

to prove the fire behavior according to DIN 4102-1

File number FLT 3587316

**Outsourcer**

Outcome from 2016-06-21 Received on 2016-06-27

Sample material Uncoated, flat sheets of rigid PVC, marked "12050GR".  
(See sheet 2 for details)

Date of receipt 2016-06-27

**Test item** Testing for low flammability (building material class  
of the outside B1) according to DIN 4102-1

**Result** In freely suspended arrangement or at a distance of  
> 40 mm from the same or other flat building  
materials, the material meets the requirements for  
flame-retardant building materials (building material  
class B1) according to  
DIN 4102-1.  
(See sheet 5 for details)

**Period of validity**  
until 2021-07-31

**Sampling** The sample material was sent in by the client.

Note: If the above-mentioned building material (composite) is not used as a building product in accordance with MBO §2, Para. 9, No. 1, a general building inspection test certificate is not required. This test certificate does not apply if the tested building material is used as a building product in the sense of the national building regulations (MBO § 17, para. 3).

This test certificate does not

replace any necessary building authority

certificate of usability in accordance

with the state building code. This must be carried out by:

- a general technical approval or by
- a general test certificate for construction or by
- a consent in individual cases.

This test certificate can serve as a basis in the building inspection procedure

- for regulated construction products for the prescribed certificates of conformity
- for non-regulated construction products for the required usability certificates.

This test certificate consists of sheets 1 to 5 and 3 annexes



Prüfstelle für das  
Brandverhalten  
From building  
materials

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FÜZ-Stelle (LBO): BRA09

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## And recommending - .Uornvachandcertificalstelle

Prüfzeugnisse dürfen nur in vollem Wortlaut und ohne Zusätze veröffentlicht werden. Für veränderte Wiedergabe und Auszüge ist vorher die widerrufliche schriftliche Einwilligung der ausstellenden Prüfstelle einzuholen. Die Prüfergebnisse beziehen sich ausschließlich auf die untersuchten Prüfmaterialien.



## 1 Description of the experimental material

### 1.1 Sample material (as specified by the client):

The material delivered is uncoated sheets of rigid PVC. The material is to be used for the production of profiles or moldings and was given the trade name "12050GR".

### 1.2 Description of the material delivered:

For the tests, 15 uncoated, flat sheets of plastic measuring 1000 mm x 190 mm x 1.16 mm and 1000 mm x 190 mm x 3.18 mm were provided to the testing laboratory. The material was not marked and was designated by the client as "product code: 12050" and "CAB 621 wit 9016".

Color: white.

Material properties: see Section 4.1; photos: see Annex 1, 2. No further information is available to the inspection body, samples are deposited.

## 2 Manufacture of the test specimens

For the tests in the firing box, specimens with dimensions of 190 mm x 90 mm for edge flaming and specimens with dimensions of 230 mm x 90 mm for surface flaming were cut for each thickness.

For the tests in the fire shaft, 4 test specimens were made from 4 specimens each (dimensions 000 mm x 190 mm each). Specimen A was made of specimens with a thickness of 1.16 mm, specimens B, C and D of specimens with a thickness of 3.18 mm (details: see sheet 4).

All specimens were stored to constant weight prior to testing in accordance with DIN 50014-23/50-2.

## 3 Test execution

The tests in the fire box were carried out in accordance with DIN 4102-1, section 6.2.5 (building material class B2). The tests in the fire shaft were carried out in accordance with DIN 4102-1 and -16 (building material class B1).

All tests were performed in one layer, in a freely suspended arrangement. Performance of the tests: July 2016.

## 4 Results

- Section 4.1 Material properties
- Section 4.2. 1 Tests in the firing box, see Appendix 3
- Section 4.2. 2 Tests in the fire shaft

### 4.1 Material properties

Table 1

Designation	Manufacturer's data		Measured values	
	ROhdensit y [kg/m ] <sup>l</sup>	Thickness [mm]	Basis weight [kg/m ] <sup>2</sup>	Thickness (i.M.) [mm] s
"12050GR"	ca. 1550	./.	1,621	1,16 0,015
		./.	4,764	3,18 0,021

i.M. on average  
s Standard deviation  
./ No data



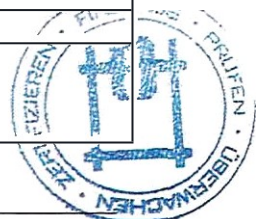


Results of the fire shaft test (part 2)								
Line no.	Fire shaft inspection	Measured values specimen						Requirements
		A	B	C	D	E	F	
17	Afterburning after end of test Duration.....min:s	No	No	No	No		-	
18	Burning fallen probe parts							
19	Number of specimens Front							
20	side of specimen Back side of							
21	specimen Flame length.....cm							
22	Post-olims after the end of the test	No	No	No	No	-	-	
23	Duration .....min:s							
24	Number of samples							
25	Location of							
26	occurrence bottom							
27	half of sample top							
28	half of sample							
29	front/back side of							
30	sample Smoke							
31	density	116	206	232	236		-	
32	< 400 % min	./.	./.	./.	./.			
33	> 400 % min (very strong smoke development)	1	3	5	7	-		
34	Diagram in Fig. no.							
35	Restlängen							
36	Individual values.....cm	43	44	40	46	-	-	
37		54	43	44	50			
38		58	39	44	48			
39		52	37	48	48			
40	Mean value .....cm	51	40	44	48			
41	Photo of the specimen							
42	on picture no.	2	4	6	8		-	
43	Smoke gas temperature							
44	Maximum Average .....°C	114	121	120	118	-	-	< 200
45	Time* .....min:s	9:28	4:06	9:58	9:58			
46	Diagram on picture no.	1	3	5	7			
47	Remarks: Line 13: Duration of continued burning of sample parts on the sieve bottom of < 20 sec. is not considered burning dripping/falling. Line 32: Due to the remaining residual length of > 45 cm (specimen A). further tests could be dispensed with. (Diagrams and photos see appendices 1, 2)							

1) Time data from start of test No  
data / not checked No occurrence  
./.

2) Must not give rise to any complaints

Specimen	Test no.	Variant (thickness)
A	587316-001	1.16 mm
B	587316-002	
C	567316-003	3.18 mm
D	587316-004	



## 5 Beurteilung

In section 4.2, the test results of the test material described in section 1 and 4.1 were compiled and compared with the requirements of DIN 4102-1. The above test results show that the requirements for class B1 building materials were met by the tested building material in a thickness of 1.16 - 3.18 mm at a distance of > 40 mm from the same or other flat building materials.

The requirements for class B2 building materials were also met, and burning drop-off/dropping did not occur during these tests.

The proof of use

- in the outdoor area (aging behavior due to outdoor weathering) was not conducted.

## 6 Special notes

The results given apply only to the building material described in Section 1. When combined with additional materials (coating, substrate), the fire behavior may change.

This test certificate does not apply if the building material is used as a building product in the sense of the state building regulations (MBO § 17, Para. 3).

The test certificate is not a substitute for a general building authority approval or a general building authority test certificate. It is issued without prejudice to any rights of third parties.

This test certificate can serve as a basis in the building inspection procedure

- for regulated construction products for the prescribed certificates of conformity
- for non-regulated construction products for the required usability certificates

The explanations in DIN 4102-1 Annex D, in particular on third-party inspection, must be particularly observed.

The validity of this test certificate expires on 2021-07-31, if the test specifications change and assessment bases, following the state of the art, do not change prematurely. Borkheide,

August 4, 2016



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



Clerk / Examiner (Dipl.-  
Ing. Manfred Sailer)



Specimen A

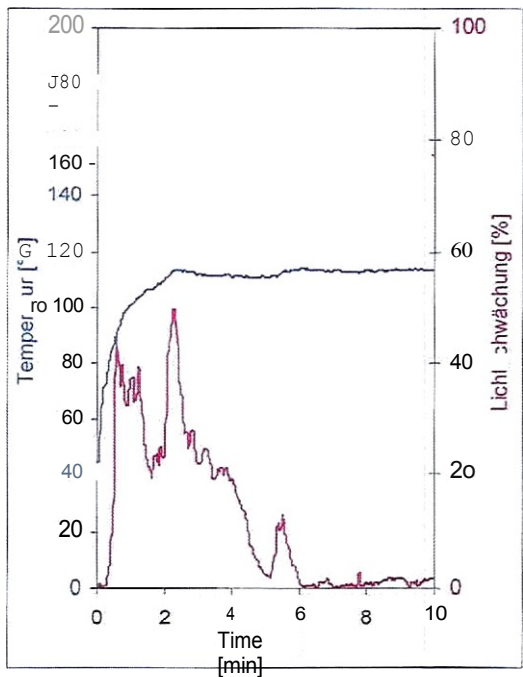
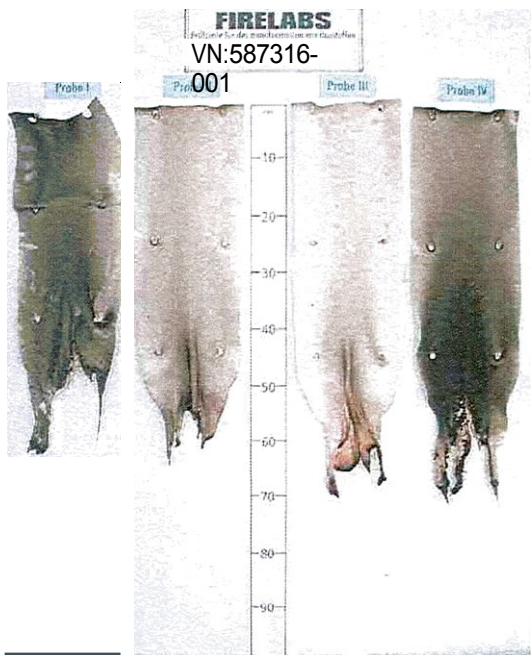


Image  
Time course of smoke temperature  
smoke density



1Image 2  
Appearance of samples after testing and

Specimen B

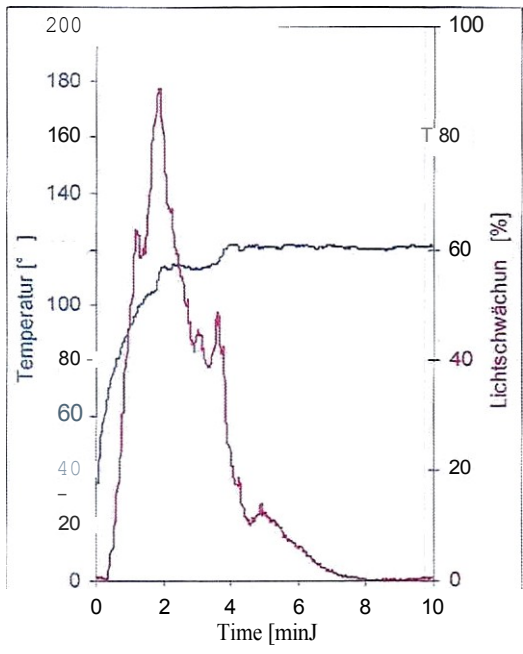
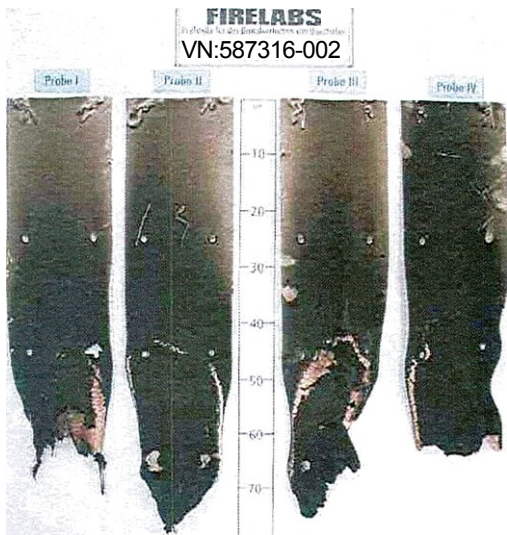
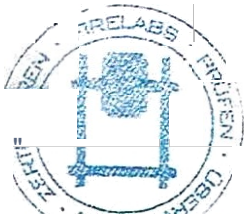


Image  
Time course of Smoke gas temperature  
smoke density



3Image 4  
Appearance of samples after testing and





Specimen C

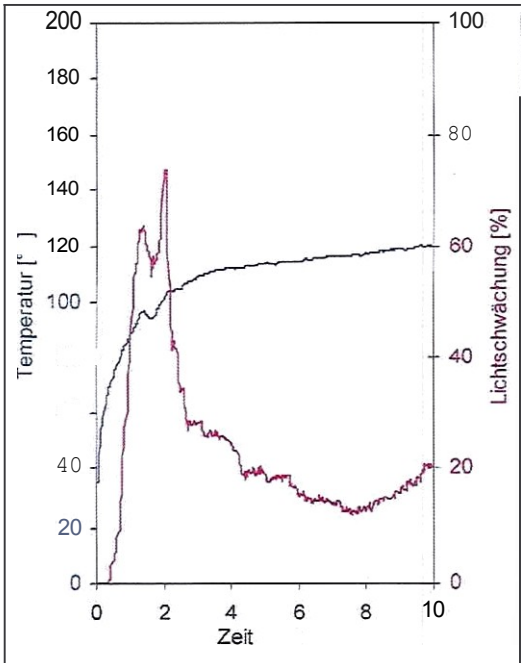
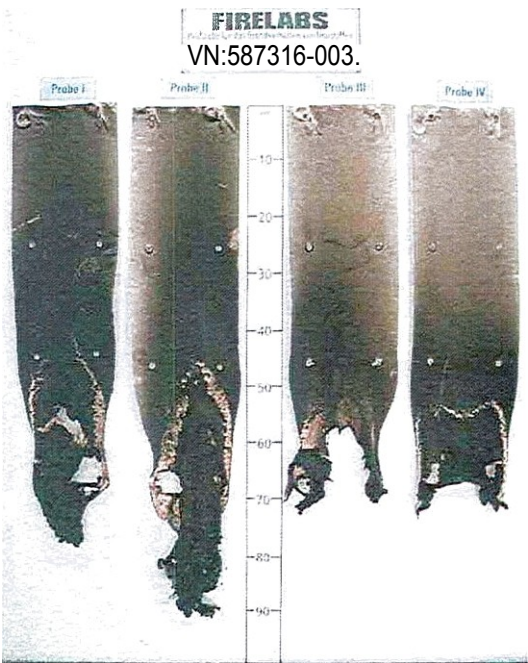


Image  
Time course of smoke temperature  
and smoke density



5Image 6  
Appearance of samples after testing

Specimen D

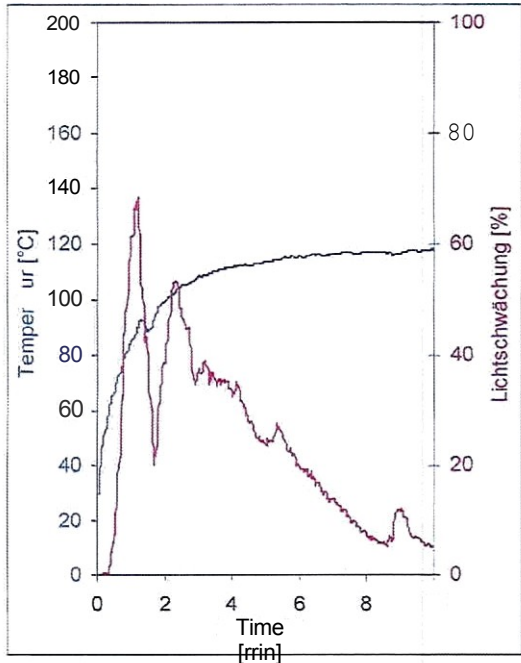


Image 7  
Time course of the flue gas temperature  
and the smoke density

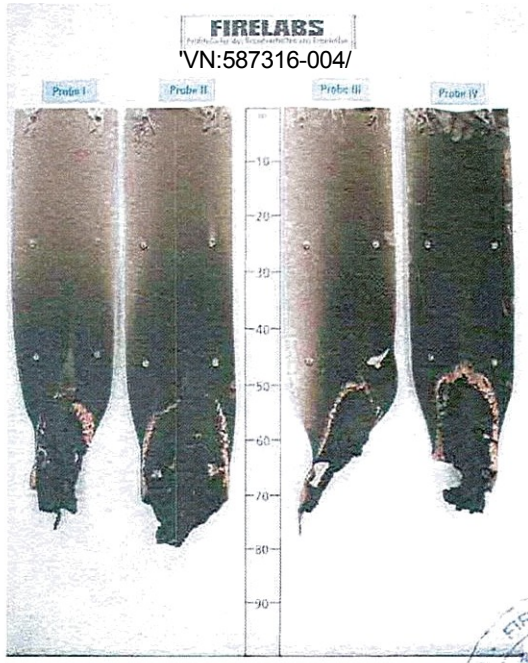


Image 8  
Appearance of the specimens after  
testuq



Results of the tests in the firing box Table

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Variant (thickness)	Dim.	1.16 mm							3.18 mm							Require- rations
Sample no.		1	2	3	4	5	6	-	1	2	3	4	5	6	-	
Ignition	s	2	2	2	2	2	5		2	2	2	2	2	7		
Greatest flame height	cm	3	3	3	3	3	3	-	3	3	3	3	3	2		
Time of occurrence	s	16	15	15	16	15	13		12	13	12	12	13	15		
Flame tip at the Measuring mark	s	J.	J.	J.	J.	J.	J.		J.	J.	J.	J.	J.	J.	-	a20
Extinguishing the flames before reaching the measuring mark	s	16	16	16	16	16	16		16	16	16	16	16	16	-	
Ignition of the filter paper	s	J.	J.	J.	J.	J.	J.		J.	J.	J.	J.	J.	J.		1)
Roughing (visual)					ark							ar				
Continued burning after end of test	s	J.	J.	J.	J.	J.	J.		J.	J.	J.	J.	J.	J.		
Flames extinguished after	s	J.	J.	J.	J.	J.	J.		J.	J.	J.	J.	J.	J.		

, appearance of the samples after the experiments (20 seconds after the start of the experiment):

The samples were in the area of the flame attack point up to a max. height of approx. 2 cm and approx. 1.5 cm wide destroyed, above sooted to the upper edge of the specimen

1) no flaming within 20 seconds

J. no occurrence of the event

Dim. Dimension

2 Time data from start of test

Dimensional data from flame reference line

