Materialprüfanstalt für das Bauwesen

MPA BAU HANNOVER

Test report no. 155937

English Version

1. issue dated 14.01.2016

Sponsor:	3A Composites GmbH Kiefernweg 10 49090 Osnabrück
Order from:	04.12.2015 – Fatmir Beari
Order:	Single-flame source test according to DIN 4102-1: 1998-05, Baustoffklasse B2, sandwich-elements „KAPAmount“ with PUR hard foam core and cardboard surface layers on both sides
Notes:	In Germany this test report can be used only for a building material, not for a building product. For sale on the German market, other special papers according to the German “Landesbauordnung” are needed in addition. This test report can be used for these special papers.

This test report consists of 4 pages.

Materialprüfanstalt für das Bauwesen Hannover MPA BAU HANNOVER

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1 Sampling and delivery

Sampling:	by sponsor
Receipt:	08.12.2015 by DHL
Quantity:	35 specimens: 250 mm x 90 mm x 5 mm 32 specimens: 250 mm x 90 mm x 10 mm

2 Description of the test specimens

Identification:	„KAPAmount“
Constituents:	rigid polyurethane, aluminum foil (9 µm), cardboard-layers
Description:	The building product is made of a flat rigid polyurethane core covered on front and rear side with identical surface layers. The 0.3 mm thick surface layers are reinforced by a 9 µm thick aluminum foil
Colour:	front and rear side: white rigid polyurethane: grey
Nominal thickness:	material 1: 5 mm, material 2: 10 mm

3 Preparation

In the fire laboratory the delivery materials 1 and 2 were cut out for the fire tests. Since front and rear surface of the building product are equal, only one surface is tested.

4 Test results

4.1 Thickness and mass per unit area

The test results are compiled in table 1.

Table 1: Thickness and mass per unit area

material 1: nominal thickness 5 mm		
thickness of the elements	5,1	mm
mass per unit area of the elements	877	g/m^2
material 2: nominal thickness 10 mm		
thickness of the elements	10,1	mm
mass per unit area of the elements	1109	g/m^2

4.2 Reaction to fire tests

Before testing the samples were conditioned for at least 14 days in a chamber with a reference atmosphere according to DIN 50014 - 23/50-2. The reaction to fire tests were carried out in accordance with DIN 4102-1:1998-05, clause 6.2.5.
Date of tests: 12.01.2016
For each nominal thickness 5 edge flame impingements according to clause 6.2.5.2 (specimen nos. 1 to 10) and 5 surface flame impingements according to clause 6.2.5.3 (specimen nos. 11 to 20) were carried out at the surface layers.
Further more 5 specimens for each nominal thickness turned at 90° round their vertical axis were carried out as edge flame impingements in accordance with clause 6.2.5.5 (specimen nos. 21 to 30).

The test results are compiled in the tables 2 to 4.

Table 2: Reaction to fire tests in accordance with DIN 4102-1, clause 6.2.5.2

edge flame impingement		material 1: nominal thickness 5 mm					material 2: nominal thickness 10 mm				
specimen no.		1	2	3	4	5	6	7	8	9	10
ignition occurs after	s	0,7	1,0	0,3	0,4	0,4	0,6	0,3	0,6	0,3	0,4
duration of flames	s	60*)	60*)	60*)	60*)	60*)	60*)	60*)	60*)	60*)	60*)
max. vertical flame spread	mm	80	70	120	110	120	120	120	100	120	100
smoke production		high					high				
flaming droplets/particles		no					no				

*) The flames were extinguished after 60 s.

Table 3: Reaction to fire tests in accordance with DIN 4102-1, clause 6.2.5.3

surface flame impingement		material 1: nominal thickness 5 mm					material 2: nominal thickness 10 mm				
specimen no.		11	12	13	14	15	16	17	18	19	20
ignition occurs after	s	4,4	5,1	5,2	4,2	5,3	3,9	5,4	4,7	4,1	4,6
duration of flames	s	11,4	14,6	11,4	11,6	13,0	13,1	16,2	10,9	11,5	20,8
max. vertical flame spread	mm	40	40	30	30	40	30	40	30	30	40
smoke production		low					low				
flaming droplets/particles		no					no				

Table 4: Reaction to fire tests in accordance with DIN 4102-1, clause 6.2.5.5

edge flame impingement		material 1: nominal thickness 5 mm					material 2: nominal thickness 10 mm				
specimen no.		21	22	23	24	25	26	27	28	29	30
position of flame attack		rigid polyurethane / surface layers					rigid polyurethane				
ignition occurs after	s	0,8	0,8	0,9	0,8	0,9	0,7	0,4	0,4	0,3	0,4
duration of flames	s	14,5	14,6	14,5	14,7	14,4	8,6	15,1	15,0	14,7	14,9
max. vertical flame spread	mm	10	10	10	10	10	30	30	20	30	30
smoke production		low					moderate				
flaming droplets/particles		no					no				

Requirement of Baustoffklasse DIN 4102 - B2:

There shall be no flame spread in excess of 150 mm vertically from the point of application of the test flame within 20 s from the time of the application.

5 Assessment

The building product „KAPAmount" with nominal thickness of 5 mm and 10 mm meets the requirements of Baustoffklasse B2 according to DIN 4102-1.

During the tests there were no flaming droplets / particles according to DIN 4102-1 clause 6.2.6.

6 Notes

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For sale on the German market, other special papers according to the German "Landesbauordnung" are needed in addition.

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The validity of this test report expires on 31.01.2021.

Hannover, 14. January 2016

Head of fire laboratory

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Materialprüfanstalt für das Bauwesen Hannover MPA BAU HANNOVER

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