

TEST REPORT

REACTION TO FIRE TEST

TEST SPONSOR:

Sistem Metal Yapı Reklam Malzemeleri ve İnşaat San. Tic. A.Ş.

Hatip Mah. Ali Osman Celebi Bulvari

No 140 59860 Corlu, Tekirdag, Turkey

T: +90 282 6611010, F: +90 282 6611011

Website: www.albond.com.tr

Test Material/Assembly:

Albond FR Aluminium Composite Panels

Test Standard:

ASTM E84-16: Standard Test Method for Surface Burning Characteristics of Building Materials



**THOMAS BELL-WRIGHT
INTERNATIONAL CONSULTANTS**

Test Date: 15-Jan-18

Issue Date: 4-Feb-18

Test Reference No: RD104-6

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DUBAI

ABU DHABI

DOHA



Accreditation

ISO/IEC 17025: General requirements for the competence of testing and calibration laboratories with:

United Kingdom Accreditation Service (UKAS) - Testing Laboratory: **4439**
www.ukas.com



GCC Accreditation Center (GAC) – Testing Laboratory: **ATL-0017**
www.GCC-accreditation.org



Memberships

Members of European Group of Organization for Fire Testing, Inspection and Certification

www.egolf.org.uk

Member of International Trade Council

www.thetradecouncil.com

Member of Association for Specialist Fire Protection

www.asfp.org.uk

Member of Centre for Window and Cladding Technology

www.cwct.co.uk



The work which is the subject of this report falls wholly or partly under the accreditations of **ISO 17025 UKAS and ISO 17025 GAC**.



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1. INTRODUCTION

Determination of the flame spread index and the smoke developed index of Albond FR Aluminium Composite Panels as per ASTM E84; Standard Test Method for Surface Burning Characteristics of Building Materials.

2. SPONSOR

Name: Sistem Metal Yapı Reklam Malzemeleri ve İnşaat San. Tic. A.Ş.
Address: Hatip Mah. Ali Osman Celebi Bulvari
No 140 59860 Corlu, Tekirdag, Turkey
T: +90 282 6611010, F: +90 282 6611011
Website: www.albond.com.tr

3. TESTING LABORATORY

Name: Thomas Bell-Wright International Consultants (TBWIC)
Address: Corner of 46th and 47th Streets,
Jebel Ali Industrial Area 1
Dubai, United Arab Emirates
T: +971 4 821 5777
F: +971 4 333 2693
Website: www.bell-wright.com

4. DATE OF TEST

Sample received: 14-Jan-18
Test date: 15-Jan-18

The test has been witnessed by:

Name	Company	Contact Number
Egemen Yörür	Sistem Metal Yapı Reklam	+90 533 3232692
Ismail Hasimoglu	Malzemeleri ve İnşaat San. Tic. A.Ş.	+90 530 7627643



5. SPECIMEN DESCRIPTION

The description of the specimen given below has been prepared from information provided by the Sponsor.

Product Tested	Albond FR Aluminium Composite Panels		
Product Reference	Albond FR ACP		
Manufacturer	Sistem Metal Yapı Reklam Malzemeleri ve İnşaat San. Tic. A.Ş.		
Fire side	Coated Aluminium Metal surface		
Product Description	Aluminium composite panel consisting of two prepainted aluminium sheets thermally bonded on either side of a mineral reinforced filled core.		
Product Details	1st Layer - Top Coat (Fire side)	Product Name	PVDF Topcoat
		Product Reference	Anthracite Grey RAL 7016
		Manufacturer	Note 1
		Application rate per coat	90 g/m ² (±5%)
		Application method	Coil coating (roll coater)
		Curing time	21 seconds
		Number of coats	1
		Thickness	20 microns (±2 microns)
		Specific Gravity	1.2 g/cm ³
	2nd Layer - Primer	Product Name	Universal Primer
		Product Reference	Note 1
		Manufacturer	Note 1
		Application rate per coat	60 g/m ²
		Application method	Coil Coating (Roll Coater)
		Curing time	21 seconds
		Number of coats	1
		Thickness	5 microns (±2 microns)
		Specific Gravity	1.15 g/cm ³
	3rd Layer	Product Name	Aluminium Sheet
		Product Reference	Mill Finish Aluminium Coil 3105 H24 Alloy
		Manufacturer	Note 1
		Colour reference	Natural Aluminium
		Thickness	0.50 mm (±0.02 mm)
		Density or Specific Gravity	2.71 g/cm ³



Product Details	4th Layer	Product Name	Adhesive Granule
		Product Reference	Note 1
		Manufacturer	Note 1
		Application rate per coat	100 g/m ²
		Application method	Co-Ex
		Curing time	110 seconds
		Thickness	Aprox. 110 microns
		Specific Gravity	0.93 g/cm ³
	5th Layer	Product Name	FR Mineral Mixture Core
		Product Reference	Note 1
		Manufacturer	Note 1
		Colour reference	White
		Thickness	3.0 mm (±0.2 mm)
		Density or Specific Gravity	1.55 g/cm ³
	6th Layer	Product Name	Adhesive Granule
		Product Reference	Note 1
		Manufacturer	Note 1
		Application rate per coat	100 g/m ²
		Application method	Co-Ex
		Curing time	110 seconds
		Thickness	Aprox. 110 microns
		Specific Gravity	0.93 g/cm ³
	7th Layer	Product Name	Aluminium Sheet
		Product Reference	Mill Finish Aluminium Coil 3105 H24 Alloy
		Manufacturer	Note 1
		Colour reference	Natural Aluminium
		Thickness	0.50 mm (±0.02 mm)
		Density or Specific Gravity	2.71 g/cm ³
	8th Layer	Product Name	Protective Coating (Epoxy – Polyester)
		Product Reference	Note 1
		Manufacturer	Note 1
		Application rate per coat	50 g/m ²
		Application method	Coil Coating (Roll Coater)
		Curing time	21 seconds
		Number of coats	1
		Thickness	5 microns (± 2 microns)
Specific Gravity		1.25 g/cm ³	



Dimension per panel	2 Nos. 3660 x 600 x 4mm (l x w x t) as measured
No. of panels	2
Total Dimensions	7320 x 600 x 4mm (l x w x t) as measured
Specimen placement	Two (2) sections of Albond FR Aluminium Composite Panels were butt jointed end-to-end. The test specimen was placed directly to the tunnel ledges with the coated Aluminium metal face towards the flame source.

Note 1: Information not provided by the client.

The test specimen was sampled by Mr. Suresh Kumar of TBWIC Certification Division dated July 12, 2017 and was submitted by the Sponsor for testing as part of product certification process.

6. METHOD OF TEST

6.1. Placing of test specimen

The test specimen consisted of two (2) sections of 4mm thick Albond Aluminium Composite Panels. The dimension per panel was 3660 x 600mm (l x w) and was butt jointed end-to-end. The total dimensions of the specimen were 7320 x 600mm (l x w).

Several sections of cement board butt jointed end-to-end with overall dimensions of 7350 x 600mm (l x w), were placed at the back of the sample to protect the furnace lid assembly.

6.2. Test Method

The specimen was installed horizontally in the Steiner Tunnel and supported by the ledges. The coated Aluminium metal surface was exposed to a flaming exposure during the 10 minute test duration.

Flame spread and density of the smoke are measured and recorded while the results are computed against the standard calibration materials (cement board and red oak flooring).

6.3. Conditioning

After delivery on 14-Jan-18, the specimen was stored in room temperature for 1 day prior to the test ranging from 20.2 to 25.8°C and 45 to 55% relative humidity.



7. OBSERVATION

Test Data and Observation

Observations	
Ignition Time (min:sec)	0:52
Time to maximum flame front advance (min:sec)	None
Maximum flame spread (ft)	None
Time to end of tunnel reached (min:sec)	Not Reached
Maximum temp recorded at the exposed thermocouple located near the end of the tunnel (°F / °C)	545/285
Dripping (min:sec)	None
Flaming on the floor (min:sec)	None
After flame on the top (min:sec)	None
After flame on the floor (min:sec)	None
Delamination (min:sec)	1:42
Sagging (min:sec)	None
Shrinkage (min:sec)	None
Fallout (min:sec)	None
FS*Time Area (ft*min)	0
Smoke Area (%A*min)	31.84
Red Oak Smoke Area (%A*min)	87.8

8. SUMMARY OF RESULTS

The test specimen has been evaluated in accordance with ASTM E84; Standard Test Method for Surface Burning Characteristics of Building Materials.

The test results are:

FLAME SPREAD INDEX (FSI)	0
SMOKE DEVELOPED INDEX (SDI)	35

Results are valid for the tested configuration only.



9. CLASSIFICATIONS

The following information is designed to help put these test results into context. Flame Spread Index and Smoke Developed Index results from an ASTM E84 test are often used by regulatory agencies to approve materials for various applications. For example, the International Building Code 2015, Section 803.1.1 requires that:

Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84 or UL 723-10th Ed. 2008. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indexes.

Class A: Flame spread index 0 - 25; smoke-developed index 0 - 450.

Class B: Flame spread index 26 - 75; smoke-developed index 0 - 450.

Class C: Flame spread index 76 - 200; smoke-developed index 0 - 450.

Note that the above example is the IBC requirement for interior wall and ceiling finishes only; your application may be different.



10. LIMITATIONS

Testing of materials that melt, drip, or delaminate to such a degree that the continuity of the flame front is destroyed, results in low flame spread indices that do not relate directly to indices obtained by the testing materials that remain in place

Thomas Bell-Wright International Consultants recommend that the relevance of test reports should be considered after a period of five years.

This test report is respectfully submitted by: Thomas Bell-Wright International Consultants

Prepared/Tested By:

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Reviewed By:

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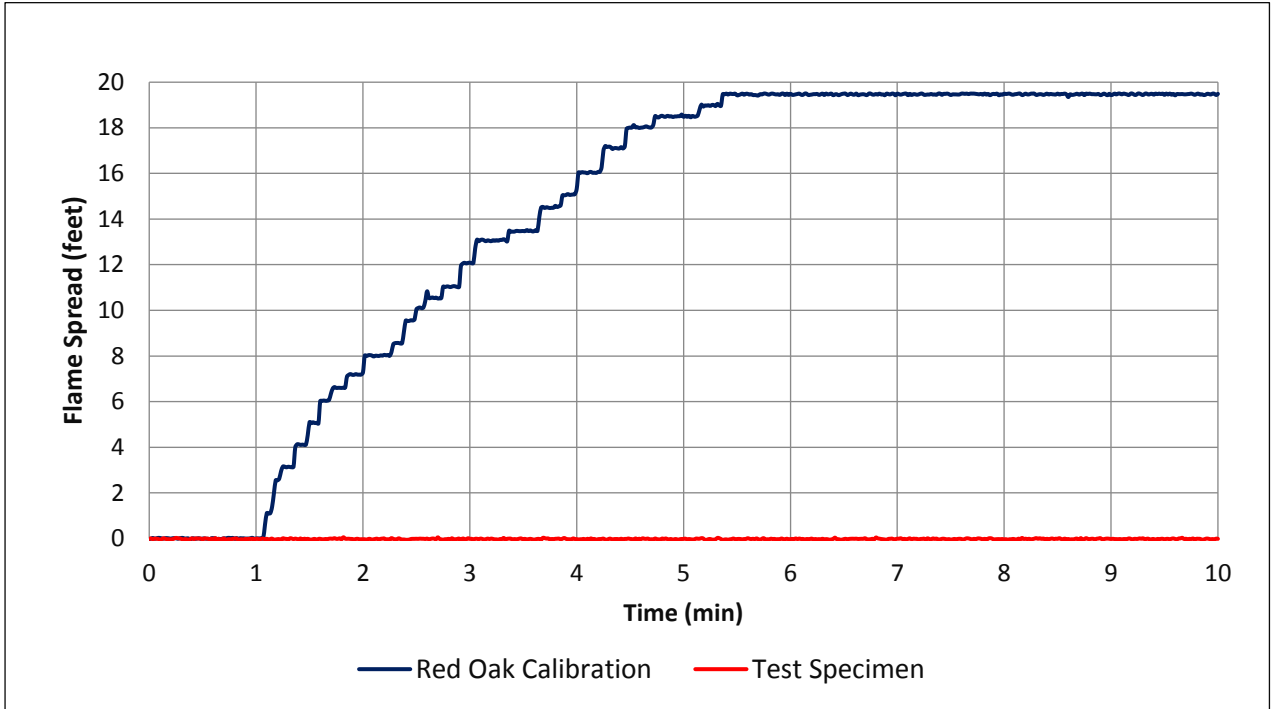
Approved By:

Suketa Tyagi
Reaction to Fire - Manager

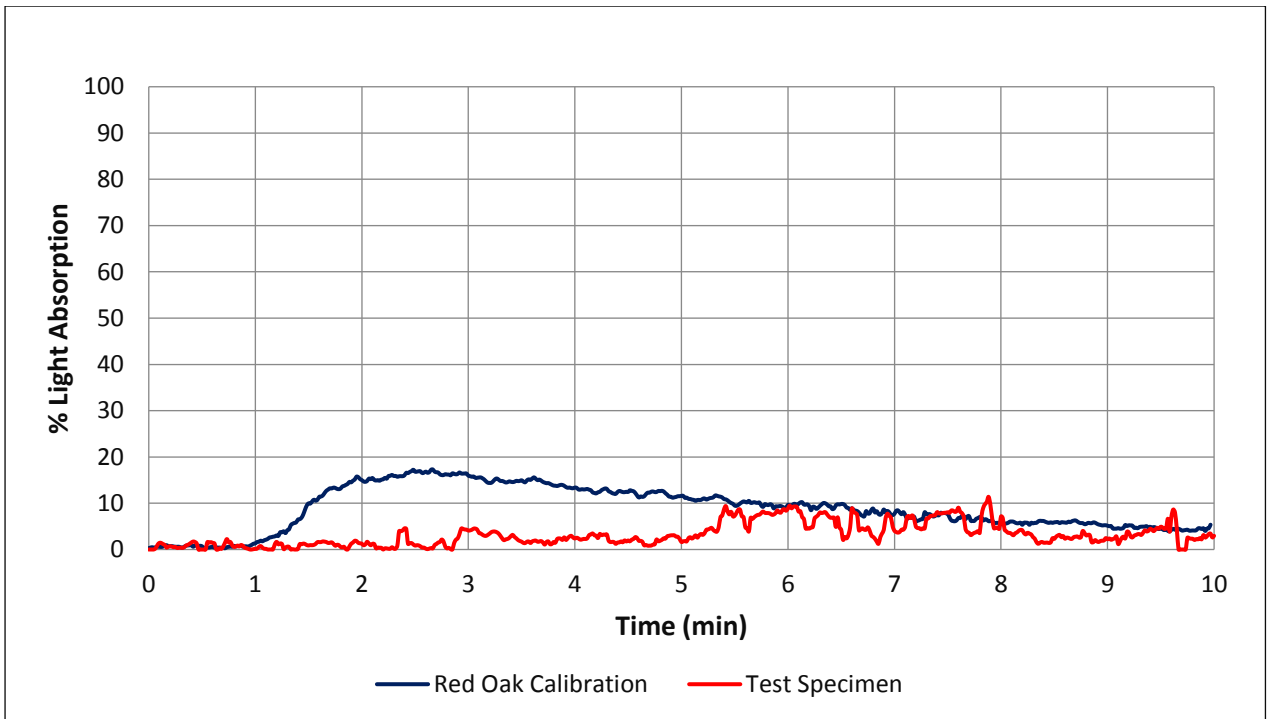




11. APPENDIX 1- GRAPHS



Graph 1: Flame Spread Index (FSI)



Graph 2: Smoke Developed Index (SDI)



12. APPENDIX 2- PICTURES



**Photo 1: Specimen before the test.
(Non-Fire Side)**



**Photo 2: Specimen before the test.
(Fire Side)**



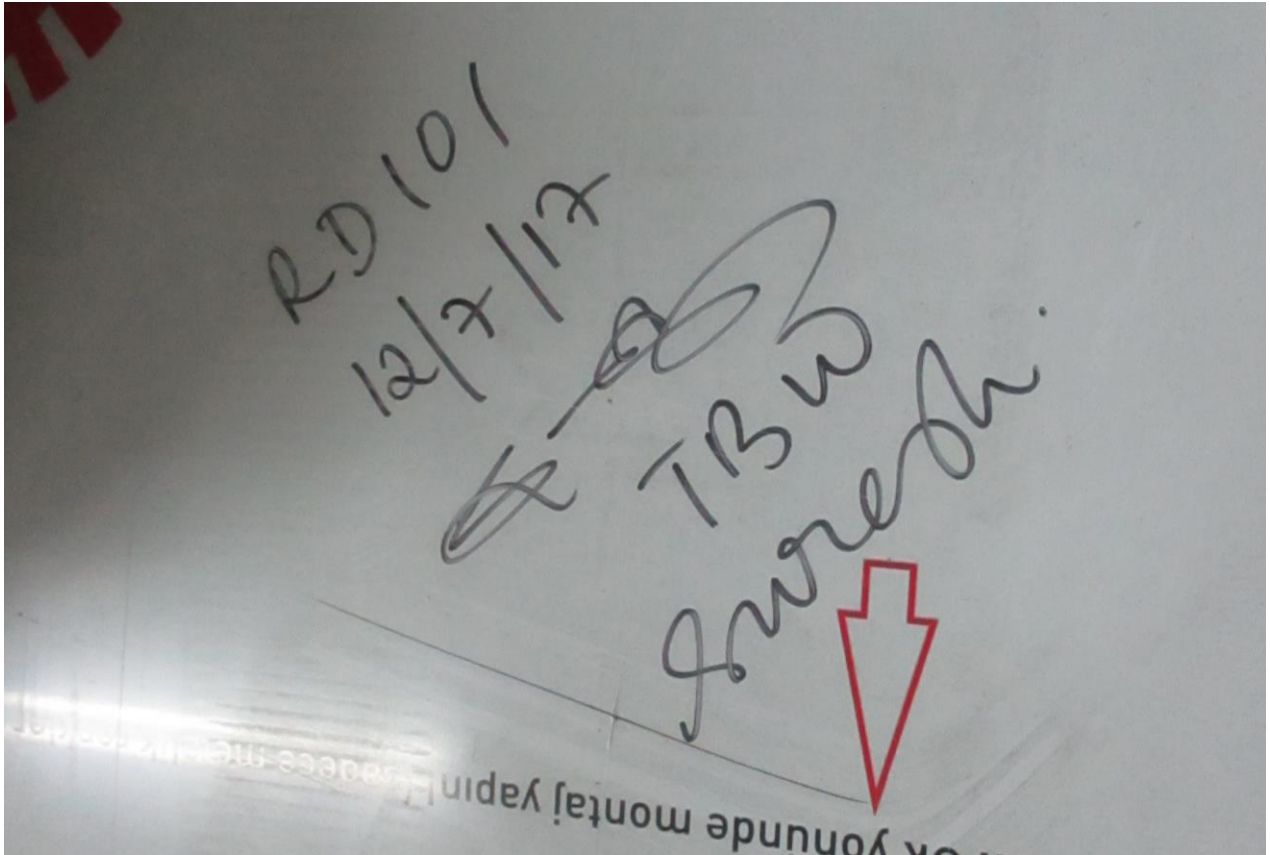
**Photo 3: Specimen after the test.
(As seen from the fire-end)**



**Photo 4: Specimen after the test.
(As seen from the exhaust end)**



13. SAMPLING MARK/SIGNATURE



---- End of Test Report ----