

Testing. Advising. Assuring.

Test report No. 2009-2211

for applying of a required "Verwendbarkeitsnachweis"
issued 30.11.2009

Applicant: Marta Trede
LG HI-MACS® Project Management
Gladiolenweg 3b
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Date of order: 04.11.2009
Date of sampling: no official taking out of the sample from
a representative of the Bodycote
Warrington Brandhaus
Date of arrival: 04.11. + 16.11.2009
Date of test: 19.11. + 30.11.2009

Order

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

Description / designation of the test object

HI-MACS®, Natural Acrylic Stone

Description of the relevant test procedure

DIN 4102 Teil 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:

HI-MACS[®], Natural Acrylic Stone

Construction: HI-MACS[®], colour: Opal (S302), thickness 12 mm
HI-MACS[®], colour: Garnet Sand (G16), thickness 12 mm
HI-MACS[®], colour: Black Granite (G31), thickness 12 mm

1.2 At the sample preparation in the Exova Brandhaus determined values:

Panel Material

Sample:	1.	2.	3.
Colour:	white	red streaked	black streaked
Thickness:	12 mm	12 mm	12 mm
Weight:	20,8 Kg/m ²	20,3 Kg/m ²	20,1 Kg/m ²

The samples were stored before testing under climatic conditions (23°C / 50 % rel. humidity).

2. Test results

2.1 Brandschachtprüfung nach DIN 4102-1

Sample A: HI-MACS[®], colour: Opal (S302)
 Sample B: HI-MACS[®], colour: Garnet Sand (G16)
 Sample C: HI-MACS[®], colour: Black Granite (G31)

Test results of the Brandschacht tests part 1						
line no.		Measurements test sample				
			A	B	C	
1	<u>no. test arrangement according to DIN 4102 part 15, table 1</u>		1			
2	<u>flame height max. over lower sample edge</u> time ¹⁾	cm	90	100	90	
		min : s	9:37	9:51	8:56	
3	<u>ascertainties on the front side</u> Flaming/glowing time ¹⁾	min : s	1:47	2:08	2:47	
4	<u>melting / burning through</u> time ¹⁾	min : s	not occured	not occured	not occured	
5	<u>ascertainties on the back side</u> Flaming/glowing time ¹⁾	min : s	no	no	no	
		min : s				
6	discolouring time ¹⁾	min : s				
		min : s				
7	<u>burning droplets</u> begin ¹⁾	min : s	not occured	not occured	not occured	
8	occasional dropping of material					
9	constant dropping of material					
10	<u>separating from burning sample parts</u> begin ¹⁾	min : s	not occured	not occured	not occured	
		min : s				
11	occasional separating parts					
12	constant separating parts					
13	duration of burning on the sieve tray (max.)	min : s	not occured	not occured	not occured	
14	<u>influnce on the burner flame by dropping of / separating material</u> time ¹⁾	min : s	no	no	no	
		min : s				
15	<u>earlier end of test</u> end of the fire scenario on the sample ¹⁾	min : s	10:15	10:24	10:33	
		min : s				
16	time of a possible resulted test stop ¹⁾	min : s				

¹⁾ 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> duration	min : s	0:15	0:24	0:33	
18	number of sample		4	4	4	
19	front side of sample		no	no	no	
20	backside of sample	cm	40	40	40	
21	flame length					
22	<u>glowing after end of test</u> duration	min . s	not occured	not occured	not occured	
23	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		5	1	1	
29	> 440 % x min		--/--	--/--	--/--	
30	diagram in annex no.		1	2	3	
31	<u>residual length</u> single results	cm	53 / 54 55 / 54	50 / 53 54 / 55	52 / 52 50 / 50	
32	average of the single results	cm	54	53	51	
33	foto of the sample on page		5	5	5	
34	<u>smoke temperature</u> max. of the average results	°C min : s	168	172	183	
35	time ¹⁾		9:55	9:53	9:55	
36	diagram in annex no.		1	1	1	

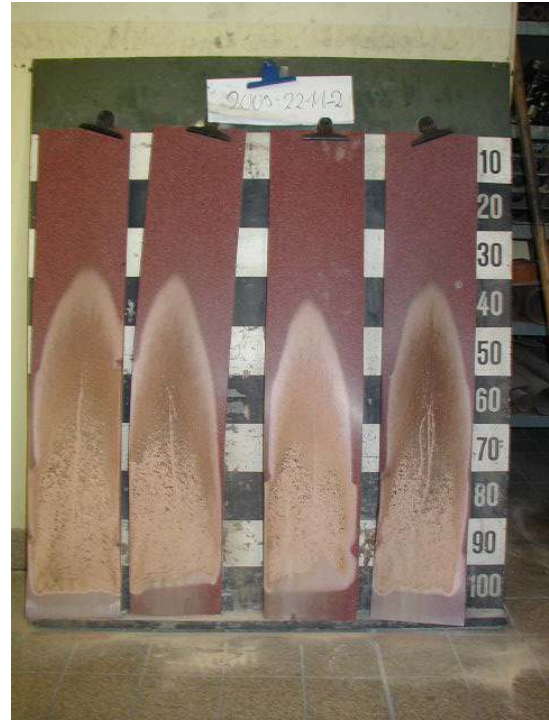
¹⁾ time from start of test

Remarks: no special observations.

Because of the average residual length of all tests was > 45 cm, the quantity of tests could be reduced to three tests.



Appearance of sample A
after the "Brandschacht" test



Appearance of sample B
after the "Brandschacht" test



Appearance of sample C
after the "Brandschacht" test

2.2 Normal flammability test according to DIN 4102-1

Test with edge ignition without deposit
 Flame application on: lower sample edge
 Test direction: in direction of production
 HI-MACS[®], colour: Opal (S302):

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

Remarks: none

HI-MACS[®], colour: Garnet Sand (G16):

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

Remarks : none

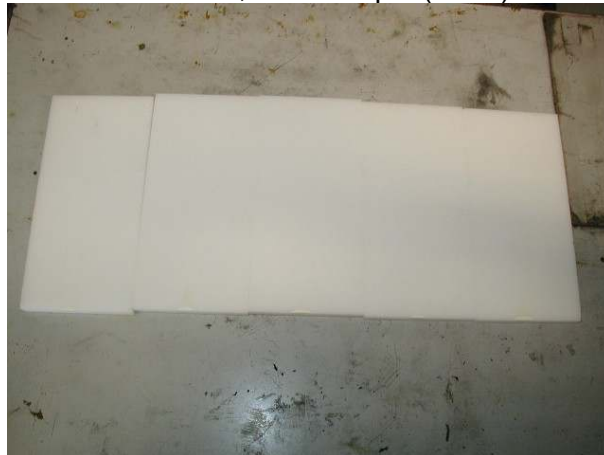
HI-MACS[®], colour: Black Granite (G31):

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

Remarks : none

Appearance of the sample after the small burner test:

HI-MACS[®], colour: Opal (S302):



HI-MACS[®], colour: Garnet Sand (G16):



HI-MACS[®], colour: Black Granite (G31)



Assessment

The in chapter one described material fulfils the requirements of the building class B2 according to DIN 4102-1 (Mai 1998).

The determined test results show that the material fulfils also 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 in chapter one described material, in the tested thicknesses, square weights and colours, in free hanging configuration,. The distance to other plane material must be more then ≥ 40 mm.

In accordance to the experience of the test institute the test result is also valid for the colour amongst.

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

Frankfurt, the 30.11.2009

A handwritten signature in blue ink, appearing to be 'P. Scheinkönig'.

P. Scheinkönig
Tester in charge

A handwritten signature in blue ink, appearing to be 'H. Bräuer'.

Dipl.-Ing. H. Bräuer
Head of laboratory

This Test report is valid until 29.11.2014.

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

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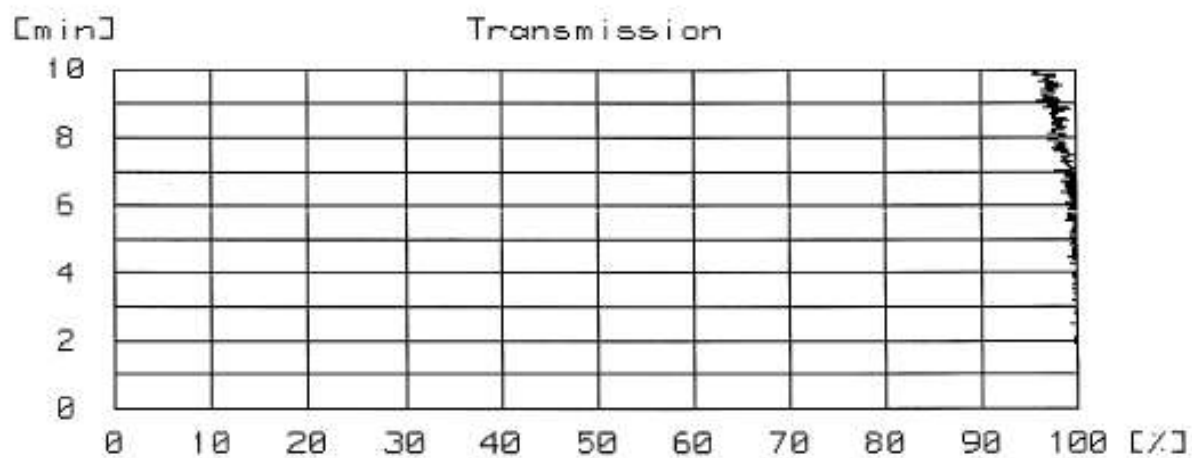
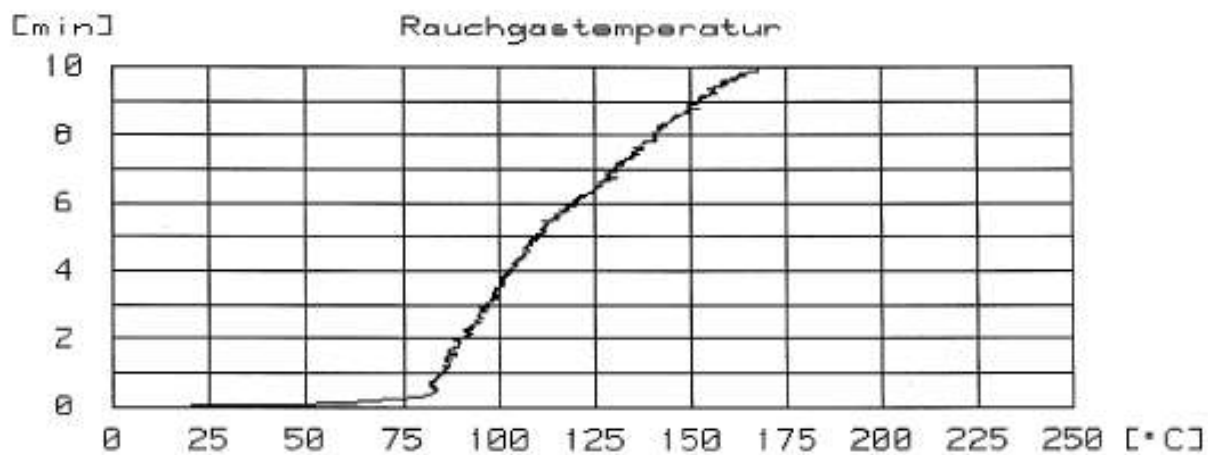
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This Test report is a translation of the German version 2009-2211 (issued 30.11.2009). In case of doubt only the German version is valid

This test report contains 9 pages and 3 annexes.

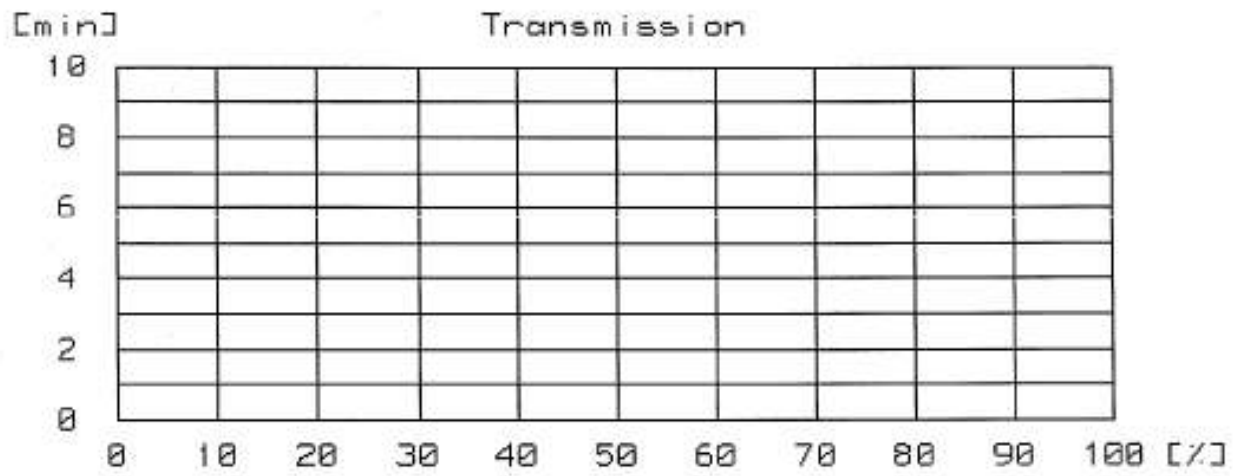
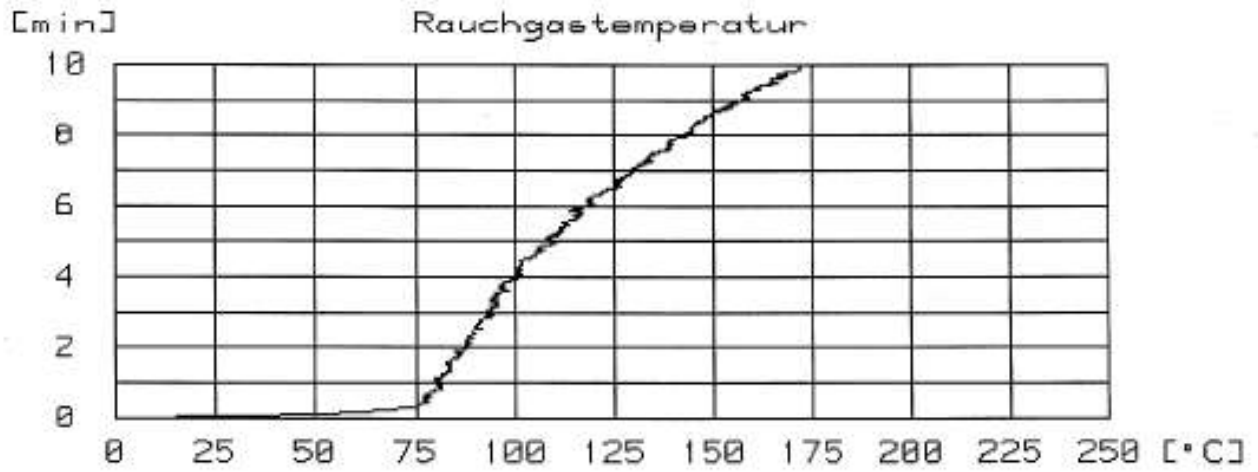
Annex 1 to the Test report No. 2009-2211 dated 30.11.2009

Sample A:



Annex 2 to the Test report No. 2009-2211 dated 30.11.2009

Sample B:



Annex 3 to the Test report No. 2009-2211 dated 30.11.2009

Sample C:

