



Testing. Advising. Assuring.

## Test report No. 2016-1782

for applying of a required "Verwendbarkeitsnachweis"  
issued 31.10.2016

**Applicant:** BBT Bio Brandschutz-Technologie GmbH  
Lochstrasse 27  
Postfach 134  
  
CH – 9404 Rorschacherberg

**Date of order:** 08.08.2016  
**Date of sampling:** *no official sampling of the specimen by a representative of Exova Warringtonfire, Frankfurt*  
*The material was taken by the applicant and delivered*  
**Date of arrival:** 16.09.2016  
**Date of test:** 26.10.2016

### Order

Testing of the flammability (building class B1) according to DIN 4102-1 (May 1998)

### Description / designation of the test object

BIO-Brandschutzmittel BBT – Antiflame 2050 W

**Purpose:** Treatment of absorbent, uncoated papers, absorbent fabrics made of 100% cellulose fibers (excluding jute) for use as a coating for decorative items in the Interior.

### Description of the relevant test procedure

DIN 4102 part 1 (Mai 1998)

Note: If the above mentioned building materials (-composite) is not used as a construction product com. MBO § 2, paragraph 9, item 1, a general building code test certificate is not required.  
This certificate does not apply, if the tested material is used as a building product within the meaning of the regional building regulations (MBO § 17, par. 3).

This certificate does not replaced if necessary technical availability proof building regulations according to the "Landesbauordnung". This is to carry out:

- a general construction approval or by
- a general building code test certificate or by
- a consent in each case.

In the approval procedure, this test report can serve as a basis  
-in regulated construction products for the prescribed conformity certificates  
-in non-regulated construction products for the required proofs of usability.

## 1. Description of the test material

### 1.1 Details of the customer:

BIO-Brandschutzmittel BBT – Antiflame 2050 W

## Datenblatt 6 / 2015

Für Industriekunden :

### Behandlung von Papier und Textil mit Brandschutzmittel :

- Basismaterial : BBT - Antiflame 2050 W
- Hochdruckanlage z.B. Fliessbecher Accuspray / H.V.L.P. oder Druckbehälter Anlage
- Druck : Arbeitsdruck 2-3 bar
- Luftbedarf : 400 Ltr. / min.
- Düse : 1,3 mm
- Sprühabstand : ca. 10 - 15 cm
- Verbrauch : 1 Ltr. / ca. 6-8 m<sup>2</sup>, je nach Materialstärke
- Arbeitsgänge : 1 x gut feucht bis nass einsprühen
- Trockenzeit : wie bei Wasser, je nach Papierstärke
- Lagerungstemperatur : 0 - 50° C in dichten Kunststoffbehälter
- Reinigung : mit Wasser
- Arbeitsschutz : Handschuhe, Schutzbrille und Mundschutz  
( Bei Haut und Augenkontakt, mit Wasser spühlen )

**Empfehlung :** Nur für saugfähige Papiere und Textilien geeignet. Dickere Papiere / Karton von beiden Seiten gut einsprühen. Eventuell mit einem behandelten Muster einen Brandtest machen. Textilien nach jedem Waschgang neu behandeln ( siehe Produktbeschreibung )

Diese Angaben entsprechen unseren heutigen Kenntnissen und Erfahrungen in Betrieb und Labor. Eine Verbindlichkeit kann daraus nicht abgeleitet werden. Der Abnehmer ist von sorgfältigen Eigenschaftsprüfungen nicht entbunden.

Delivered substrates: 100% cotton, thickness 1 mm

Paper, thickness approx. 0,3 mm, weight approx. 48,78 g/m<sup>2</sup>

1.2 By Exova Warringtonfire, Frankfurt determined values:

Type of test material: flame retardants agent in 5 L plastic canister.  
Caption: BBT-Antiflame Bio-Brandschutzmittel  
Content: clear aqueous solution based on organic and inorganic salts. Slightly alkaline (about pH 8)

Kind of substrates: 100% cotton, white / white unprinted paper

Flame retardant agent applied according manufacturer's instructions on the supplied substrates with a compressor air hand spray:

Substrates:	100% cotton	unprinted paper
Thickness untreated:	0,2 mm	0,06 mm
Surface weight untreated:	114,21 g/m <sup>2</sup>	49,84 g/m <sup>2</sup>
Wet application:		
Flame retardant agent:	1 x approx. 130 ml/m <sup>2</sup>	1 x approx. 130 ml/m <sup>2</sup>
(good wet sprayed)		

Measured quantities after drying and clima storage up to constant weight:

Thicknes treated:	0,36 mm	0,21 mm
Surface weight treated:	145,16 g/m <sup>2</sup>	67 g/m <sup>2</sup>
- substrate tara:	114,21 g/m <sup>2</sup>	49,84 g/m <sup>2</sup>
results in a		
flame retardant agent application of:	30,95 g/m <sup>2</sup>	17,16 g/m <sup>2</sup>

Testing after storing under climatic conditions (23°C / 50 % rel. humidity).

Cans of flame retardant agent and substrates were delivered by the customer to exova warringtonfire, Frankfurt.

Further tests were not required due to the similar results of the test report 2011-1804-2.

## 2. Test results

### 2.1.1 Brandschachtprüfung according to DIN 4102-1

Sample A: Substrate 100% cotton, material tested in production direction

Sample B: Substrate 100% cotton, material tested crosswise to the production direction

Sample C: Substrate paper, material tested in production direction

Test results of the Brandschacht tests part 1						
line no.		Measurements test sample				
			A	B	C	D
1	<u>no. test arrangement according to DIN 4102 part 15, table 1</u>		1	1	1	
2	<u>flame height max. over lower sample edge</u> time <sup>1)</sup>	cm	50	50	40	
		min : s	0:09	0:18	0:06	
3	<u>ascertainments on the front side</u> Flaming/glowing time <sup>1)</sup>	min : s	0:04	0:04	0:06	
4	<u>melting / burning through</u> time <sup>1)</sup>	min : s	0:15	0:25	0:08	
5	<u>ascertainments on the back side</u> Flaming/glowing time <sup>1)</sup> discolouring time <sup>1)</sup>	min : s	yes 0:15	yes 0:24	yes 0:14	
6		min : s	0:15	0:24	0:14	
7	<u>burning droplets</u> begin <sup>1)</sup> extent occasional dropping of material constant dropping of material	min : s	not occured	not occured	not occured	
8						
9						
10	<u>separating from burning sample parts</u> begin <sup>1)</sup> occasional separating parts constant separating parts	min : s	no	no	no	
11						
12						
13	<u>duration of burning on the sieve tray (max.)</u>	min : s	not occured	not occured	not occured	
14	<u>influence on the burner flame by dropping of / separating material</u> time <sup>1)</sup>	min : s	no	no	no	
15	<u>earlier end of test</u> end of the fire scenario on the sample <sup>1)</sup> time of a possible resulted test stop <sup>1)</sup>	min : s	no	no	no	
16		min : s				

<sup>1)</sup> time from start of test

Test results of the Brandschacht tests part 2						
line no.		Measurements test sample				
			A	B	C	
17	<u>flaming after end of test</u>	min : s	--/--	--/--	--/--	
18	duration		--/--	--/--	--/--	
19	number of sample		--/--	--/--	--/--	
20	front side of sample		--/--	--/--	--/--	
21	backside of sample	cm	--/--	--/--	--/--	
	flame length		--/--	--/--	--/--	
22	<u>glowing after end of test</u>	min . s	not occurred	not occurred	not occurred	
23	duration		--/--	--/--	--/--	
	number of sample		--/--	--/--	--/--	
	place of occurrence		--/--	--/--	--/--	
24	lower sample part		--/--	--/--	--/--	
25	upper sample part		--/--	--/--	--/--	
26	front side of sample		--/--	--/--	--/--	
27	backside of sample		--/--	--/--	--/--	
28	<u>smoke density</u>					
	< 400 % x min		1	14	16	
29	> 440 % x min		--/--	--/--	--/--	
30	<u>diagram in annex no.</u>		1	2	3	
31	<u>residual length</u>	cm				
	single results		49 / 44 45 / 46	48 / 44 49 / 48	57 / 53 55 / 57	
32	average of the single results	cm	46	47	55	
33	photo of the sample on page		6	6	6	
34	<u>smoke temperature</u>	°C				
	max. of the average results		115	115	112	
35	time <sup>1)</sup>		8:04	9:40	9:54	
36	diagram in annex no.		1	2	3	

<sup>1)</sup> time from start of test

Remarks: Because of the residual length of > 45 cm in two tests, the quantity of tests could be reduced, according to DIN 4102-16.

2.1.2 Appearance of the specimen after the test:



appearance of the sample A  
after the Brandschacht test



appearance of the sample B  
after the Brandschacht test



appearance of the sample C  
after the Brandschacht test

### 2.2.1 Normal flammability test according to DIN 4102-1

Test with edge ignition: substrate 100 % cotton

Flame application on: lower sample edge

Edge ignition

Length direction

Sample-no.	1	2	3	4	5
Time from start of test					
Ignition point [s]	1	1	1	1	1
Reaching the measuring mark within 20 seconds	no	no	no	no	no
Self-extinguishing of the flame [s]	3	3	3	3	3
Max. flame height [mm]	30	30	30	30	30
Time [s]	3	3	3	3	3
End of afterflaming [s]	-	-	-	-	-
End of afterglowing [s]	-	-	-	-	-
Flames extinguished after [s]	-	-	-	-	-
Smoke development (visual impression) <sup>low / moderate / strong</sup>	Low smoke development				
Separating from burning material	no	no	no	no	no
Time [s]	-	-	-	-	-

Remarks: none

Cross direction

Sample-no.	1	2	3	4	5
Time from start of test					
Ignition point [s]	1	1	1	1	1
Reaching the measuring mark within 20 seconds	no	no	no	no	no
Self-extinguishing of the flame [s]	3	3	3	3	3
Max. flame height [mm]	30	30	30	30	30
Time [s]	3	3	3	3	3
End of afterflaming [s]	-	-	-	-	-
End of afterglowing [s]	-	-	-	-	-
Flames extinguished after [s]	-	-	-	-	-
Smoke development (visual impression)	Low smoke development				
Separating from burning material	no	no	no	no	no
Time [s]	-	-	-	-	-

Remarks: none

## 2.2.2 Normal flammability test according to DIN 4102-1

Test with edge ignition: substrate unprinted paper

Flame application on: lower sample edge

Edge ignition

Length direction

Sample-no.	1	2	3	4	5
Time from start of test					
Ignition point [s]	1	1	1	1	1
Reaching the measuring mark within 20 seconds	no	no	no	no	no
Self-extinguishing of the flame [s]	3	3	3	3	3
Max. flame height [mm]	30	30	30	30	30
Time [s]	3	3	3	3	3
End of afterflaming [s]	-	-	-	-	-
End of afterglowing [s]	-	-	-	-	-
Flames extinguished after [s]	-	-	-	-	-
Smoke development (visual impression) <sup>low / moderate / strong</sup>	Low smoke development				
Separating from burning material	no	no	no	no	no
Time [s]	-	-	-	-	-

Remarks: none



2.2.3 Appearance of the sample after the small burner test:

Substrate 100% cotton:



Substrate paper:



### 3. Assessment

The flame retardant agent described in chapter one fulfils in the tested arrangements and with the applicated quantities (approx. 130 mm/m<sup>2</sup>, wet sick until the drop off) the requirements for the treatment of the mentioned absorbent substrates (100% cotton and unprinted paper, in the mentioned thicknesses and surface weights) the requirements of the building class B2 according to DIN 4102-1 (Mai 1998).

The determined test results show that the material also fulfils the requirements as flame resistant decorative article **of the building class B1** according to DIN 4102-1 (Mai 1998).

### 4. Special note

The fire test result is only valid for the material described in chapter, for the above stated purpose in free hanging arrangement.

The distance to other plane material must be more or equal then 40 mm.

In combination with other materials (for example coatings, deposits) the burning behaviour could be influenced unfavourable so that the classification above is not valid any longer. According to DIN 4102-1 the burning behaviour in combination with other materials has to be tested separately.

The detection of resistance of the flame retardant agent against washing, dry cleaning or outdoor weathering is not provided by this certificate.

Therefore, the treatment with the flame retardants must be renewed after every moisture of the materials.

If the material is not used as a building product com. MBO article 2, paragraph 9, paragraph 1, a general building code test certificate is not required. This certificate does not apply, if the tested material is used as a building product within the meaning of the regional building regulations (MBO § 17, chapter 3).

This test report does not replace the required „Verwendbarkeitsnachweis“ according local building regulations“.

In the approval procedure, this test report can serve as a basis

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

Frankfurt, the 31.10.2016



P. Scheinkönig  
Tester in Charge



Dipl.-Ing. T. Zachäus  
Head of the business

This Test report is valid until 25.10.2021

The results of the tests relate only to the behaviour of the test specimen which is designated on the top.

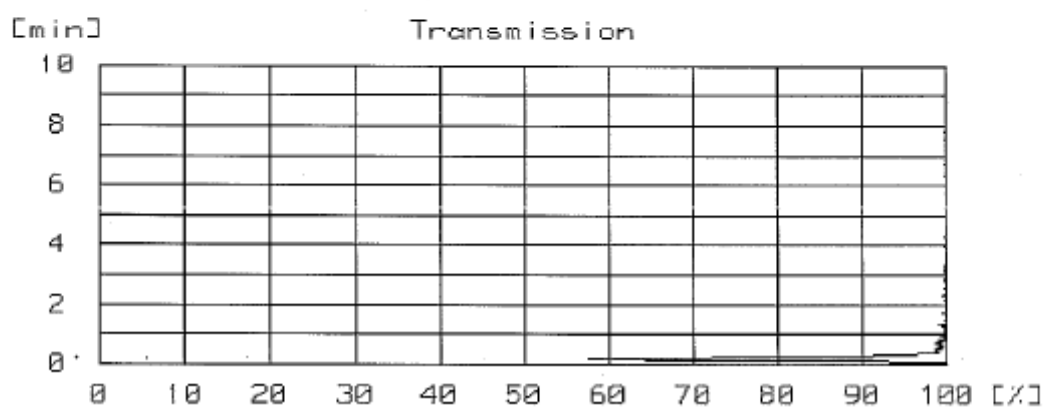
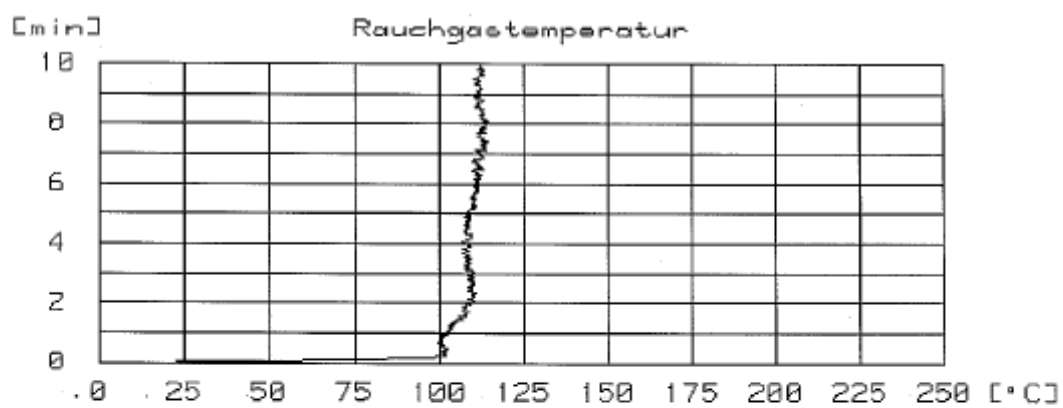
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This test report is a translation of the German version 2016-1782 (issued 31.10.2016). In case of doubt only the German version is valid

This test report contains 10 pages and 3 annexes.

Annex 1 to the Test report No. 2016-1782 issued 31.10.2016

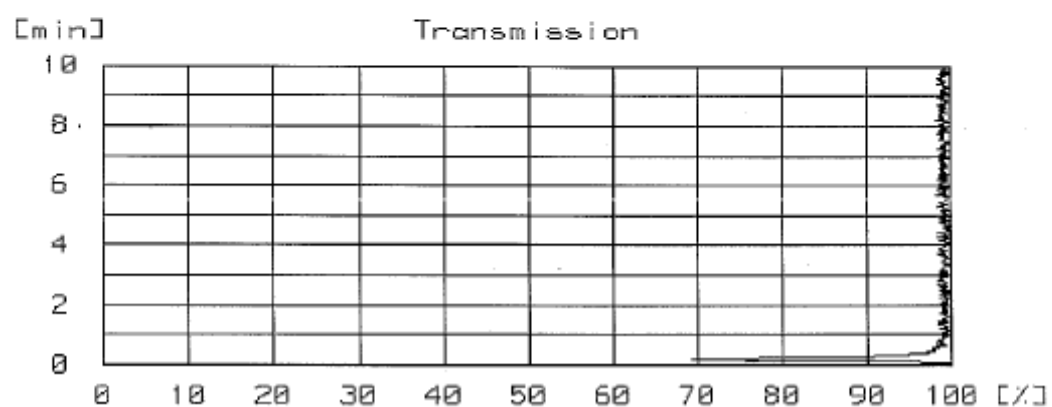
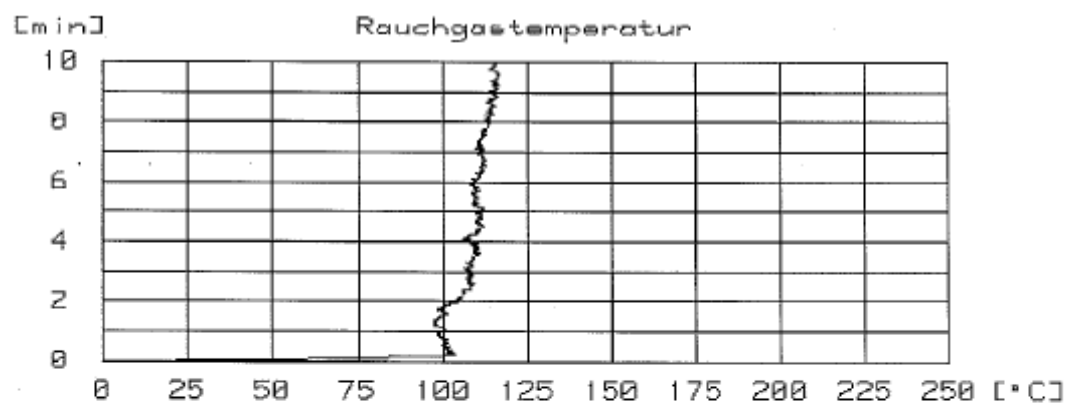
Sample A:



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Annex 2 to the Test report No. 2016-1782 issued 31.10.2016

Sample B:



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Annex 3 to the Test report No. 2016-1782 issued 31.10.2016

Sample C:

