CERTIFICATES

TEST REPORT

No. : GP080701203
Date : Aug.18,2008
Page: 1 of 2

PLATO PLASTIC CO., LTD
DAYUAN VILLAGE HENGLI TOWN NANSHA DISTRICT GUANGZHOU CITY GUANGDONG CHINA

The following sample(s) was/ were submitted and identified on behalf of the client as:

Sample Name	:	PVC TARPAULIN
Manufacturer	:	GUANGZHOU PLATO PLASTIC CO., LTD
Test Required	:	Selected test(s) as requested by applicant
Test Method	:	With reference to DIN 4102-1:1998 clause 6.1
Date of Receipt	:	Jul.08,2008
Test Period	:	Jul.08,2008 to Aug.18,2008
Test result(s)	:	Please refer to the following page(s)

******** To be continued********

Signed for and on behalf of
SGS-CSTC Ltd.

May Huo
Engineer

GZML 085241

198 KEZHU Road, SCIENTECH Park Guangzhou Economic & Technology Development District, Guangzhou, China 510663 t (86-20)82155678 f (86-20)82075080 www.cn.sgs.com
中国·广州·经济技术开发区科学城科珠路198号 邮编: 510663 t (86-20)82155678 f (86-20)82075080 e sgs.china@sgs.com

TEST REPORT

No. : GP080701203
Date : Aug.18,2008
Page: 2 of 2

Test Result(s):

Sample description: textile

Test item	Criteria for classification	Result	Conclusion
Flammability test	Meet the requirements for class B2 materials	Flaming does not reach the gauge mark within 20 seconds after flame application with bottom edge ignition and no drops.	pass
	The mean value for the residual length of each specimen is at least 15cm and no individual values are lower than 0cm ,the mean effluent temperature does not exceed 200℃ in any test	Averages residual length of 4 sets of specimens: 402mm, 408mm, 400mm, 410mm. (Minimum residual length for individual specimen:393mm) Averages mean effluent temperature of 4sets of specimens: 164℃, 162℃, 164℃, 161℃.	pass

Final conclusion: The tested material met the requirements for class B1 materials according to DIN 4102-1:1998 clause 6.1

Note: The above test has been subcontracted to the accredited laboratory.

********End of report********

GZML 085242

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Test Report
(SVHC)

No. SHAHC1308029801 Date: 16 Apr 2013 Page 1 of 7

ZHEJIANG MSD NEW MATERIAL CO.,LTD
NO.11,HONGQI ROAD,WARP KNITTING INDUSTRIAL PARK OF HAINING,ZHEJIANG,CHINA

The following sample(s) was/were submitted and identified on behalf of the client as : PVC COATED BANNER

SGS Job No. :	SHHG1301011641SD - SH
Manufacturer :	ZHEJIANG MSD NEW MATERIAL CO.,LTD
Supplier :	ZHEJIANG MSD NEW MATERIAL CO.,LTD
SGS Ref No. :	AJI2013011946
Date of Sample Received :	08 Apr 2013
Testing Period :	08 Apr 2013 - 16 Apr 2013
Test Requested :	As requested by client, SVHC screening is performed according to: (i) Some substances in the Candidate List of Substances of Very High Concern (SVHC) for authorization published by European Chemicals Agency (ECHA) on and before Dec 18, 2012 regarding Regulation (EC) No 1907/2006 concerning the REACH.
Test Results :	Please refer to next page(s).

Signed for and on behalf of
SGS-CSTC Ltd.

J.J Fan
Approved Signatory

Remark :

(1) The chemical analysis of specified SVHC is performed by means of currently available analytical techniques against the following SVHC related documents published by ECHA:
http://echa.europa.eu/web/guest/candidate list table
These lists are under evaluation by ECHA and may subject to change in the future.

(2) Concerning article(s):
In accordance with Regulation (EC) No 1907/2006, any EU producer or importer of articles shall notify ECHA, in accordance with paragraph 1 of Article 7, if a substance meets the criteria in Article 57 and is identified in accordance with Article 59(1) of the Regulation, if (a) the substance in the Candidate List is present in those articles in quantities totaling over one tonne per producer or importer per year; and (b) the substance in the Candidate List is present in those articles above a concentration of 0.1% weight by weight (w/w).

Article 33 of Regulation (EC) No 1907/2006 requires supplier of an article containing a substance meeting the criteria in Article 57 and identified in accordance with Article 59(1) in a concentration above 0.1% weight by weight (w/w) shall provide the recipient of the article with sufficient information, available to the supplier, to allow safe use of the article including, as a minimum, the name of that substance in the Candidate List.

SGS adopts the interpretation of ECHA for SVHC in article unless indicated otherwise. Detail explanation is available at the following link.
http://webstage.contribute.sgs.net/corpreach/documents/SGS-0115_SVHC-paper-HN-11.pdf

(3) Concerning material(s).
Test results in this report are based on the tested sample. This report refers to testing result of tested sample submitted as homogenious material(s). In case such material is being used to compose an article, the results indicated in this report may not represent SVHC concentration in such article. If this report refers to testing result of composite material group by equal weight proportion, the material in each composite test group may come from more than one article.

If the sample is a substance or mixture, and it directly exports to EU, client has the obligation to comply with the supply chain communication obligation under Article 31 of Regulation (EC) No 1907/2006 and the conditions of Authorization of substance of very high concern included in the Annex XIV of the Regulation (EC) No. 1907/2006.

(4) Concerning substance and preparation:
If a SVHC is found over 0.1% (w/w) and/or the specific concentration limit which is set in Regulation (EC) No 1272/2008 and No 790/2009, client is suggested to prepare a Safety Data Sheet (SDS) against the SVHC to comply with the supply chain communication obligation under Regulation (EC)

No 1907/2006, in which:

a substance that is classified as hazardous under the CLP Regulation (EC) No 1272/2008;

a mixture that is classified as dangerous according Dangerous Preparations Directive 1999/45/EC or classified as hazardous under the CLP Regulation (EC) No 1272/2008, when their concentrations are equal to, or greater than, those defined in the Article 3(3) of 1999/45/EC or the lower values given in Part 3 of Annex VI of Regulation (EC) No. 1272/2008; or

a mixture is not classified as dangerous under Directive 1999/45/EC, but contains either:
(a) a substance posing human health or environmental hazards in an individual concentration of ≥ 1 % by weight for mixtures that are solid or liquids (i.e., non gaseous mixtures) or > 0.2 % by volume for gaseous mixtures; or
(b) a substance that is PBT, or vPvB in an individual concentration of > 0.1 % by weight for mixtures that are solid or liquids (i.e., non gaseous mixtures), or
(c) a substance on the SVHC candidate list (for reasons other than those listed above), in an individual concentration of > 0.1 % by weight for non gaseous mixtures, or
(d) a substance for which there are Europe-wide workplace exposure limits.

(*) If a SVHC is found over the reporting limit, client is suggested to identify the component which contains the SVHC and the exact concentration of the SVHC by requesting further quantitative analysis from the laboratory.

Test Sample :

Sample Description :

Specimen No.	SGS Sample ID	Description
1	SHA13-[illegible]-001	White plastic film

Test Method :
SGS In-House method-SITC-CIICM-SOP-87-T, SITC-CIICM-SOP-302-T. Analyzed by ICP-OES, GC-MS, and UV-VIS,Colorimetric Method/HPLC.

(SVHC)

Test Result : (Substances in the Candidate List of SVHC)

NO.	Substance Name	CAS No.	EC No.	001 Concentration (%)	RL (%)
1	1,2-Benzenedicarboxylic acid, di-C6-8 branched alkyl esters, C7 rich	71888-89-6	276-158-1	ND	0.050
2	1,2-Benzenedicarboxylic acid, di-C7-11-branched and linear alkyl esters	68515-42-4	271-084-6	ND	0.050
3	1,2,3-trichloropropane	96-18-4	202-486-1	ND	0.0050
4	1-methyl-2-pyrrolidone	872-50-4	212-828-1	ND	0.0050
5	2,4-Dinitrotoluene	121-14-2	204-450-0	ND	0.050
6	2-Ethoxyethanol	110-80-5	203-804-1	ND	0.050
7	2-ethoxyethyl acetate	111-15-9	203-839-2	ND	0.0050
8	2-Methoxyethanol	109-86-4	203-713-7	ND	0.0050
9	4,4-Diaminodiphenylmethane(MDA)	101-77-9	202-974-4	ND	0.050
10	5-tert-butyl-2,4,6-trinitro-m-xylene (musk xylene)	81-15-2	201-329-4	ND	0.050
11	Acrylamide	79-06-1	201-173-7	ND	0.0050
12	Alkanes, C10-13, chloro (Short Chain Chlorinated Paraffins)	85535-84-8	287-476-5	ND	0.050
13	Aluminosilicate Refractory Ceramic Fibres *	650-017-00-8 (Index no.)		ND	0.0005
14	Ammonium dichromate*	7789-09-5	232-143-1	ND	0.005
15	Anthracene	120-12-7	204-371-1	ND	0.0050
16	Anthracene oil*	90640-80-5	292-602-7	ND	0.0050
17	Anthracene oil, anthracene paste*	90640-81-6	292-603-2	ND	0.050
18	Anthracene oil, anthracene paste, anthracene fraction*	91995-15-2	295-275-9	ND	0.050

NO.	Substance Name	CAS No.	EC No.	001 Concentration (%)	RL (%)
19	Anthracene oil, anthracene paste, distn. lights*	91995-17-4	295-278-5	ND	0.050
20	Anthracene oil, anthracene-low*	90640-82-7	292-604-8	ND	0.050
21	Benzyl butyl phthalate (BBP)	85-68-7	201-622-7	ND	0.050
22	Bis (2-ethylhexyl)phthalate (DEHP)	117-81-7	204-211-0	ND	0.050
23	Bis(tributyltin)oxide (TBTO)	56-35-9	200-268-0	ND	0.050
24	Boric acid*	10043-35-3, 11113-50-1	233-139-2 234-343-4	ND	0.005
25	Chromic acid, Dichromic acid, Oligomers of chromic acid and dichromic acid*	7738-94-5, 13530-68-2	231-801-5 236-881-5	ND	0.005
26	Chromium trioxide*	1333-82-0	215-607-8	ND	0.005
27	Cobalt carbonate*	513-79-1	208-169-4	ND	0.005
28	Cobalt diacetate*	71-48-7	200-755-8	ND	0.005
29	Cobalt dichloride*	7646-79-9	231-589-4	ND	0.005
30	Cobalt dinitrate*	10141-05-6	233-402-1	ND	0.005
31	Cobalt sulphate*	10124-43-3	233-334-2	ND	0.005
32	Diarsenic pentaoxide*	1303-28-2	215-116-9	ND	0.005
33	Diarsenic trioxide*	1327-53-3	215-481-4	ND	0.005
34	Dibutyl phthalate (DBP)	84-74-2	201-557-4	ND	0.050
35	Diisobutyl phthalate	84-69-5	201-553-2	ND	0.050
36	Disodium tetraborate, anhydrous*	1303-96-4, 1330-43-4, 12179-04-3	215-540-4	ND	0.005
37	Hexabromocyclododecane (HBCDD) and all major diastereoisomers identified (α-HBCDD, β-HBCDD, γ-HBCDD)Δ	25637-99-4 3194-55-6	247-148-4 and 221-695-9	ND	0.050

NO.	Substance Name	CAS No.	EC No.	001 Concentration (%)	RL (%)
38	Hydrazine	7803-57-8 302-01-2	206-114-9	ND	0.050
39	Lead chromate*	7758-97-6	231-846-0	ND	0.005
40	Lead chromate molybdate sulphate red (C.I. Pigment Red 104)*	12656-85-8	235-759-9	ND	0.005
41	Lead hydrogen arsenate*	7784-40-9	232-064-2	ND	0.005
42	Lead sulfochromate yellow (C.I. Pigment Yellow 34)*	1344-37-2	215-693-7	ND	0.005
43	Pitch, coal tar, high temp.*	65996-93-2	266-028-2	ND	0.050
44	Potassium chromate*	7789-00-6	232-140-5	ND	0.005
45	Potassium dichromate*	7778-50-9	231-906-6	ND	0.005
46	Sodium chromate*	7775-11-3	231-889-5	ND	0.005
47	Sodium dichromate*	7789-12-0 10588-01-9	234-190-3	ND	0.005
48	Strontium chromate*	7789-06-2	232-142-6	ND	0.005
49	Tetraboron disodium heptaoxide, hydrate*	12267-73-1	235-541-3	ND	0.005
50	Trichloroethylene	79-01-6	201-167-4	ND	0.050
51	Triethyl arsenate*	15606-95-8	427-700-2	ND	0.005
52	Tris(2-chloroethyl)phosphate	115-96-8	204-118-5	ND	0.050
53	Zirconia Aluminosilicate Refractory Ceramic Fibres* •	650-017-00-8 (Index no.)		ND	0.005

Notes :

(SVHC)

(1) RL = Reporting Limit. All RL are based on homogenous material

(2) ND = Not detected (lower than RL). ND is denoted on the SVHC substance.

(3) " The test result is based on the calculation of selected element(s) / marker(s) and to the worst-case scenario. For detail information, please refer to the SGS REACH website: www.reach.sgs.com/substance-of-very-high-concern-candidate-list/. Calculated concentration of boric compounds are based on the water extractive boron and sodium by ICP-OES.

RL = 0.005% is evaluated for element (i.e. cobalt, arsenic, lead, sodium, chromium, chromium (VI), aluminum, zirconium, potassium, and strontium respectively), except molybdenum RL: 0.0005%, boron RL: 0.0025 %(only for Lead bis (tetrafluoroborate)).

(4) + On Jun 18, 2012, ECHA consolidated two entries of aluminosilicate refractory ceramic fibres and two of zirconia aluminosilicate refractory ceramic fibres in the Candidate List of SVHC for authorization published in Jan 2010 and Dec 2011 into one entry for aluminosilicate refractory ceramic fibres and one for zirconia aluminosilicate refractory ceramic fibres.

Sample photo:

SHA13-055250.001

SGS authenticate the photo on original report only

*** End of Report ***

X-GLOO INFLATABLE DISPLAY WALL WIND-RESISTANCE CERTIFICATE

FORCES

BASIS:

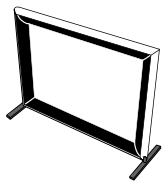
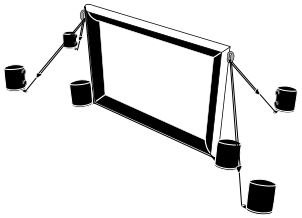
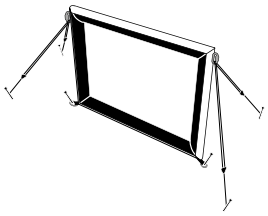
- Wind Speed: 3.6 m/s = 1 km/h
- Density of the flowing medium: 1.224 kg/m³
- Drag Coefficient: 1 (Safety factor of 1.5; estimated actual drag coefficient of 0.6
- Friction of Ballast Barrel and ground: 1 [material: rubber-to-asphalt]

Surface Area
6,75m² (64.6ft²)

Total Force (T) [daN]		
30 km/h wind speed (18.7 mph)	40 km/h wind speed (25 mph)	60 km/h wind speed (37.3 mph)
with standard-material Wall Print		
57,01	101,34	228,03
with mesh-material Wall Print		
38,00	67,56	152,02

ANCHORING OPTIONS

The chart below shows various anchoring/support options which may be used when setting up the Inflatable Display Wall as well as what wind speeds they are rated to withstand.

Aluminum Supports	Water-Filled Inflatable Support	Water Ballast Barrels (x6)	Tent Pegs (x6)
			
with standard-material Wall Print			
Wind speeds up to **3 km/h**	Wind speeds up to **30 km/h**	Wind speeds up to **40 km/h**	Wind speeds up to **40 km/h***
with mesh-material Wall Print			
Wind speeds up to **5 km/h**	Wind speeds up to **40 km/h**	Wind speeds up to **60 km/h**	Wind speeds up to **60 km/h***

** This wind speed rating does not apply when the Display Wall is set up and anchored on loose or soft ground surfaces; e.g. sand or mud.*

X-GLOO Creative Event Equipment

X-GLOO Creative Event Equipment	
Skywalk GmbH & Co. KG, Windeckstr. 4, 83250 Marquartstein, Germany	
Ballast reccomendations based on anticipated wind speed and direction. *User note: These recommendations are valid only in cases where the Inflatable Display Wall is properly set up and anchored. Improper setup can also result in damage to the Display Wall and possible injury to people in the surrounding area.*	
Approval:	Date: 08.09.2015

M F P A L e i p z i g G m b H

Anerkannte Prüfstelle für Baustoffe, Bauteile und Bauarten

PÜZ-Stelle nach Landesbauordnung (SAC 02), Bauproduktengesetz (NB 0800)

DAkkS Deutsche Akkreditierungsstelle D-PL-11021-01-00

Durch die DAkkS GmbH nach DIN EN ISO/IEC 17025 akkreditiertes Prüflaboratorium. Die Akkreditierung gilt für die in der Urkunde aufgeführten Prüfverfahren, die unter www.mfpa-leipzig.de eingesehen werden kann.

Business division III – Structural fire protection

Head of business division: Dr.-Ing. Peter Nause

Working group 3.1 – Fire behaviour of structural components

-Certified translation from German -

Test Certificate

PZ 3.1/11-096-2

dated 07/06/2011 1st copy

Client:	[redacted]
Subject matter:	Test for low flammability (building material class B1) according to DIN 4102 Part 1, May 1998 issue
Object:	Woven and knitted fabrics of polyethylene, color white
Order date:	11/01/2011
Samples received on:	17/01/2011 (file number DZ 3.1/11-011)
Sampling:	by client
Identification:	without
Test date:	08/ 20/04/18/05/2011 (test in fire shaft), 12/04 /18/05/2011 (test in fire box)
Prepared by:	Dipl.-Phys. Günter Brinkmann

This test certificate includes 12 text sheets and 11 Annexes.

Gesellschaft für Materialforschung und Prüfungsanstalt für das Bauwesen Leipzig mbH
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Handelsregister: Amtsgericht Leipzig HRB 177 19
Ust.-Nr.: DE 813200649
Bankverbindung: Sparkasse Leipzig
Kto.-Nr. 1100 560 781
BLZ 860 555 92

1 Description of material

According to the client, the building products to be tested were white woven and/or knitted fabrics of polyester provided with a flame-proofing agent.
According to the client, the products with the designation 350FRn and 3152FRn were provided with an alternative flame-proofing agent as compared with the other products.
According to the client, the materials are used for the fabrication of banners and flags inside of buildings. According to the client, the materials were not backed by other materials when used in the building industry.

No other information about the materials and their use were available to the test board.

2 Preparation of samples

The samples for the fire tests were cut to size at the test site from material which was provided by the client.
The samples were taken from the longitudinal and transverse direction of the material.

3 Material parameters

Parameters provided by client:

Designation:	Weight per unit area [g/m²]:
2187FR knitted fabric	approx. 50
3153FR knitted fabric	approx. 280
637FR woven fabric	approx. 68
6083FR woven fabric	approx. 330

MFPA Leipzig determined the following parameters:

Designation:	Weight per unit area [g/m²]:
2187FR knitted fabric	approx. 46
3153FR knitted fabric	approx. 277
637FR woven fabric	approx. 65
6083FR woven fabric	approx. 345
350FRn	approx. 112
3152FRn	approx. 205

4 Testing

The tests were carried out according to DIN 4102 Part 1 (May 1998 issue), DIN 4102 Part 15 (May 1990 issue) and DIN 4102 Part 16 (May 1998 issue).

The tests at the above materials were carried out in the fire shaft according to DIN 4102 Part 1, Section 6.1.2.2 and in the fire box according to DIN 4102 Part 1, Section 6.2.5.2 with the samples in freely suspended arrangement.

5 Test results

The test results are summarized in the following tables 1 to 5.

Table 1: Test in fire shaft according to DIN 4102 Part 1, Section 6.1.2.2

Woven and/or knitted fabric of polyester, color white,
Freely suspended sample arrangement;

Specimen A: Woven fabric 637FR, samples from longitudinal direction,
Specimen B: Woven fabric 6083FR, samples from transverse direction,
Specimen C: Knitted fabric 2187FR, samples from longitudinal direction,
Specimen D: Knitted fabric 3153FR, samples from transverse direction;

Line No.			Measuring values for specimen A	B	C	D
1	No. of sample arrangement acc. to DIN 4102 Part 15, Table 1		1	1	1	1
2	Maximum flame height above bottom edge of sample	cm	35	40	30	35
3	Time*)	min:s	0:15	0:05	0:02	2:00
4	Melting through/burning through Time*)	min:s	0:02	0:05	0:02	0:04
5	Findings at the rear side of sample Flames/glowing Time*)	min:s	./.	./.	./.	./.
6	Discoloration Time*)	min:s	./.	./.	./.	./.
7	Burning dripping down Beginning*)	min:s	./.	./.	./.	./.
8	Extent: occasionally dripping down sample material		-	-	-	-
9	Continuously dripping down sample material		-	-	-	-
10	Burning dropping down sample parts Beginning*)	min:s	./.	./.	./.	./.
11	Extent: occasionally dropping down sample parts		-	-	-	-
12	Continuously dropping down sample parts		-	-	-	-
13	Period of continued burning at screen plate (max.)	min:s	-	-	-	-
14	Impairment of burner flame by dripping down/dropping down parts Time*)	min:s	./.	./.	./.	./.
15	Premature end of test End of fire at samples*)	min:s	./.	./.	./.	./.
16	Time of aborted test, if any*)	min:s	./.	./.	./.	./.

*) Time from beginning of test
./. Event did not occur
- No information

Table 1 continued:

Line No.			Measuring values for specimen A	B	C	D
	<u>After-burning at end of test</u>					
17	Period	min:s	./.	./.	./.	./.
18	Number of samples		-	-	-	-
19	Front side of sample		-	-	-	-
20	Rear side of sample		-	-	-	-
21	Flame length	cm	-	-	-	-
	<u>After-glowing at end of test</u>					
22	Period	min:s	./.	./.	./.	./.
23	Number of samples		-	-	-	-
	Point of occurrence:					
24	Bottom sample half		-	-	-	-
25	Top sample half		-	-	-	-
26	Front side of sample		-	-	-	-
27	Rear side of sample		-	-	-	-
	<u>Smoke density</u>					
28	max. 400 % min	%min	< 1	2	< 1	4
29	> 400 % min (very strong smoke development)	%min	./.	./.	./.	./.
30	Diagram in Annex No.		4	5	6	7
	<u>Residual lengths</u>					
31	Individual values	cm	69; 70 69; 68	65; 62 66; 64	62; 61 72; 54	63; 64 62; 62
32	Mean value	cm	69	64	62	63
33	Photo of specimen in Annex No.		1	1	2	2
	<u>Flue gas temperature</u>					
34	Maximum of mean value	°C	119	112	120	116
35	Time*)	min:s	7:26	2:18	9:22	9:46
36	Diagram in Annex No.		4	5	6	7
37	<u>Remarks:</u> - none;					

*) Time from beginning of test
./. Event did not occur
- No information

Table 2: Test in fire shaft according to DIN 4102 Part 1, Section 6.1.2.2

Woven and/or knitted fabric of polyester, color white,
Freely suspended sample arrangement;

Specimen E: Woven fabric 6083FR, samples from longitudinal direction,
Specimen F: Knitted fabric 2187FR, samples from transverse direction,
Specimen G: 350FRn, samples from longitudinal direction,
Specimen H: 3152FRn, samples from longitudinal direction;

Line No.			Measuring values for specimen E	F	G	H
1	No. of sample arrangement acc. to DIN 4102 Part 15, Table 1		1	1	1	1
2	Maximum flame height above bottom edge of sample	cm	40	35	40	40
3	Time*)	min:s	0:15	0:10	0:05	0:05
4	Melting through/burning through Time*)	min:s	0:05	0:01	0:02	0:04
5	Findings at the rear side of sample Flames/glowing Time*)	min:s	./.	./.	./.	./.
6	Discoloration Time*)	min:s	./.	./.	./.	./.
7	Burning dripping down Beginning*)	min:s	./.	./.	0:10	0:12
8	Extent: occasionally dripping down sample material		-	-	yes	yes
9	Continuously dripping down sample material		-	-	no	no
10	Burning dropping down sample parts Beginning*)	min:s	./.	./.	./.	./.
11	Extent: occasionally dropping down sample parts		-	-	-	-
12	Continuously dropping down sample parts		-	-	-	-
13	Period of continued burning at screen plate (max.)	min:s	-	-	0:00	0:00
14	Impairment of burner flame by dripping down/dropping down parts Time*)	min:s	./.	./.	./.	./.
15	Premature end of test End of fire at samples*)	min:s	./.	./.	./.	./.
16	Time of aborted test, if any*)	min:s	./.	./.	./.	./.

*) Time from beginning of test
./. Event did not occur
- No information

Table 2 continued:

Line No.			Measuring values for specimen E	F	G	H
	After-burning at end of test					
17	Period	min:s	./.	./.	./.	./.
18	Number of samples		-	-	-	-
19	Front side of sample		-	-	-	-
20	Rear side of sample		-	-	-	-
21	Flame length	cm	-	-	-	-
	After-glowing at end of test					
22	Period	min:s	./.	./.	./.	./.
23	Number of samples		-	-	-	-
	Point of occurrence:					
24	Bottom sample half		-	-	-	-
25	Top sample half		-	-	-	-
26	Front side of sample		-	-	-	-
27	Rear side of sample		-	-	-	-
	Smoke density					
28	max. 400 % min	%min	3	< 1	< 1	1
29	> 400 % min (very strong smoke development)	%min	./.	./.	./.	./.
30	Diagram in Annex No.		8	9	10	11
	Residual lengths					
31	Individual values	cm	73; 69 65; 67	54; 58 67; 58	68; 69 68; 69	69; 68 70; 69
32	Mean value	cm	68	59	68	69
33	Photo of specimen in Annex No.		-	-	3	3
	Flue gas temperature					
34	Maximum of mean value	°C	117	120	115	120
35	Time*)	min:s	9:18	9:38	8:46	9:26
36	Diagram in Annex No.		8	9	10	11
37	Remarks: - none;					

*) Time from beginning of test
./. Event did not occur
- No information

Table 3: Test in fire box according to DIN 4102 Part 1, Section 6.2.5.2 (edge flaming)

Woven and/or knitted fabric of polyester, color white,
Freely suspended sample arrangement;

Samples 1, 3, 4 and 6: Longitudinal direction,
Samples 2 and 5: Transverse direction;

Samples 1 to 3: Woven fabric 637FR,
Samples 4 to 6: Woven fabric 6083FR;

Data acc. to DIN 4102 Part 1		Test results Sample No. 1	2	3	4	5	6
Inflammation	s	1	1	1	1	1	1
Max. flame height	mm	140	110	90	50	40	50
Time of occurrence	s	12	7	7	6	6	6
Flame peak at measuring mark	s	./.	./.	./.	./.	./.	./.
Extinguishing of flame prior to reaching the measuring mark	s	14	21	15	7	7	7
Continued burning after end of test	s	./.	./.	./.	./.	./.	./.
Ignition of filter paper	s	./.	./.	./.	./.	./.	./.

Appearance of samples after the fire tests:

The samples were damaged at the flaming side at a length of max. 140 mm and at the bottom edge at a width of max. 15 mm.

Burning dropping down/dripping down did not occur.

Smoke development (visual): low moderate strong very strong

./. Event did not occur

Table 4: Test in fire box according to DIN 4102 Part 1, Section 6.2.5.2 (edge flaming)

Woven and/or knitted fabric of polyester, color white,
Freely suspended sample arrangement;

Samples 1, 3 and 4: Longitudinal direction,
Samples 2, 5 and 6: Transverse direction;

Samples 1 to 3: Knitted fabric 2187FR,
Samples 4 to 6: Knitted fabric 3153FR;

Data acc. to DIN 4102 Part 1		Test results Sample No. 1	2	3	4	5	6
Inflammation	s	1	1	1	1	1	1
Max. flame height	mm	20	20	20	30	40	40
Time of occurrence	s	2	2	2	5	5	4
Flame peak at measuring mark	s	./.	./.	./.	./.	./.	./.
Extinguishing of flame prior to reaching the measuring mark	s	2	2	2	6	8	11
Continued burning after end of test	s	./.	./.	./.	./.	./.	./.
Ignition of filter paper	s	./.	./.	./.	./.	./.	./.

Appearance of samples after the fire tests:

The samples were damaged at the flaming side at a length of max. 140 mm and at the bottom edge at a width of max. 15 mm.

Burning dropping down/dripping down did not occur.

Smoke development (visual): low moderate strong very strong

./. Event did not occur

Table 5: Test in fire box according to DIN 4102 Part 1, Section 6.2.5.2 (edge flaming)

Woven and/or knitted fabric of polyester, color white,
Freely suspended sample arrangement;

Samples 1, 3 and 4: Longitudinal direction,
Samples 2, 5 and 6: Transverse direction;

Samples 1 to 3: 350FRn,
Samples 4 to 6: 3152FRn;

Data acc. to DIN 4102 Part 1		Test results Sample No. 1	2	3	4	5	6
Inflammation	s	1	1	1	1	1	1
Max. flame height	mm	20	20	20	40	40	40
Time of occurrence	s	2	2	2	3	2	2
Flame peak at measuring mark	s	./.	./.	./.	./.	./.	./.
Extinguishing of flame prior to reaching the measuring mark	s	3	2	2	3	3	3
Continued burning after end of test	s	./.	./.	./.	./.	./.	./.
Ignition of filter paper	s	./.	./.	./.	./.	./.	./.

Appearance of samples after the fire tests:

The samples were damaged at the flaming side at a length of max. 75 mm and at the bottom edge at a width of max. 20 mm.

Burning dropping down/dripping down did not occur.

Smoke development (visual): low moderate strong very strong

./. Event did not occur

6 Evaluation

6.1 Test in fire box according to DIN 4102 Part 1, Section 6.2.5.2

The white woven and knitted fabrics of polyester with the weight per unit area from approx. 46 g/m² to approx. 345 g/m² met the requirements of building material class B2 (normally inflammable) according to DIN 4102 Part 1, Section 6.2.

When tested according to DIN 4102 Part 1, Section 6.2.6, the materials are deemed non-burning dropping down (dripping down).

6.2 Test in fire shaft according to DIN 4102 Part 1, Section 6.1.2.2

The white woven and knitted fabrics of polyester with the weight per unit area from approx. 46 g/m² to approx. 345 g/m² in freely suspended sample arrangement met the test in the fire shaft according to DIN 4102 Part 1, Section 6.1.2.2.

When tested according to DIN 4102 Part 16, Section 9.3, the materials are deemed non-burning dropping down (dripping down).

The following evaluation shall be applicable to the following materials of white color:

2187FR
637FR
350FR
379FR
2152V3FR
3151FR
3153FR
6083FR
350FRn
3152FRn

Thus the above products can be classified in building class B1 (hardly inflammable) according to DIN 4102 under the following conditions:

- The above white woven and knitted fabrics of polyester with weights per unit area from approx. 46 g/m² to approx. 345 g/m² shall be arranged at a distance of > 40 mm to equal or other flat materials.
- When used as hardly inflammable materials, the above products shall not be exposed to the weather in the open area.

7 Specific notes

When installed permanently in buildings or building structures, banners and flags may be deemed building products according to § 2 Abs. 9 of the building regulations. Suitability of the above products as building products shall then be demonstrated by verification of applicability according to the regional building laws of the Federal Republic of Germany.

For the purpose of the procedure of the Building Inspectorate, this test certificate is used as basis for the prescribed verification of applicability.

This test certificate shall not substitute the general test certificate, if any, of the Building Inspectorate required in the procedure of the Building Inspectorate. It shall be used only as basis for the preparation of a general test certificate of the Building Inspectorate.

The results of the tests refer exclusively to the test objects described and not to the universe.

The validity of this test certificate expires on 07/04/2016.

Leipzig, 07/06/2011

Dr.-Ing. P. Nause
Head of business division

Dipl.-Phys. I. Kotthoff
Head of test board

Having been publicly appointed and generally sworn in as a translator for English by the President of the Leipzig Regional Court, I hereby certify the above translation of the document submitted to me as an original in the German language to be correct and complete.

Leipzig, 14/06//2011

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Hoch
Fladungen

Prüfinstitut für das Brandverhalten von Bauprodukten, Dipl.-Ing. (FH) Andreas Hoch
Bauaufsichtlich anerkannte Prüf-, Überwachungs- und Zertifizierungsstelle

PRÜFZEUGNIS
PZ-Hoch-140915

zum Nachweis des Brandverhaltens nach DIN 4102, Teil 1

ANERKANNTE PRÜF-, ÜBERWACHUNGS- UND ZERTIFIZIERUNGSSTELLE Hoch Fladungen

Antragsteller	[redacted]
Art des Prüfmaterials	Wirkware aus 100% Polyester in 2 verschiedenen Varianten Farbe: weiß
Bezeichnung des Prüfmaterials	[redacted]
Probenahme	durch den Antragsteller
Inhalt des Antrags	Prüfung auf Entflammbarkeit zur Einreihung in die Baustoffklasse B1 "schwerentflammbar" nach DIN 4102, Teil 1
Geltungsdauer des Prüfzeugnisses	31.05.2019
Ergebnis	**Die geprüften Produkte erfüllen freihängend oder im Abstand größer 40 mm zu gleichen oder anderen flächigen Baustoffen, die Anforderungen der Baustoffklasse B1 für schwerentflammbare Baustoffe nach DIN 4102, Teil 1 (Mai 1998).**

Das Prüfzeugnis umfasst 4 Seiten und 5 Anlagen.

Hinweis: Falls der o.g. Baustoff nicht als Bauprodukt gemäß MBO § 2, Abs. 9, Ziffer1, verwendet wird, ist ein allgemeines bauaufsichtliches Prüfzeugnis nicht erforderlich.
Dieses Prüfzeugnis gilt nicht, wenn der geprüfte Baustoff als Bauprodukt im Sinne der Landesbauordnungen verwendet wird (MBO § 17, Abs. 3).
Dieses Prüfzeugnis ersetzt nicht einen gegebenenfalls notwendigen baurechtlichen / bauaufsichtlichen Verwendbarkeitsnachweis nach Landesbauordnung. Dieser ist zu führen durch:

- eine allgemeine bauaufsichtliche Zulassung oder durch
- ein allgemeines bauaufsichtliches Prüfzeugnis oder durch
- eine Zustimmung im Einzelfall

Im bauaufsichtlichen Verfahren kann dieses Prüfzeugnis als Grundlage dienen

- bei geregelten Bauprodukten für die vorgeschriebenen Übereinstimmungsnachweise
- bei nicht geregelten Bauprodukten für die erforderlichen Verwendbarkeitsnachweise.

Das Prüfzeugnis darf ohne vorherige Zustimmung der Prüfstelle nur innerhalb des Geltungszeitraumes und nur nach Form und Inhalt unverändert veröffentlicht oder vervielfältigt werden.

1. Beschreibung des Versuchsmaterials im Anlieferungszustand

PN 19790: [redacted]

Wirkware aus 100% Polyester / Farbe: weiß
Es besteht kein Unterschied zwischen der Seite A und der Seite B.
Von der Prüfstelle ermittelte Kennwerte:
Dicke ≈ 0,40 mm Flächengewicht ≈ 195 g/m²

PN 19792: [redacted]

Wirkware aus 100% Polyester / Farbe: weiß
Es besteht kein Unterschied zwischen der Seite A und der Seite B.
Von der Prüfstelle ermittelte Kennwerte:
Dicke ≈ 0,36 mm Flächengewicht ≈ 153 g/m²

Weitere Angaben zur Zusammensetzung des geprüften Baustoffes liegen der Prüfstelle nicht vor. Muster sind hinterlegt.

2. Herstellung und Vorbehandlung der Proben

Aus dem Material wurden Proben mit den Abmessungen 1000 mm x 190 mm zur Beflammung im Brandschacht herausgeschnitten.
Die Proben wurden in einem Klima 23/50 bis zur Gewichtskonstanz gelagert.

3. Probenanordnung -freihängend-

#5600: PN 19790 Beflammung der Seite A in Kettrichtung
#5601: PN 19790 Beflammung der Seite B in Schussrichtung
#5602: PN 19792 Beflammung der Seite B in Schussrichtung

4. Prüfdatum KW 29 in 2014

5. Versuchsergebnisse Die Prüfung erfolgte gemäß DIN 4102 (Mai 1998)

Zeilen Nr.	Messwert-Art / Versuchs-Nr.	Messwert für Probekörper #5600 PN 19790	#5601 PN 19790	#5602 PN 19792	---	---	Dimension
Beflammung	Seite / Richtung	A Kette	B Schuss	B Schuss	---	---	
1	Nr. Probenanordnung gem. DIN 4102/T15, Tab. 1	1	1	1	---	---	
2	Maximale Flammenhöhe über Probenunterkante	30	30	30	---	---	cm
3	Zeitpunkt 1)	0:02	0:02	0:02	---	---	min:s
4	Durchschmelzen / Durchbrennen Zeitpunkt 1)	0:03	0:03	0:03	---	---	min:s
5	Feststellungen a. d. Probenrückseite Flammen/Glimmen Zeitpunkt 1)	--- /.	--- /.	--- /.	--- /.	--- /.	min:s
6	Verfärbungen Zeitpunkt 1)	--- /.	--- /.	--- /.	--- /.	--- /.	min:s
7	Brennendes Abtropfen Beginn 1)	/. /.	/. /.	/. /.	/.	/.	min:s
8	Umfang vereinzelt abtropfendes Probenmaterial 2)	/.	/.	/.	---	---	
9	stetig abtropfendes Probenmaterial 2)	---	---	---	---	---	
	Brennend abfallende Probenteile	/.	/.	/.	/.	/.	min:s

Zeilen Nr.	Messwert-Art	Messwert für Probekörper						Dimension
	Versuchs-Nr.	#5600 PN 19790	#5601 PN 19790	#5602 PN 19792	---	---		
Beflam-mung	Seite Richtung	A Kette	B Schuss	B Schuss	---	---		
10	Beginn [1]							
	Umfang							
11	vereinzelt abfallende Probenteile [2]	---	---	---	---	---		
12	stetig abfallende Probenteile [2]	---	---	---	---	---		
13	Dauer des Weiterbrennens auf dem Siebboden (max.)	./.	./.	./.	./.	./.		min:s
14	Beeinträchtigung der Brennerflamme durch abtropfendes/abfallendes Material: Zeitpunkt [1]	./.	./.	./.	./.	./.		min:s
15	Vorzeitiges Versuchsende							
16	Ende des Brandgeschehens an den Proben [1]	./.	./.	./.	./.	./.		min:s
	Zeitpunkt d. ggf. erfolgten Versuchsabbruchs [1]	./.	./.	./.	./.	./.		min:s
	Nachbrennen nach Versuchsende							
17	Dauer [1]	./.	./.	./.	./.	./.		min:s
18	Anzahl der Proben	---	---	---	---	---		
19	Probenvorderseite [2]	---	---	---	---	---		
20	Probenrückseite [2]	---	---	---	---	---		
21	Flammenlänge	---	---	---	---	---		cm
	Nachglimmen nach Versuchsende	---	---	---	---	---		
22	Dauer [1]	./.	./.	---	---	---		min:s
23	Anzahl der Proben	---	---	---	---	---		
	Ort des Auftretens							
24	Untere Probenhälfte [2]	---	---	---	---	---		
25	Obere Probenhälfte [2]	---	---	---	---	---		
26	Probenvorderseite [2]	---	---	---	---	---		
27	Probenrückseite [2]	---	---	---	---	---		
28	Rauchdichte ≤ 400 % * min	2	1	3	---	---		% * min
29	> 400 % * min [4]	---	---	---	---	---		% * min
30	Diagramm in Anlage Nr.	1	2	3	---	---		
31	Restlängen: Einzelwerte [3] Probe 1	74	67	68	---	---		cm
	Probe 2	68	64	68	---	---		cm
	Probe 3	73	59	73	---	---		cm
	Probe 4	75	73	71	---	---		cm
32	Mittelwert Einzelversuch [3]	**73**	**66**	**70**	---	---		cm
33	Foto des Probekörpers in Anlage Nr.	1	2	3	---	---		
	Rauchgastemperatur							
34	Maximum des Mittelwertes	**111**	**113**	**115**	---	---		°C
35	Zeitpunkt [1]	09:42	09:57	09:02	---	---		min:s
36	Diagramm in der Anlage Nr.	1	2	3	---	---		
37	Bemerkungen: keine							

1) Zeitangaben ab Versuchsbeginn
2) Zutreffendes angekreuzt
3) Bei Feuerschutzmitteln Angaben von Trägerplatte/Schaumschicht getrennt
4) sehr starke Rauchentwicklung

6. Erläuterungen zur Versuchsdurchführung

Aufgrund der Restlängen von größer 45 cm wurde auf die Durchführung von weiteren Prüfungen im Brandschacht verzichtet.

7. Zusammenfassung der Ergebnisse und ergänzende Feststellung zum Brandverhalten

Zeilen Nr.	Messwert-Art	Messwert für Probekörper					Dimension
	Versuchs-Nr.	#5600 PN 19790	#5601 PN 19790	#5602 PN 19792	---	---	
Beflam-mung	Seite Richtung	A Kette	B Schuss	B Schuss	---	---	
1	Mittlere Restlänge	73	66	70	---	---	cm
2	Max. mittlere Rauchgastemperatur	111	113	115	---	---	°C
3	Rauchdichte	2	1	3	---	---	%min
4	Bemerkungen: -keine-						

Nach DIN 4102 Teil1 müssen schwerentflammbare Baustoffe auch die Anforderungen der Baustoffklasse B2 erfüllen.

Gemäß zusätzlicher Prüfungen im Brennkasten ist dies der Fall (siehe Anlage 4 und 5).

8. Besondere Hinweise

- Die genannten Ergebnisse gelten nur für den in Abschnitt 1 beschriebenen Baustoff. Im Verbund mit zusätzlichen Materialien (Beschichtung, Untergrund) kann sich das Brandverhalten ändern.
- Dieses Prüfzeugnis gilt nicht als Nachweis des Brandverhaltens nach Bewitterung im Freien, Waschen oder chemisch Reinigen.
- Dieses Prüfungszeugnis gilt nicht, wenn der geprüfte Baustoff als Bauprodukt im Sinne der Landesbauordnungen verwendet wird (MBO § 17, Abs. 3).
- Das Prüfzeugnis ist kein Ersatz für eine bauaufsichtliche Zulassung oder ein allgemeines bauaufsichtliches Prüfzeugnis. Es wird unbeschadet eventueller Rechte Dritter erteilt.
- Im bauaufsichtlichen Verfahren kann dieses Prüfungszeugnis als Grundlage dienen
  - bei geregelten Bauprodukten für die vorgeschriebenen Übereinstimmungsnachweise
  - bei nicht geregelten Bauprodukten für die erforderlichen Verwendbarkeitsnachweise.
- Die Erläuterungen in DIN 4102-1, Anhang D, insbesondere zur Fremdüberwachung, sind besonders zu beachten.

9. Geltungsdauer

Dieses Prüfzeugnis gilt bis zum auf der Seite 1 genannten Zeitpunkt, falls sich die Prüfvorschriften und Beurteilungsgrundlagen, dem Stand der Technik folgend, nicht vorzeitig ändern.

Fladungen, den 31.07.2014

Sachbearbeiter:

(Dipl.-Ing. (FH) Jürgen Hammer)

ANERKANNTE PRÜF-, ÜBERWACHUNGS- UND ZERTIFIZIERUNGSSTELLE Hoch Fladungen

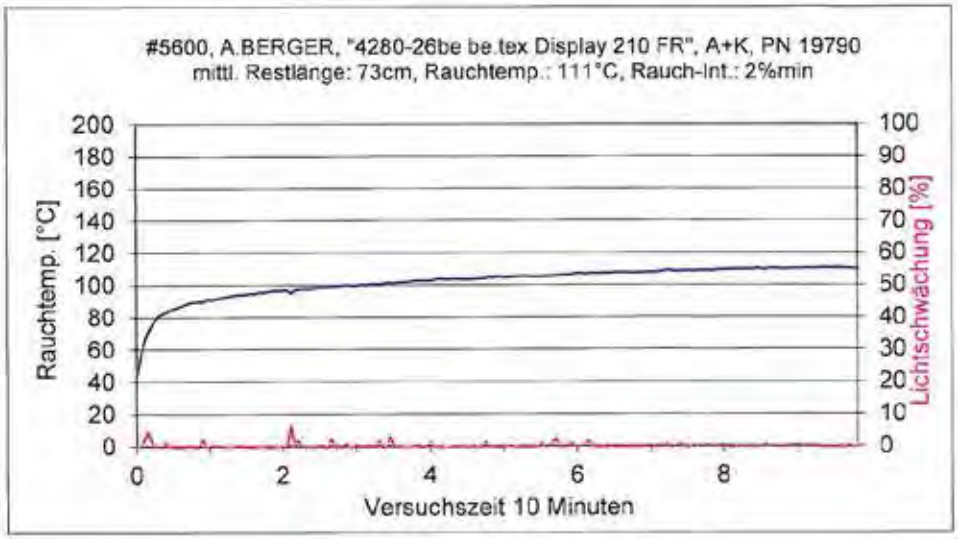
Leiter der Prüfstelle:

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

Brandschachtprüfung #5600

ANERKANNTE PRÜF-, ÜBERWACHUNGS- UND ZERTIFIZIERUNGSSTELLE
Hoch
Fladungen

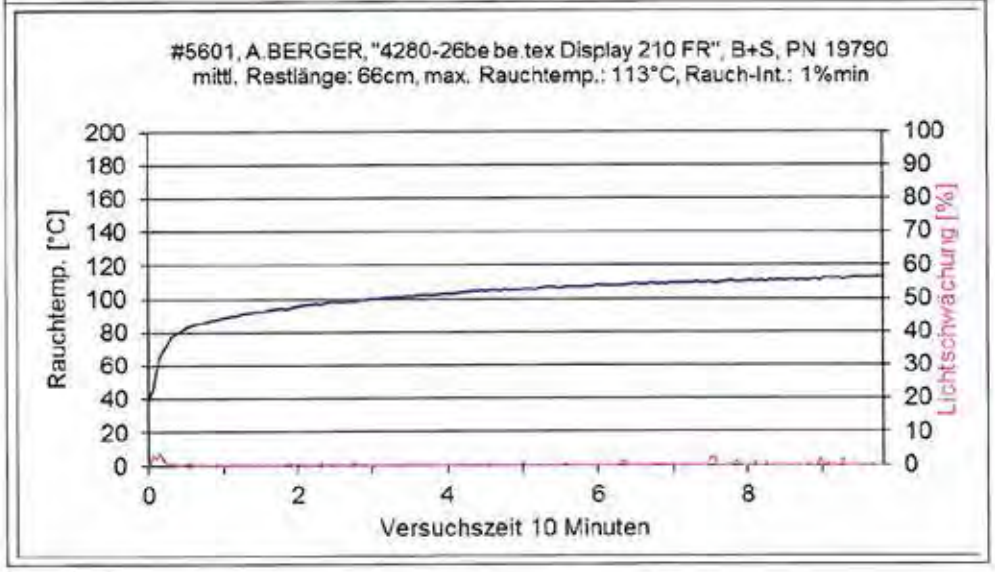
Messdaten



Brandschachtprüfung #5601

ANERKANNTE PRÜF-, ÜBERWACHUNGS- UND ZERTIFIZIERUNGSSTELLE
Hoch
Fladungen

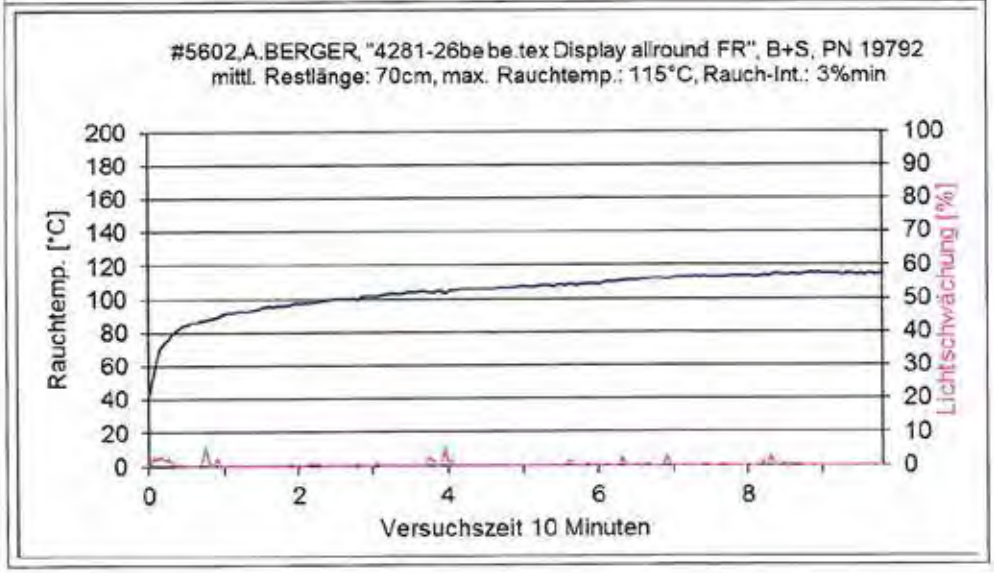
Messdaten



Brandschachtprüfung #5602

ANERKANNTE PRÜF-, ÜBERWACHUNGS- UND ZERTIFIZIERUNGSSTELLE
Hoch
Fladungen

Messdaten



Prüfinstitut Hoch
Lerchenweg 1
D-97650 Fladungen

Prüfung auf Normalentflammbarkeit

Einreihung in die Baustoffklasse B2 nach DIN 4102

1. **Beschreibung des Versuchsmaterials im Anlieferungszustand** s. Seite 2
2. **Herstellung und Vorbehandlung der Proben**
   Aus dem Material wurden Proben für den Kanten- und Flächentest herausgeschnitten.
   Die Proben wurden in einem Klima 23/50 bis zur Gewichtskonstanz gelagert.
3. **Probenanordnung**
   - freihängend
   - Beflammung der Seite A bzw. der Seite B in Kett- bzw. in Schussrichtung
4. **Prüfdatum** KW 29 in 2014
5. **Versuchsergebnisse**

PN 19792: Beflammung der Seite B in Kettrichtung	Kantenbeflammung						Flächenbeflammung						Dim
Proben Nr.	1	2	3	4	5	6	1	2	3	4	5	6	
Entzündung[1]	1	1	1	1	1	--	2	--	--	--	--	--	./.
Erreichen d. Messmarke[1][2]	./.	./.	./.	./.	./.	--	./.	--	--	--	--	--	s
max. Flammenhöhe	11	10	10	12	11	--	11	--	--	--	--	--	cm
Zeitpunkt	17	15	17	19	18	--	11	--	--	--	--	--	./.
Selbstverlöschen der Flammen[1]	20	17	20	20	21	--	13	--	--	--	--	--	./.
Ende des Glimmens[1]	./.	./.	./.	./.	./.	--	./.	--	--	--	--	--	s
Flammen wurden gelöscht nach[1]	./.	./.	./.	./.	./.	--	./.	--	--	--	--	--	s
Rauchentwicklung (visuell)	stark						stark						
Brennendes Abtropfen innerhalb 20 s[1]	./.	./.	./.	./.	./.	--	./.	--	--	--	--	--	s
Das Material ist ausgebrannt/zerstört bis max. B 7cm H 10cm.													

PN 19792: Zusatzprüfungen	Kantenbeflammung						Flächenbeflammung						Dim
Proben Nr.	1	2	3	4	5	6	1	2	3	4	5	6	
Entzündung[1]	1	1	1	--	--	--	2	2	2	--	--	--	./.
Erreichen d. Messmarke[1][2]	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
max. Flammenhöhe	8	5	8	--	--	--	7	4	5	--	--	--	cm
Zeitpunkt	10	10	7	--	--	--	10	5	10	--	--	--	./.
Selbstverlöschen der Flammen[1]	13	14	9	--	--	--	21	22	22	--	--	--	./.
Ende des Glimmens[1]	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
Flammen wurden gelöscht nach[1]	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
Rauchentwicklung (visuell)	stark						stark						
Brennendes Abtropfen innerhalb 20 s[1]	./.	./.	./.	--	--	--	./.	./.	./.	--	--	--	s
Das Material ist ausgebrannt/zerstört bis max. B 6cm H 8cm.													

[1] Zeitangaben ab Versuchsbeginn
[2] innerhalb 20 Sekunden

-/- kein Auftreten des Ereignisses
-- keine Angabe

PN 19790: Zusatzprüfungen	Kantenbeflammung						Flächenbeflammung						Dim
Proben Nr.	1	2	3	4	5	6	1	2	3	4	5	6	
Entzündung[1)]	1	1	1	1	--	--	3	2	2	2	--	--	./.
Erreichen d. Messmarke[1)2)]	./.	./.	./.	./.	--	--	./.	./.	./.	./.	--	--	s
max. Flammenhöhe	6	4	4	5	--	--	6	6	5	5	--	--	cm
Zeitpunkt	8	6	3	4	--	--	6	10	5	9	--	--	./.
Selbstverlöschen der Flammen[1)]	12	9	6	7	--	--	24	13	9	11	--	--	./.
Ende des Glimmens[1)]	./.	./.	./.	./.	--	--	./.	./.	./.	./.	--	--	s
Flammen wurden gelöscht nach[1)]	./.	./.	./.	./.	--	--	./.	./.	./.	./.	--	--	s
Rauchentwicklung (visuell)	mäßig						mäßig						
Brennendes Abtropfen innerhalb 20 s[1)]	./.	./.	./.	./.	--	--	./.	./.	./.	./.	--	--	s
Das Material ist ausgebrannt/zerstört bis max. B 4cm H 6cm.													

[1)] Zeitangaben ab Versuchsbeginn
[2)] innerhalb 20 Sekunden

-/- kein Auftreten des Ereignisses
-- keine Angabe

6. **Bemerkungen und Erläuterungen zur Versuchsdurchführung** -keine-

7. **Beurteilung bezüglich brennenden Abtropfens/Abfallens**
Das geprüfte Material gilt als nicht brennend abtropfend/abfallend.

ANERKANNTE PRÜF-, ÜBERWACHUNGS- UND ZERTIFIZIERUNGSSTELLE
Hoch
Fladungen