



Testing. Advising. Assuring.

## Test report No. 2014-1450

for applying of a required "Verwendbarkeitsnachweis"  
issued 05.05.2014

**Applicant:** AFS Boru Sanayi A.S.  
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Cadde. No: 153  
  
Türkiye

**Date of order:** 07.04.2014  
**Date of sampling:** *no official sampling of the specimen by a representative of Exova Warringtonfire, Frankfurt*  
**Date of arrival:** 08.04.2014  
**Date of test:** 23.04.2014

### Order

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

### Description / designation of the test object

Product description: TPU industrial hose

### Description of the relevant test procedure

DIN 4102 part 1 (Mai 1998)

This test report did not replace the required „Verwendbarkeitsnachweis“. It is only used for issuing the "Verwendbarkeitsnachweis".

## 1. Description of the test material

### 1.1 Details of the customer:

Product description: TPU industrial hose

Intended end use of Product: Industrial Hose

### 1.2 At the specimen preparation by Exova Warringtonfire, Frankfurt determined values:

Hose material

Colour:	clear	
	Sample 4	Sample 5
Thickness:	0,5 mm	1 mm

Testing after storing 14- days under climatic conditions (23°C / 50 % rel. humidity).

## 2. Test results

### 2.1.1 Brandschachtprüfung according to DIN 4102-1

Sample A: Material tested in production direction. (Sample 4 Thickness: 0,5 mm)

Sample B: Material tested in production direction. (Sample 5 Thickness: 1 mm)

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		
2	<u>flame height max. over lower sample edge</u> time <sup>1)</sup>	cm	40	30		
		min : s	0:11	0:08		
3	<u>ascertainties on the front side</u> Flaming/glowing time <sup>1)</sup>	min : s	0:08	0:06		
4	<u>melting / burning through</u> time <sup>1)</sup>	min : s	0:15	0:14		
5	<u>ascertainties on the back side</u> Flaming/glowing time <sup>1)</sup> discolouring time <sup>1)</sup>	min : s	no	no		
6		min : s	no	no		
7	<u>burning droplets</u> begin <sup>1)</sup> extent occasional dropping of material constant dropping of material	min : s	not occurred	not occurred		
8						
9						
10	<u>separating from burning sample parts</u> begin <sup>1)</sup> occasional separating parts constant separating parts	min : s	yes	yes		
11						
12						
13	duration of burning on the sieve tray (max.)	min : s	not occurred	not occurred		
14	<u>influence on the burner flame by dropping of / separating material</u> time <sup>1)</sup>	min : s	yes	yes		
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		
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	D
17	<u>flaming after end of test</u> duration	min : s	not occured	not occured		
18	number of sample		--/--	--/--		
19	front side of sample	cm	--/--	--/--		
20	backside of sample		--/--	--/--		
21	flame length		--/--	--/--		
22	<u>glowing after end of test</u> duration	min . s	not occured	not occured		
23	number of sample		--/--	--/--		
24	place of occurrence lower sample part	cm	--/--	--/--		
25	upper sample part		--/--	--/--		
26	front side of sample		--/--	--/--		
27	backside of sample		--/--	--/--		
28	<u>smoke density</u> < 400 % x min		10	23		
29	> 440 % x min		--/--	--/--		
30	diagram in annex no.		-	-		
31	<u>residual length</u> single results	cm	57 / 60 55 / 58	60 / 56 50 / 50		
32	average of the single results	cm	57	54		
33	foto of the sample on page		5	5		
34	<u>smoke temperature</u> max. of the average results	°C min : s	117	116		
35	time <sup>1)</sup>		9:44	7:08		
36	diagram in annex no.		1	2		

<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:



Sample A



Sample B

2.2.1 Normal flammability test according to DIN 4102-1

Test with edge ignition without deposit  
 Flame application on: lower sample edge  
 Edge ignition

Sample 4 thickness: 0,5 mm

Sample-no.	1	2	3	4	5
Time from start of test					
Ignition point [s]	2	2	2	1	1
Reaching the measuring mark within 20 seconds	no	no	no	no	no
Self extinguishing of the flame [s]	-	-	20	-	-
Max. flame height [mm]	40	50	60	60	60
Time [s]	20	17	15	16	15
End of afterflaming [s]	-	-	5	-	-
End of afterglowing [s]	-	-	-	-	-
Flames extinguished after [s]	25	25	-	25	25
Smoke development (visuell impression)	moderate smoke production				
Separating from burning material	yes	yes	yes	yes	yes
Time [s]	8	10	7	8	8

Remarks: none

Sample 5 thickness: 1 mm

Sample-no.	1	2	3	4	5
Time from start of test					
Ignition point [s]	1	2	1	1	2
Reaching the measuring mark within 20 seconds	no	no	no	no	no
Self extinguishing of the flame [s]	-	18	16	21	16
Max. flame height [mm]	40	50	40	50	50
Time [s]	17	12	13	14	10
End of afterflaming [s]	-	3	1	6	1
End of afterglowing [s]	-	-	-	-	-
Flames extinguished after [s]	25	-	-	-	-
Smoke development (visuell impression)	moderate smoke production				
Separating from burning material	yes	yes	yes	yes	yes
Time [s]	9	8	8	9	10

Remarks: none

## 2.2.2 Appearance of the sample after the small burner test:



## Assessment

The material, described in chapter one fulfils 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

### of the building class B1

according to DIN 4102-1 (Mai 1998).

## Special comment

The fire test result is only valid for the material described in chapter one, in the tested colours, thickness and weight per unit area.

The test was carried out in free hanging configuration.

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

The material wasn't tested after an outside storage.

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.

This test report did not replace the required „Verwendbarkeitsnachweis“. It is only used for issuing the “Verwendbarkeitsnachweis”.

Frankfurt, the 05.05.2014

Handwritten signature of H. Anders in blue ink.

H. Anders  
Tester in charge

Handwritten signature of Dipl.-Ing. T. Zachäus in blue ink.

Dipl.-Ing. T. Zachäus  
Laboratory Supervisor

This Test report is valid until 22.04.2019

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

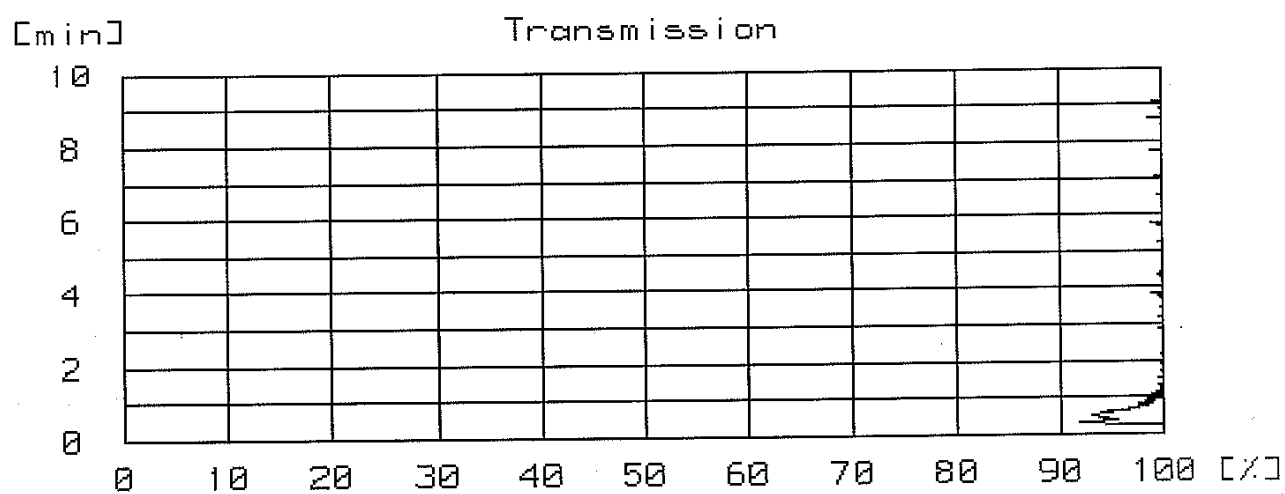
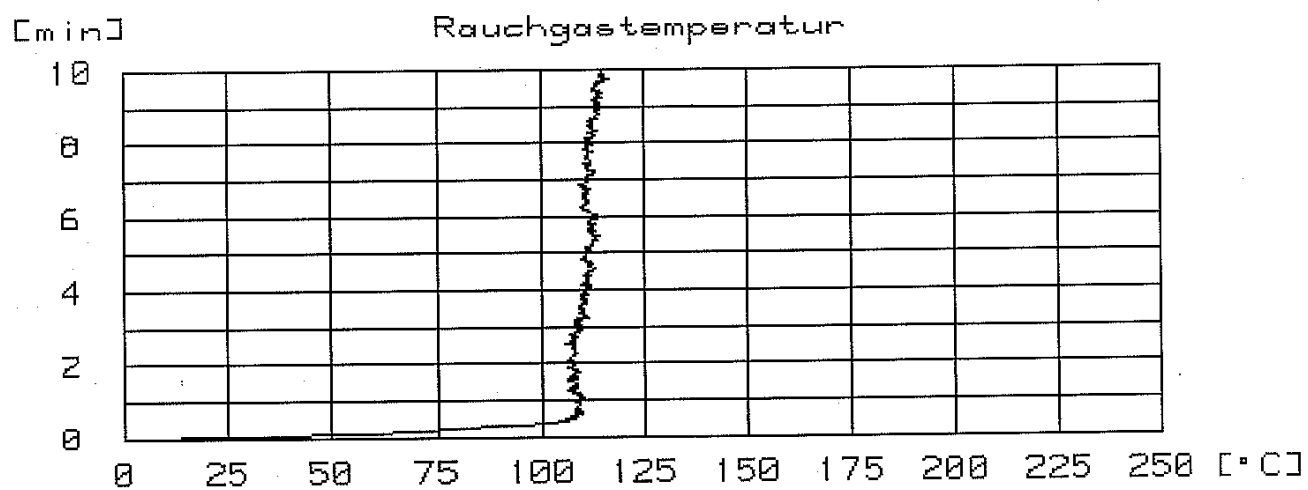
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This test report is a translation of the German version 2014-1450 (issued 05.05.2014). In case of doubt only the German version is valid

This test report contains 8 pages and 2 annexes.



Sample A:



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Annex 2 to the Test report No. 2014-1450 issued 05.05.2014

Sample B:

