

SIGNOLIT® SI 110 Matte 510g Rigid PVC Pop-Up Film (B1)

Description	<i>Material</i>	- highly white rigid vinyl film with high opacity
	<i>Coating</i>	- microporous coating
	<i>Properties</i>	- flame retardant - tested and certified according to DIN 4102 - 1 (fire protection B1) - scratch-resistant - can be laminated right to the edges - reduced reflections on the printed surface - brilliant colour reproduction - high opacity
	<i>Application</i>	- for indoor use
	<i>Durability</i>	- medium-term up to 12 months with pigmented inks
	<i>Printing System</i> <i>Inks</i>	- bubblejet and piezo - dye-based and pigmented inks
Examples of Use	<i>Indoor</i>	- posters, points of sales, pop-up displays, exhibition panels In case of a multi-panel presentation it is necessary to check before printing that in regard to the thickness of the film the printer can print with sufficient dimensional accuracy.
Laminating	It is necessary to protect the surface if it is subject over a long time to abrasion or any other mechanical influences, to dirt or humidity. The lamination can be done right to the edges or over the edges. The user should check before using what is more appropriate. If dye inks are used, SI 110 must be laminated indoor and outdoor to improve light-fastness and smudge-proofness. We recommend to use self-adhesive laminating foils for cold lamination.	
Technical Data	<i>Base material</i>	white rigid vinyl film
	<i>Thickness</i> <i>Grammage</i>	~ 360 µm ~ 510 g/m ²
	<i>Dimensions</i>	914 mm x 20 m. 1067 mm x 20 m. 1270 mm x 20 m.
Storage	After printing the remaining roll must be removed from the plotter and stored in its closed original packing in a cool and dry environment.	
Disposal	The left-over pieces of film can be treated as industrial waste and incinerated. Nevertheless, it is absolutely necessary to follow the local regulations in force in the waste treatment plants.	



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



Prüfstelle für das
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von Baustoffen

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Reference	FLT 3259409 (Translation of the German test report - no guarantee for translation of technical terms)
Company	REGULUS GMBH Paul-Gossen-Str. 114 D – 91011 Erlangen
Order	2009-09-30 Arrived: 2009-10-02
Description of samples	Rigid PVC-film, on one side white coated to be used as printable advertising space, named “ SI 110 “ (for details see page 2)
Delivered	2009-10-02
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 test report	2014-10-31
Sampling	By the company itself

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:

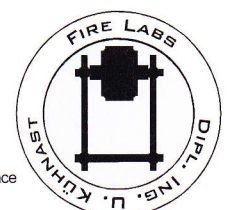
- for regular building products for the pre scribed proofs of conformity
- for non-regular building products for the needed proofs of applicability.

This test report 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 REPORT



1 Description of test material in condition as delivered (according to the manufacturer)

The material provided for the laboratory was a rigid PVC-foil with a white coating on one side (inkjet coating for printing purposes) to be used as a printable advertising space. The foil was labelled "SI 110" and was delivered plain without printing.

For the tests the laboratory received a sample of app. 5 m long and 1,067 m wide.
Colour: white foil with a white coating; Characteristic values: see paragraph 4.1;
Photos: see enclosure 1.

2 Preparation of samples

Out of the material the following samples had been cut: For the fire shaft test (Brandschacht) 2 specimens, made of 4 samples with the dimensions 1000 mm x 190 mm were assembled. The samples for the test specimens A were cut in machine direction, the samples for the test specimens B were cut in cross direction of the foil.

For the small burner test (Brennkasten) 5 samples for edge exposure (dimensions 190 mm x 90 mm) and 1 sample for surface exposure (dimensions 230 mm x 90 mm) were cut in machine and cross direction of the foil.

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

3 Arrangement of samples

The tests have been performed acc. DIN 4102-1, chapter 6.2.4.2 (building materials class B2) and DIN 4102-1 and -16 (building materials class B1).

Arrangement of all samples: freely suspended

Examination period: November 2009

4 Results

- Table 1 Material characteristics
- Table 2 Test results class B2 ,enclosure 3
- Table 3 Test results class B1 ("Brandschacht")

4.1 Material characteristics

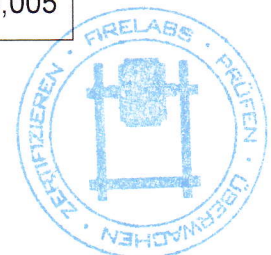
Table 1

Name / type	Specifications by manufacturer		Measured values		
	mass / unit g/m ²	thickness mm	mass/unit g/m ²	thickness mm	s
"SI 110"	./.	./.	512,0	0,39	0,005

./. 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 (low flammable). The material, tested in "Brennkasten" acc. DIN 50 050 meets the requirements class B2. The material does not show burning particles / droplets.

Flame impingement of front or rear side did not influence the behaviour of burning.

(Results: see enclosure 2)

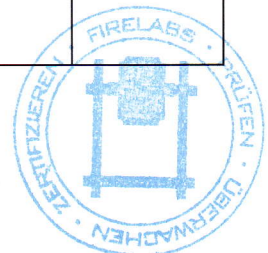
4.2.2 Test results class B1 (Brandschacht)

The results of testing in the “Brandschacht” are provided in the table bellow.

Table 3

Test results (part 1)						
line no.	Measurement	Test results				requirements
		A	B	C	D	
1	<u>Number of specimen arrangement</u> acc. DIN 4102 –15 Table 1	1	1	-	-	
2	<u>Maximal flame height</u> above bottom edge cm	70	60	-	-	*)
3	Time 1) min	1	1	-	-	
4	<u>Burning / melting through</u> Time 1)min	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:s	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	Yes 0:30	Yes 0:36	-	-	
11	Extend: Sporadic falling of burning parts	Yes	Yes			
12	Continuous falling of burning parts	No	No			
13	<u>Afterflame time at the bottom of the</u> <u>sieve (max.)</u> min:s	0:03	0:09			
14	<u>Impairment of the burner</u> <u>flames by dropping or falling</u> <u>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

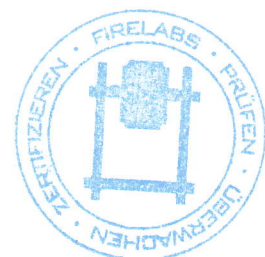


Test results (part 1)						
line no.	Measurement	Test results				requirements
		A	B	C	D	
17	<u>Afterflame after end of test</u> Timemin:s	No	No	-	-	
18	Number of specimen					
19	Front side of specimen					
20	Back side of specimen					
21	Flame lengthcm					
22	<u>Afterglow after end of test</u> Timemin:s	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	58,3	82,9			
29	≥ 400 % min (very strong smoke density)					
30	Diagram fig. no.	1	3			
31	<u>Residual length</u> Individual valuecm	48 47 50 50	53 45 49 54	- - - -	- - - -	> 0
32	Average valuecm	48	50	-	-	≥ 15
33	Photo of test specimen fig. no.	2	4			
34	<u>Flue gas temperature</u> Maximum of average value...°C	104	109	-	-	≤ 200
35	Time 1)min:s	9:46	9:58			
36	Diagram fig. no.	1	3			
37	<u>Remarks:</u>	line 13: Afterflame time at the bottom of the sieve < 20sec. is not rated as "falling of burning parts or droplets" line 32: There were no additional tests proceeded, because of the residual length of more then 45 cm.				

Test specimen A: (VN 259409-001): samples in machine direction

Test specimen B: (VN 259409-002): samples in cross 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, fulfils the requirements of building materials class B1 and B2 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 this tests.

This test report is not valid for

- the exposure to outdoor climate conditions.

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 grounds 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

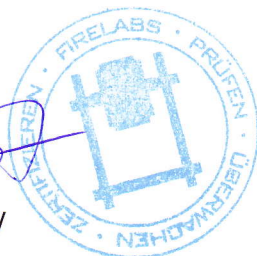
- regular building materials for the required proof of accordance
- for not regular building materials for the required proof of applicability

Explanations given by DIN 4102-1 appendix D, mentioning external inspection have to be considered particularly.

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

Borkheide, 17th of November 2009

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



Test specimen A:

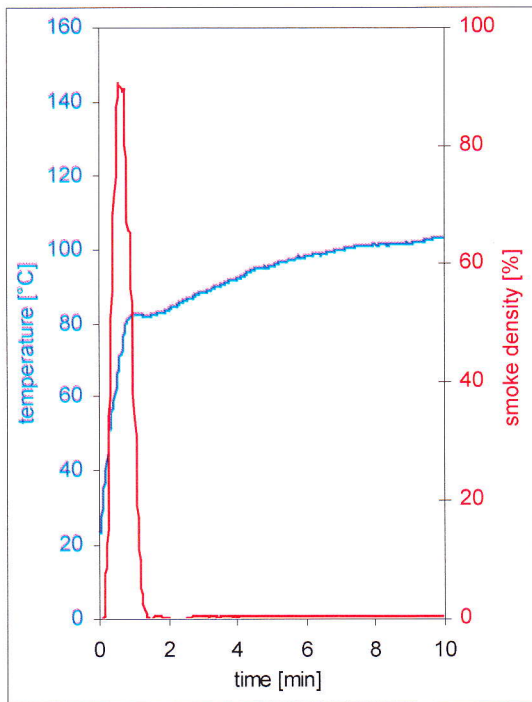


Fig. 1
Graphs of the flue gas temperature and the smoke density

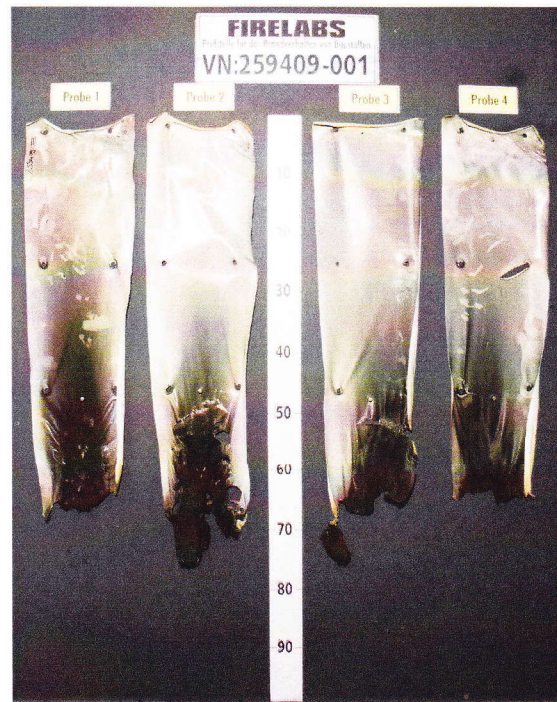


Fig. 2
Photo of test specimen after the test

Test specimen B:

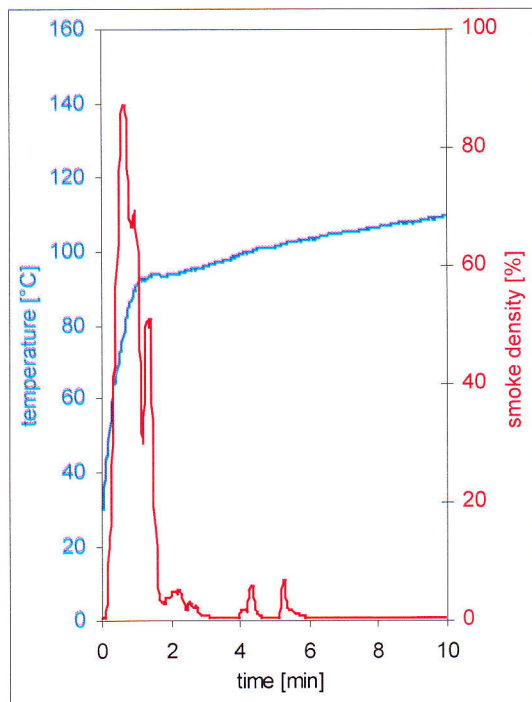


Fig. 3
Graphs of the flue gas temperature and the smoke density

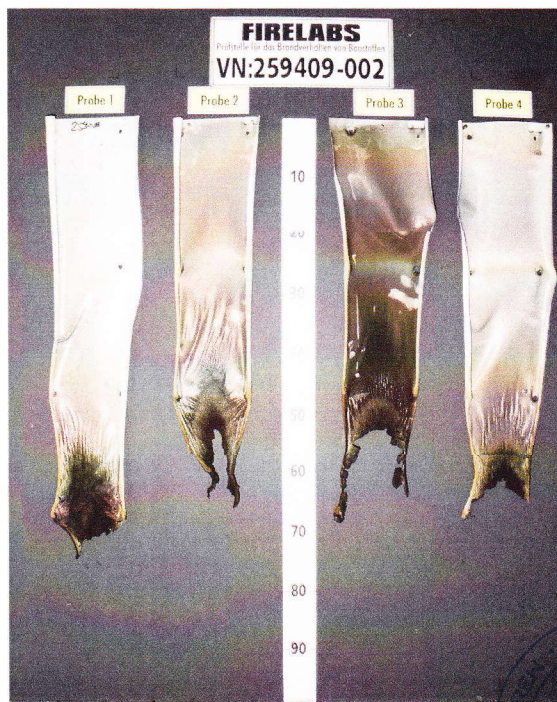


Fig. 4
Photo of test specimen after the test



Table 2 : Test results small burner test (Brennkasten), freely suspended, complete test

Sample-No.	machine direction						cross direction						dim.	requirements
	1	2	3	4	5	6	1	2	3	4	5	6		
Sample-No.	1	2	3	4	5	6	1	2	3	4	5	6	-	-
Ignition of the sample	2	2	1	2	2	6	2	2	2	2	2	4	s	-
Maximum flame height	4	3	4	3	3	3	6	5	6	6	5	4	cm	-
Time of the maximum	16	15	16	16	15	15	13	13	12	14	14	14	s	
Flame tip reached the 150 mm test mark	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	≥ 20
Flame has extinguished before reaching the test mark	24	20	17	19	22	16	15	16	15	17	15	15	s	
Ignition of filter paper	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	1)
Smoke density	moderate						moderate						-	-
Afterburning time	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	./.	s	-
View of the samples after the test (20 seconds after exposure the flame):														
- machine direction: destroyed length max. 4 cm, burned width app. 1,5 cm, above sooted														
- cross direction: destroyed length max. 7 cm, burned width app. 1,5 cm, above sooted														

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

