of the sample	4	4	4	4	4	3	4	4	4	4	4	3	s	-
Maximum flame height	6	5	6	6	5	4	6	6	5	6	6	5	cm	-
Time of the maximum	15	15	15	15	15	8	15	15	15	15	15	14	s	
Flame tip reached the 150 mm test mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flame has extinguished before reaching the test mark	16	16	16	16	16	15	16	16	16	16	16	16	s	
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	[1]
Smoke density	moderate						moderate						-	-
Afterburning after end of test	./.	./.	./.	./.	./.	./.	-	-	-	-	-	-	s	-
View of the samples after the test: Warp and weft orientation: At the area of flame impingement the samples were destroyed up to a height of 5 cm and a width of 1,5 cm; above discoloured brown of app. 4 cm														

[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
Samples 1-5 : surface exposure; sample 6: edge exposure

Table 2.2 – "solvotex cotton premium heavy S"

Substrate	warp orientation						weft orientation						dim.	require-ments
Sample-No.	1	2	3	4	5	6	1	2	3	4	5	6	-	-
Ignition of the sample	1	1	1	1	1	4	1	1	1	1	1	4	s	-
Maximum flame height	8	7	6	6	5	5	8	7	5	7	6	5	cm	-
Time of the maximum	7	8	7	7	6	10	6	6	7	7	6	9	s	
Flame tip reached the 150 mm test mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flame has extinguished before reaching the test mark	16	16	16	16	16	16	16	16	16	16	16	16	s	
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	[1]
Smoke density	moderate						moderate						-	
Afterburning after end of test	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-
View of the samples after the test: Warp and weft orientation: At the area of flame impingement the samples were destroyed up to a height of 6 cm and a width of 1,5 cm; above discoloured brown of app. 6 cm														

[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
Samples 1-5: edge exposure ; sample 6: surface exposure