

Test Report

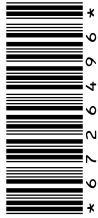
No. 6726496

Date: 06.02.2024

Zimmer + Rhode
 Zimmersmühlenweg 14-18
 DE-61440 Oberursel/Frankfurt
 Germany

The following sample(s) was (were) submitted and identified by the client as:

Original Sample ID	Sample Description	Sample Receipt Date
231140656	Article 6000 col 110	22/11/2023
231140657	Article 6000 col 998	22/11/2023
231140658	Article 6000 col 555	22/11/2023



SGS Customer No : 10083859
 SGS Order No : 6804051
 Buyer : -
 Order No. : - dt. 20/11/2023
 Country of Origin : -
 Test Performing Period : 29/11/2023 – 27/12/2023
 Test Performed : Selected test(s) as requested by applicant
Overall Conclusion : The tested sample meets class B1 building materials requirements of DIN 4102-1 (May 1998).
 Test Results : Please refer to the next pages

This (e)Report cancels and supersedes the (e)Report No. 6670730 dated 27.12.2023 issued by SGS INSTITUT FRESENIUS GmbH.

SGS INSTITUT FRESENIUS GmbH

This test report was electronically created and released:

	date	name	function	department
created	06.02.2024	i.A. Marilyn Mohr	Customer Service Assistant	Connectivity & Products
released	06.02.2024	i.A. Wolfgang Löffler	Project Manager	Connectivity & Products

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Performed Test Summary:

Test	Result
Class B1 building materials requirements of DIN 4102-1*	M

Remarks:

- M = Meets Client's requirement
- F = Does not meet Client's requirement
- I = Inconclusive
- = No specified requirement

Note: Conclusions on pass/fail are based on the test result from the actual sampling of the received sample(s).

Conclusions are based on the relevant requirements; measurement uncertainties are not taken into account. Only results above the relevant detection limit are taken into account for the calculation of sums.

Test was conducted on composite of random parts of the item as per client's request and the test result is the overall result.

The composite sampling method is based on the client's special request and is a modification from the testing standard.

For 2-composite mix with results exceeding one half of the relevant requirements or 3-composite mix with results exceeding one third of the relevant requirements, the composite sample may have the possibility of one or more components that can lead to a failure result, it is recommended to test on individual basis.

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Analytical results

Sample ID: 231140656 / article 6000, col. 110

I. Test conducted

This test was conducted as per DIN 4102-15:1990 Fire behaviour of building materials and elements – ‘Brandschacht’ apparatus, DIN 4102-16:2015 Fire behaviour of building materials and elements – ‘Brandschacht’ tests and DIN 4102-1:1998-05 Clause 6.2.5, and Classification according to DIN 4102-1:1998-05 Clause 6.1 Class B1 materials.

II. Sample details

General description	Fabric
Color	White
Area Density	48 g/m ²
Size of sample	190mm×1000mm & 190mm×90mm

Conditioning

Prior to testing, the sample was conditioned at least 14 days to constant mass at a temperature of 23 ± 2 °C, and a relative humidity of 50 ± 5 %.

III. Test results

1) “Brandschacht” Test according to DIN 4102-15 & 16

Exposed surface: The marking surface

Results of “Brandschacht” Test (part 1)				
Line No.	Unit	Test direction		
		Lengthwise	Widthwise	
1	Specimen fixings according to DIN 4102 part 15, table	/	/	/
2	Max. flame height above lower sample edge;	cm	40	40
3	Time ¹⁾	min:s	00:21	00:25
4	<u>Melting/burning through</u> Time ¹⁾	min:s	00:01	00:01
5	<u>Back of specimen</u> Flaming/glowing, Time ¹⁾	min:s	00:01	00:01
6	Discolouring, Time ¹⁾	min:s	00:01	00:01
7	<u>Burning droplets</u> Begin 1)	min:s	00:09	00:11
8	<u>Amount</u> Specimen material falling off in separate droplets		√	√
9	Specimen material falling off continuously		/	/

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Results of "Brandschacht" Test (part 2)			
Line No.	Unit	Test direction	
		Lengthwise	Widthwise
	<u>Burning parts</u>	No	No
10	Begin 1)	/	/
11	Parts of sample falling off separately	/	/
12	Parts of sample falling off continuously	/	/
13	Duration of continued combustion on mesh base (max.)	No	No
	<u>Burner flame impairment by dripping/falling material</u>	No	No
14	Time ¹⁾	/	/
	<u>Premature ending of test</u>	/	/
15	End of burning at specimen ¹⁾	/	/
16	Time when test terminated (if applicable) ¹⁾	/	/
	<u>Burning after end of test</u>	No	No
17	Duration	/	/
18	Number of specimens	/	/
19	Front of specimen	/	/
20	Back of specimen	/	/
21	Height of flame	/	/
	<u>Glowing after end of test</u>	No	No
22	Duration	/	/
23	Number of specimens	/	/
24	Front of specimen	/	/
25	Back of specimen	/	/
26	Top half of specimen	/	/
27	Bottom half of specimen	/	/
	<u>Smoke density</u>	Yes	Yes
28	≤ 400 %×min	√	√
29	> 400 %×min	/	/

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Results of "Brandschacht" Test (part 3)

Line No.	Unit	Test direction			
		Lengthwise		Widthwise	
	<u>Residual length</u>	/		/	
30	Single results	62	59	63	65
		60	64	60	61
31	Average of the single results	61.3		62.3	
	<u>Smoke temperature</u>	/		/	
32	Max. of average	°C		124.8	126.1
33	Time ¹⁾	min:s		05:52	06:09

Note: ¹⁾ time from start of testing

*Reduction in number of test (*DIN 4102 Part 16, clause 5.2*)

Class B1 materials:

If the residual length measured after the first test is 45cm or greater, further tests are not required.

2) Ignitibility test according to DIN 4102-1 Clause 6.2.5

Edge ignition

Fire application time: 15s

Parameter	Lengthwise					Widthwise				
	1	2	3	4	5	6	7	8	9	10
Whether or not flaming extinguished before reach the gauge mark (Yes/No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Whether or not flaming reach the measuring mark within 20 seconds (Yes/No)	No	No	No	No	No	No	No	No	No	No
Time for the flame tip to reach the gauge mark (s)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afterflame time (s)	0	0	0	0	0	0	0	0	0	0
Max. flame height (cm)	5	6	4	5	4	4	5	5	4	5
Molten dripping (Yes/No)	No	No	No	No	No	No	No	No	No	No
Smoke developments (visual impression)	Slight					Slight				

Note: NA--Not applicable

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IV. DIN 4102-1:1998 Criteria for classification

- 1) All materials, except flooring, may be classed as **B1** materials if they meet the following requirements a) and b):
 - a) The test using the 'Brandschacht' apparatus described in DIN 4102-15 (cf. subclause 6.1.3.1) shall be deemed passed if
 - The mean value for the residual length (portion of specimen that has not burned or charred; cf. subclause 9.1 of DIN 4102-16) of each specimen is at least 15 cm and no individual values are lower than 0 cm,
 - The mean effluent temperature does not exceed 200 °C in any test,
 - The requirement for the residual length of each specimen is met even where there is afterflame, afterglow, or smouldering.
 - b) Pass DIN 4102-1:1998 sub-clause 6.2.5 Ignitability Test if
 For each specimen, flaming doesn't reach the gage mark within 20s after flame application.
- 2) Materials may be classed as **B2** materials if they pass the ignitability test specified in DIN 4102-1:1998 subclause 6.2.5.
 For each specimen, flaming doesn't reach the gage mark (150mm marks) within 20s after flame application.
- 3) Combustible materials which cannot be classed as B1 or B2 materials shall be classed as **B3** materials.

STATEMENTS:

This declaration of conformity is only based on the result of this laboratory activity, the impact of the uncertainty of the results was not included.

This test report does not replace any mandatory certification of the product that may be required.

The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire and smoke hazard of the product in use.

Attachment: Picture of sample



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Sample ID: 231140657 / article 6000, col. 998

I. Test conducted

This test was conducted as per DIN 4102-15:1990 Fire behaviour of building materials and elements – ‘Brandschacht’ apparatus, DIN 4102-16:2015 Fire behaviour of building materials and elements – ‘Brandschacht’ tests and DIN 4102-1:1998-05 Clause 6.2.5, and Classification according to DIN 4102-1:1998-05 Clause 6.1 Class B1 materials.

II. Sample details

General description	Fabric
Color	Dark grey
Area Density	49 g/m ²
Size of sample	190mm×1000mm & 190mm×90mm

Conditioning

Prior to testing, the sample was conditioned at least 14 days to constant mass at a temperature of 23 ± 2 °C, and a relative humidity of 50 ± 5 %.

III. Test results

1) “Brandschacht” Test according to DIN 4102-15 &16

Exposed surface: The marking surface

Results of “Brandschacht” Test (part 1)				
Line No.	Unit	Test direction		
		Lengthwise	Widthwise	
1	Specimen fixings according to DIN 4102 part 15, table	/	/	/
2	Max. flame height above lower sample edge;	cm	50	50
3	Time ¹⁾	min:s	00:27	00:24
	<u>Melting/burning through</u>		Yes	Yes
4	Time ¹⁾	min:s	00:01	00:01
	<u>Back of specimen</u>		Yes	Yes
5	Flaming/glowing, Time ¹⁾	min:s	00:01	00:01
6	Discolouring, Time ¹⁾	min:s	00:01	00:01
	<u>Burning droplets</u>		Yes	Yes
7	Begin 1)	min:s	00:11	00:10
	<u>Amount</u>		/	/
8	Specimen material falling off in separate droplets		√	√
9	Specimen material falling off continuously		/	/

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Results of "Brandschacht" Test (part 2)

Line No.	Unit	Test direction	
		Lengthwise	Widthwise
	<u>Burning parts</u>	No	No
10	Begin 1)	/	/
11	Parts of sample falling off separately	/	/
12	Parts of sample falling off continuously	/	/
13	Duration of continued combustion on mesh base (max.)	No	No
	<u>Burner flame impairment by dripping/falling material</u>	No	No
14	Time ¹⁾	/	/
	<u>Premature ending of test</u>	/	/
15	End of burning at specimen ¹⁾	/	/
16	Time when test terminated (if applicable) ¹⁾	/	/
	<u>Burning after end of test</u>	No	No
17	Duration	/	/
18	Number of specimens	/	/
19	Front of specimen	/	/
20	Back of specimen	/	/
21	Height of flame	/	/
	<u>Glowing after end of test</u>	No	No
22	Duration	/	/
23	Number of specimens	/	/
24	Front of specimen	/	/
25	Back of specimen	/	/
26	Top half of specimen	/	/
27	Bottom half of specimen	/	/
	<u>Smoke density</u>	Yes	Yes
28	≤ 400 %×min	√	√
29	> 400 %×min	/	/

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Results of "Brandschacht" Test (part 3)						
Line No.	Unit	Test direction				
		Lengthwise		Widthwise		
	<u>Residual length</u>	/		/		
30	Single results	cm	58	57	59	57
			57	56	58	58
31	Average of the single results	cm	57.0		58.0	
	<u>Smoke temperature</u>		/		/	
32	Max. of average	°C	127.2		129.4	
33	Time ¹⁾	min:s	06:10		06:23	

Note: ¹⁾ time from start of testing

*Reduction in number of test (*DIN 4102 Part 16, clause 5.2*)

Class B1 materials:

If the residual length measured after the first test is 45cm or greater, further tests are not required.

2) Ignitibility test according to DIN 4102-1 Clause 6.2.5

Edge ignition

Fire application time: 15s

Parameter	Lengthwise					Widthwise				
	1	2	3	4	5	6	7	8	9	10
Whether or not flaming extinguished before reach the gauge mark (Yes/No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Whether or not flaming reach the measuring mark within 20 seconds (Yes/No)	No	No	No	No	No	No	No	No	No	No
Time for the flame tip to reach the gauge mark (s)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afterflame time (s)	0	0	0	0	0	0	0	0	0	0
Max. flame height (cm)	6	6	5	4	5	5	4	5	5	6
Molten dripping (Yes/No)	No	No	No	No	No	No	No	No	No	No
Smoke developments (visual impression)	Slight					Slight				

Note: NA---Not applicable

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IV. DIN 4102-1:1998 Criteria for classification

- 4) All materials, except flooring, may be classed as **B1** materials if they meet the following requirements a) and b):
- c) The test using the 'Brandschacht' apparatus described in DIN 4102-15 (cf. subclause 6.1.3.1) shall be deemed passed if
- The mean value for the residual length (portion of specimen that has not burned or charred; cf. subclause 9.1 of DIN 4102-16) of each specimen is at least 15 cm and no individual values are lower than 0 cm,
 - The mean effluent temperature does not exceed 200 °C in any test,
 - The requirement for the residual length of each specimen is met even where there is afterflame, afterglow, or smouldering.
- d) Pass DIN 4102-1:1998 sub-clause 6.2.5 Ignitability Test if
For each specimen, flaming doesn't reach the gage mark within 20s after flame application.
- 5) Materials may be classed as **B2** materials if they pass the ignitability test specified in DIN 4102-1:1998 subclause 6.2.5.
For each specimen, flaming doesn't reach the gage mark (150mm marks) within 20s after flame application.
- 6) Combustible materials which cannot be classed as B1 or B2 materials shall be classed as **B3** materials.

STATEMENTS:

This declaration of conformity is only based on the result of this laboratory activity, the impact of the uncertainty of the results was not included.

This test report does not replace any mandatory certification of the product that may be required.

The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire and smoke hazard of the product in use.

Attachment: Picture of sample



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Sample ID: 231140658 / article 6000, col. 555

I. Test conducted

This test was conducted as per DIN 4102-15:1990 Fire behaviour of building materials and elements – ‘Brandschacht’ apparatus, DIN 4102-16:2015 Fire behaviour of building materials and elements – ‘Brandschacht’ tests and DIN 4102-1:1998-05 Clause 6.2.5, and Classification according to DIN 4102-1:1998-05 Clause 6.1 Class B1 materials.

II. Sample details

General description	Fabric
Color	Coral
Area Density	50 g/m ²
Size of sample	190mm×1000mm & 190mm×90mm

Conditioning

Prior to testing, the sample was conditioned at least 14 days to constant mass at a temperature of 23 ± 2 °C, and a relative humidity of 50 ± 5 %.

III. Test results

1) “Brandschacht” Test according to DIN 4102-15 &16

Exposed surface: The marking surface

Results of “Brandschacht” Test (part 1)				
Line No.	Unit	Test direction		
		Lengthwise	Widthwise	
1	Specimen fixings according to DIN 4102 part 15, table	/	/	/
2	Max. flame height above lower sample edge;	cm	40	40
3	Time ¹⁾	min:s	00:21	00:27
4	<u>Melting/burning through</u> Time ¹⁾	min:s	00:01	00:01
5	<u>Back of specimen</u> Flaming/glowing, Time ¹⁾	min:s	00:01	00:01
6	Discolouring, Time ¹⁾	min:s	00:01	00:01
7	<u>Burning droplets</u> Begin 1)	min:s	00:06	00:05
8	<u>Amount</u> Specimen material falling off in separate droplets		√	√
9	Specimen material falling off continuously		/	/

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Results of "Brandschacht" Test (part 2)

Line No.	Unit	Test direction	
		Lengthwise	Widthwise
	<u>Burning parts</u>	No	No
10	Begin 1)	/	/
11	Parts of sample falling off separately	/	/
12	Parts of sample falling off continuously	/	/
13	Duration of continued combustion on mesh base (max.)	No	No
	<u>Burner flame impairment by dripping/falling material</u>	No	No
14	Time ¹⁾	/	/
	<u>Premature ending of test</u>	/	/
15	End of burning at specimen ¹⁾	/	/
16	Time when test terminated (if applicable) ¹⁾	/	/
	<u>Burning after end of test</u>	No	No
17	Duration	/	/
18	Number of specimens	/	/
19	Front of specimen	/	/
20	Back of specimen	/	/
21	Height of flame	/	/
	<u>Glowing after end of test</u>	No	No
22	Duration	/	/
23	Number of specimens	/	/
24	Front of specimen	/	/
25	Back of specimen	/	/
26	Top half of specimen	/	/
27	Bottom half of specimen	/	/
	<u>Smoke density</u>	Yes	Yes
28	≤ 400 %×min	√	√
29	> 400 %×min	/	/

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Results of "Brandschacht" Test (part 3)					
Line No.	Unit	Test direction			
		Lengthwise		Widthwise	
	<u>Residual length</u>	/		/	
30	Single results	63	65	64	64
		61	62	62	65
31	Average of the single results	62.8		63.8	
	<u>Smoke temperature</u>	/		/	
32	Max. of average	°C		125.7	126.6
33	Time ¹⁾	min:s		05:44	05:21

Note: ¹⁾ time from start of testing

*Reduction in number of test (*DIN 4102 Part 16, clause 5.2*)

Class B1 materials:

If the residual length measured after the first test is 45cm or greater, further tests are not required.

2) Ignitibility test according to DIN 4102-1 Clause 6.2.5

Edge ignition

Fire application time: 15s

Parameter	Lengthwise					Widthwise				
	1	2	3	4	5	6	7	8	9	10
Whether or not flaming extinguished before reach the gauge mark (Yes/No)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Whether or not flaming reach the measuring mark within 20 seconds (Yes/No)	No	No	No	No	No	No	No	No	No	No
Time for the flame tip to reach the gauge mark (s)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Afterflame time (s)	0	0	0	0	0	0	0	0	0	0
Max. flame height (cm)	4	5	5	4	4	5	5	4	6	4
Molten dripping (Yes/No)	No	No	No	No	No	No	No	No	No	No
Smoke developments (visual impression)	Slight					Slight				

Note: NA---Not applicable

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IV. DIN 4102-1:1998 Criteria for classification

- 7) All materials, except flooring, may be classed as **B1** materials if they meet the following requirements a) and b):
- e) The test using the 'Brandschacht' apparatus described in DIN 4102-15 (cf. subclause 6.1.3.1) shall be deemed passed if
- The mean value for the residual length (portion of specimen that has not burned or charred; cf. subclause 9.1 of DIN 4102-16) of each specimen is at least 15 cm and no individual values are lower than 0 cm,
 - The mean effluent temperature does not exceed 200 °C in any test,
 - The requirement for the residual length of each specimen is met even where there is afterflame, afterglow, or smouldering.
- f) Pass DIN 4102-1:1998 sub-clause 6.2.5 Ignitability Test if
For each specimen, flaming doesn't reach the gage mark within 20s after flame application.
- 8) Materials may be classed as **B2** materials if they pass the ignitability test specified in DIN 4102-1:1998 subclause 6.2.5.
For each specimen, flaming doesn't reach the gage mark (150mm marks) within 20s after flame application.
- 9) Combustible materials which cannot be classed as B1 or B2 materials shall be classed as **B3** materials.

STATEMENTS:

This declaration of conformity is only based on the result of this laboratory activity, the impact of the uncertainty of the results was not included.

This test report does not replace any mandatory certification of the product that may be required.

The test results relate to the behaviour of the test specimens of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire and smoke hazard of the product in use.

Attachment: Picture of sample



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*** End of test report ***

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