

TEST CERTIFICATE

No. 230009864

English version

Sponsor: SCHAUBURG RUHRKUNSTSTOFF GmbH
Weseler Straße 35

45478 Mülheim-Ruhr

Date of application: 09.01.2015
Date of sampling: Samples were sent in by the sponsor
Samples delivered on 13.01.2015
Date of testing: 29.01.2015, 05.02.2015 and 18.02.2015

Order

Testing according to DIN 4102-1 (May 1998) class B1

Description / Name of tested product

Transparent, flexible extraction hoses „FLEXADUX P 1 N PU/SE-A“ and „FLEXADUX P 1 N PU/SE-B“ for the use in the area of technical plants

Applied test procedure

DIN 4102 part 1 (May 1998)

Remark: This test certificate is a translation of the original test certificate 230009864 issued 23.02.2015 in German language and is only allowed to be used together with the original test certificate.

Name of tested product: „FLEXADUX P 1 N PU/SE-A“ and „FLEXADUX P 1 N PU/SE-B“

Description:

Information given by the sponsor:

„FLEXADUX P 1 N PU/SE-A“:

Transparent, colourless, flexible extraction hoses made of polyurethane with included bronzed and PVC-coated spring wire spiral

Hose diameter: ≥ 60 mm, Wall thickness of the profiled hose: 0.5 mm – 0.8 mm

„FLEXADUX P 1 N PU/SE-B“:

Transparent, colourless, flexible extraction hoses made of polyurethane with included PVC-coated spring wire spiral and with coloured stripes in the profiled area

Hose diameter: ≥ 60 mm, Wall thickness of the profiled hose: 0.6 mm – 0.85 mm

Values determined at MPA NRW:

„FLEXADUX P 1 N PU/SE-A“:

Wall thickness in the non-profiled area: av. 0.6 mm

Wall thickness in the profiled area: av. 1.1 mm

Mass per unit area of the polyurethane hose material (without spring wire spiral): 860 g/m² - 1050 g/m²

Colour of the tested material: colourless, transparent

„FLEXADUX P 1 N PU/SE-B“:

Wall thickness in the non-profiled area: av. 0.6 mm

Wall thickness in the profiled area: av. 1.0 mm

Mass per unit area of the polyurethane hose material (without spring wire spiral): 840 g/m² - 1030 g/m²

Colour of the tested material: colourless, transparent with white stripes in the profiled area

Special notes: None

row-no.		Results of the Brandschacht test (part 1)			
		measurements test specimen			
Hose type:		PU/SE-A A	PU/SE-A B	PU/SE-B C	PU/SE-B D
1	<u>No. of test specimen arrangement according to DIN 4102, part 15, table 1</u>	1	1	1	1
2	<u>Max. flame height above bottom edge</u>	50	50	50	50
	cm				
4	<u>Melt through / burn through</u>				
	Time ¹⁾ min : s	0:30	0:30	0:30	0:30
4	<u>Melt through / burn through</u>				
	Time ¹⁾ min : s	0:11	0:12	0:11	0:11
5	<u>Observations on the backside of the specimens</u>				
	Flames/smouldering				
5	Time ¹⁾ min : s	-- ²⁾	-- ²⁾	-- ²⁾	-- ²⁾
6	Discolouration				
	Time ¹⁾ min : s	-- ²⁾	-- ²⁾	-- ²⁾	-- ²⁾
7	<u>Burning droplets</u>				
	Start ¹⁾ min : s	0:12	0:10	0:14	0:13
	<u>Extent</u>				
8	sporadic burning droplets	x	x	x	x
9	continually falling particles	-- ²⁾	-- ²⁾	-- ²⁾	-- ²⁾
10	<u>Falling particles which burns</u>				
	Start ¹⁾ min : s	-- ²⁾	-- ²⁾	-- ²⁾	-- ²⁾
11	sporadic falling parts	-- ²⁾	-- ²⁾	-- ²⁾	-- ²⁾
12	continually falling particles	-- ²⁾	-- ²⁾	-- ²⁾	-- ²⁾
13	Duration of the burning on the screen bottom (max.) min : s	-- ²⁾	0:02	-- ²⁾	-- ²⁾
14	<u>Interference of the burner flame by dripping /falling particles</u>				
	Time ¹⁾ min : s	-- ²⁾	0:10	0:14	0:13
15	<u>Early termination of the test</u>				
	End of burning at the specimen ¹⁾ min : s	-- ²⁾	-- ²⁾	-- ²⁾	-- ²⁾
16	Time of early cancellation of the test ¹⁾ min : s	-- ²⁾	-- ²⁾	-- ²⁾	-- ²⁾

¹⁾ Time counting from the start of the test

row-no.		Results of the Brandschachttest (part 2)							
		measurements test specimen							
		A		B		C		D	
<u>Continuous burning after termination of the test</u>									
17	Duration min : s	0:20		-- ²⁾		-- ²⁾		-- ²⁾	
18	Number of specimens	1		-- ²⁾		-- ²⁾		-- ²⁾	
19	Front side of the specimen	x		-- ²⁾		-- ²⁾		-- ²⁾	
20	Back side of the specimen	-- ²⁾		-- ²⁾		-- ²⁾		-- ²⁾	
21	Flame length cm	ca. 5		-- ²⁾		-- ²⁾		-- ²⁾	
<u>Smouldering after termination of the test</u>									
22	Duration min : s	-- ²⁾		-- ²⁾		-- ²⁾		-- ²⁾	
23	Number of specimens	-- ²⁾		-- ²⁾		-- ²⁾		-- ²⁾	
<u>Location</u>									
24	Lower half of the specimens	-- ²⁾		-- ²⁾		-- ²⁾		-- ²⁾	
25	Upper half of the specimens	-- ²⁾		-- ²⁾		-- ²⁾		-- ²⁾	
26	Front side of the specimen	-- ²⁾		-- ²⁾		-- ²⁾		-- ²⁾	
27	Backside of the specimen	-- ²⁾		-- ²⁾		-- ²⁾		-- ²⁾	
<u>Smoke development</u>									
28	≤ 400 % x min	35		48		205		102	
29	> 400 % x min	-- ²⁾		-- ²⁾		-- ²⁾		-- ²⁾	
30	Diagram in appendix	--		--		1		--	
<u>Residual lengths</u>									
31	Single values cm	54	57	54	32	46	57	46	52
		47	53	36	63	39	36	36	54
32	Average values cm	53 ³⁾		46 ³⁾		45 ³⁾		47 ³⁾	
33	Photo of the specimen on page	--		--		5		--	
<u>Smoke temperature</u>									
34	Maximum value of the averaged values °C	110		113		114		114	
35	Time ¹⁾ min : s	10:00		10:00		10:00		10:00	
36	Diagram in appendix Nr.	--		--		1		--	
37	<u>Remarks:</u>	<p>The test occurred on free hanging, flat samples made of sliced hoses without spring wire spiral according to DIN 4102-16 section 7.18. Tests A and C: The exterior side of the hose was flamed. Tests B and D: The interior side of the hose was flamed.</p> <p>2) Did not occur 3) Due to the average residual length of ≥ 45 cm further tests were not necessary according to DIN 4102-16 section 5.2.</p>							



Picture 1: Appearance of specimen C after the test

Results of the B2-testing according to DIN 4102-01

(Tests with flaming the edge)

Protection of edges: --

Point of flame attack: lower edge of the front side, flaming of the profiled exterior side in the profile direction of flat samples made of sliced hoses of the type „FLEXADUX P 1 N PU/SE-A“ without spring wire spiral

Specimen No.	1	2	3	4	5
(Times stated from start of test)					
Ignition (s)	1	1	1	1	1
Flame passing the limit mark (s)	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Self extinguishment (s)	15	15	15	15	15
Max. height of the flame (cm)	13	10	12	11	12
Continuous burning after 20 s	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Continuous smouldering after 20 s	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Extinguishment of flames / glowing after passing the limit mark	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Smoke development (visual observation)	moderate				
Falling of burning particles / droplets time (s)	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾

Remark: 1) Did not occur

Point of flame attack: lower edge of the front side, flaming of the interior side of flat samples made of sliced hoses of the type „FLEXADUX P 1 N PU/SE-A“ without spring wire spiral

Specimen No.	1	2	3	4	5
(Times stated from start of test)					
Ignition (s)	1	1	1	1	1
Flame passing the limit mark (s)	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Self extinguishment (s)	15	15	15	15	15
Max. height of the flame (cm)	11	11	11	12	10
Continuous burning after 20 s	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Continuous smouldering after 20 s	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Extinguishment of flames / glowing after passing the limit mark	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Smoke development (visual observation)	moderate				
Falling of burning particles / droplets time (s)	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾

Remark: 1) Did not occur

Results of the B2-testing according to DIN 4102-01

(Tests with flaming the edge)

Protection of edges: --

Point of flame attack: lower edge of the front side, flaming of the profiled exterior side in the profile direction of flat samples made of sliced hoses of the type „FLEXADUX P 1 N PU/SE-B“ without spring wire spiral

Specimen No.	1	2	3	4	5
(Times stated from start of test)					
Ignition (s)	1	1	1	1	1
Flame passing the limit mark (s)	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Self extinguishment (s)	15	15	15	15	15
Max. height of the flame (cm)	11	10	11	11	11
Continuous burning after 20 s	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Continuous smouldering after 20 s	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Extinguishment of flames / glowing after passing the limit mark	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Smoke development (visual observation)	moderate				
Falling of burning particles / droplets time (s)	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾

Remark: 1) Did not occur

Point of flame attack: lower edge of the front side, flaming of the interior side of flat samples made of sliced hoses of the type „FLEXADUX P 1 N PU/SE-B“ without spring wire spiral

Specimen No.	1	2	3	4	5
(Times stated from start of test)					
Ignition (s)	1	1	1	1	1
Flame passing the limit mark (s)	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Self extinguishment (s)	18	15	15	-- ¹⁾	15
Max. height of the flame until the 20. sec. (cm)	11	11	11	9	11
Continuous burning after 20 s	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Continuous smouldering after 20 s	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Extinguishment of flames / glowing after passing the limit mark	-- ¹⁾	-- ¹⁾	-- ¹⁾	21	-- ¹⁾
Smoke development (visual observation)	moderate				
Falling of burning particles / droplets time (s)	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾

Remark: 1) Did not occur

Results of the B2-testing according to DIN 4102-01

(Tests with flaming the surface)

Point of flame attack: 40 mm above the lower edge of the front side, flaming of the profiled exterior side across the profile direction of flat samples made of sliced hoses of the type „FLEXADUX P 1 N PU/SE-A“ without spring wire spiral

Specimen No.	1	2	3	4	5
(Times stated from start of test)					
Ignition (s)	6	6	5	7	5
Flame passing the limit mark (s)	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Self extinguishment (s)	15	15	15	15	15
Max. height of the flame (cm)	14	12	12	12	11
Continuous burning after 20 s	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Continuous smouldering after 20 s	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Extinguishment of flames / glowing after passing the limit mark	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾
Smoke development (visual observation)	small				
Falling of burning particles / droplets time (s)	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾	-- ¹⁾

Remark: 1) Did not occur

Assessment

- The product described on page 2 fulfilled the requirements of building products according to Baustoffklasse B2. According to the results, the product as tested in the described arrangement also fulfils the requirements of building products according to Baustoffklasse B1. In consequence the product can be classified as

Baustoffklasse B1 (schwerentflammbare Baustoffe)

according to DIN 4102 part 1 (Mai 1998). This assessment is only valid, if the distance to equal or other plane building products is > 40 mm. The surface of the extraction hoses may be printed, but not be covered with paints, coatings or similar products. The resistance of the fire behaviour against climatic influences in the outside was not proofed. Therefore the product may be used as schwerentflammbar only inside of buildings or in otherwise weather protected areas.

- The material does not produce burning droplets / particles.

Special remark

- The validity of this test certificate ends on 22.02.2020. The period of validity can be extended on application.
- Since the material is used for extraction hoses in the area of technical plants it is no building product according to §2 chapter 9 no. 1 MBO. An allgemeines bauaufsichtliches Prüfzeugnis of the test institute respectively an allgemeine bauaufsichtliche Zulassung of Deutsches Institut für Bautechnik, Berlin is not necessary.
- This test certificate is not the requested approval, if the tested material is used as building product according to the German building regulations.

Marking

The above mentioned material has to be marked as following:

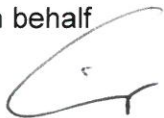
- "Only schwerentflammbar (class DIN 4102-B1) in a distance of > 40 mm to equal or other plane building products"

The marking shall be done on the material, on an enclosed paper or on the packaging or, if this would be too difficult, on the delivery-note or on an enclosure to the delivery-note.

This test certificate is solely valid in combination with the original test certificate issued in German language and dated of 23.02.2015. In case of doubt, the certificate issued in German language is valid solely.

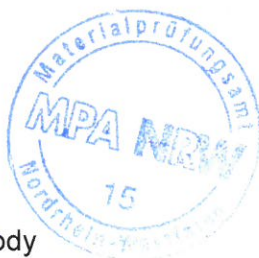
Erwitte, 23.02.2015

On behalf



Dipl.-Ing. Schreiner

Assistant head of testing body



Date of issue of this English version: 30.03.2015

Max. flue gas-temperature = 120 °C at [min : s] 07 : 39	Enclosure 1 of test report
	no. 230009864 of 23.02.2015
Smoke-development [% x min]: 205	

