



CENTRUM STAVEBNÍHO INŽENÝRSTVÍ a.s.

Zkušebna fyzikálních vlastností materiálů, konstrukcí a budov - Praha
Zkušební laboratoř č. 1007.4 akreditovaná ČIA dle ČSN EN ISO/IEC 17025
Pražská 16, 102 00 Praha 10 Hostivař

TEST REPORT

Nr. 16/732/P482



Job Nr.: Z-16/449/P199

Nr. of pages: 4 + appendixes

Nr. of copies: 2

Copy Nr.: 1

Name of test:

Determination of flammability class of construction products

Material/product/construction:

Naturalbond Alüminyum Komposit Panel

Sponsor:

EFFECTIS ERA AVRASYA TEST VE BELGELENDİRME A.Ş
TOSB TAYSAD Organize San. Böl. 1. CD.
15. Yol No: 1 Şekerpınar - Çayırova Kocaeli-TURKEY

Manufacturer:

Asaş Alüminyum Sanayi ve Ticaret A.Ş.
Kışla Alanı Mevkii Küçücek Beldesi Akyazı
Sakarya
TURKEY

Test specimens delivery date:

28th June 2016

Workplace:

Fire technical laboratory

Location:

Pražská 16, Praha 10 – Hostivař

Date of test:

10th August 2016

Date of issue:

12th August 2016

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1. Test assignment

The test has been done on the base of order issued on 28th June 2016.

2. Test methods

- DIN 4102-1:1998 Fire behaviour of building materials and building components - Part 1: Building materials; concepts, requirements and tests.
- DIN 4102-16:1998 Fire behaviour of building materials and building components - Part 16: "Brandschacht" tests.
- DIN 4102-15:1990 Fire behaviour of building materials and elements "Brandschacht".

3. Test specimens

The test specimens were delivered by manufacturer. Marking of the test specimens in laboratory: 16/P482/1-3.

Composition: Aluminium sheets, filler, adhesive - Maleic Anhydride and Polyethylene mixture, PVDF paint.

Mass per unit area of aluminium sheet: 2,46 kg/m²

Mass per unit area of Filler material: 5,04 kg/m²

Density of filler material: 1680 kg/m³

Consumption of adhesive: 0,13 kg/m²

Consumption of PVDF paint: 0,078 kg/m²

Appearance: Aluminium composite board. Thickness 4,0 mm, mass per unit area 7,37 kg/m². Face side white, back side grey. Test specimens 1 and 2 exposed from face side, test specimen 3 exposed from back side. Fixing method: Fixed on the metal holder according to DIN 4102-15, table 1, detail 2.

4. Test equipment

- 1) Test device according to DIN 4102 teil 15 „Brandschacht“ (Reg. Nr. 744)
- 2) Yardstick (Reg. Nr. 148)
- 3) Digital stop watch (Reg. Nr. 4)
- 4) Flow meter (Reg. Nr. 300)
- 5) Flow meter (Reg. Nr. 301)
- 6) Thermometer / relative humidity meter (Reg. Nr. 74)
- 7) Digital anemometer (Reg. Nr. 67)
- 8) AD converter (Reg. Nr. 45)
- 9) Weighing scale OWA Labor (Reg. Nr. 6)
- 10) Non-coated thermocouple 0,5 mm (Reg. Nr. 119)
- 11) Non-coated thermocouple 0,5 mm (Reg. Nr. 120)
- 12) Non-coated thermocouple 0,5 mm (Reg. Nr. 121)
- 13) Non-coated thermocouple 1,5 mm (Reg. Nr. 122)
- 14) Non-coated thermocouple 1,5 mm (Reg. Nr. 123)
- 15) Non-coated thermocouple 1,5 mm (Reg. Nr. 134)
- 16) Non-coated thermocouple 1,5 mm (Reg. Nr. 135)

5. Test results and conclusion

Conditioning: 14 days at temperature $T = (23 \pm 2) ^\circ\text{C}$
Testing conditions in laboratory: $T = 27 ^\circ\text{C}$

relative humidity $RH = (50 \pm 3) \%$
relative humidity $RH = 24 \%$

Measuring and observations	Test specimen No.											
	1				2				3			
Residual length of the every test specimen [cm]	58	60	57	59	56	60	60	57	55	58	54	57
Residual length average value of the test specimen [cm]	58,5				58,3				56,0			
The highest smoke temperature [°C]	135,2				141,1				128,7			
Time to accomplish of the highest temperature of the smoke [min:s]	9:58				9:49				9:55			
The highest flame level above the bottom edge of the test specimen [cm]	50				50				50			
Time to accomplish the highest flame level [min:s]	10:00				10:00				10:00			
Smoke production [%·min]	4,5				5,8				7,1			
Maximum light attenuation [%]	1,1				1,4				2,4			
Time to accomplish the maximum smoke density [min:s]	4:07				4:26				5:22			
Time of sustained burning after end of test [s]	0				0				0			
Time of glowing after end of test [s]	0				0				0			
Flaming droplets / particles [yes/no]	no				no				no			
Burning time of fallen particles [s]	(-)				(-)				(-)			

Testing according to DIN 4102-1:1998, clause 6.2.5 (Baustoffklasse B2):

The product *Naturalbond Alüminyum Komposit Panel* does comply with requirements given in DIN 4102 – 1:1998 for B2 classification. Measured values and test results are showed in the Test report No. 16/731/P481 issued on 12th August 2016 by CSI a.s, Fire technical laboratory.

Conclusion:

The tested sample of *Naturalbond Alüminyum Komposit Panel* **does comply** with requirements given in the standard DIN 4102 – 1 for classification:

DIN 4102-B1.



6. Measurement uncertainty

Expanded measurement uncertainty of length is $\pm 4,0$ cm.

Expanded measurement uncertainty of smoke density is $\pm 9,8$ s.

Expanded measurement uncertainty of temperature $\pm 5,8$ °C.

Mentioned expanded uncertainties are obtained by multiplying the standard uncertainties by a coverage factor $k=2$, which corresponded to a level of confidence of 95 %. Standard uncertainties have been determined in accordance with document „EA 4/02“.

7. Declaration

The test results relate to the behaviour of the test specimen of a product under the particular conditions of the test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product of use. The results of tests are concerned only with the subject of testing. The test report shall be reproduced in full only.

Measured by: Pavel Martan



Test report prepared by: Vít Slaboch



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List of appendixes:

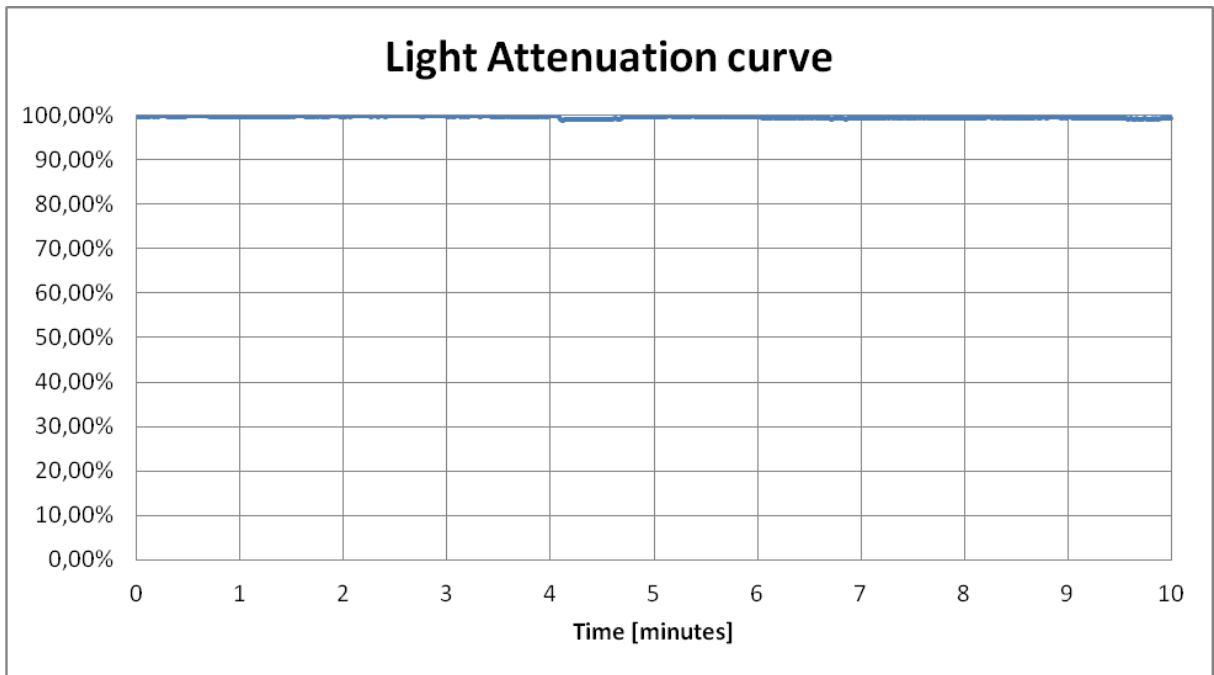
Appendix Nr. 1: The photograph of the test specimens after testing (test specimen Nr. 1)

Appendix Nr. 1: Light attenuation curve and smoke temperature curve (test specimen Nr. 1)

END OF TEST REPORT



Light attenuation curve - test specimen Nr. 1:



Smoke temperature curve - test specimen Nr. 1:

