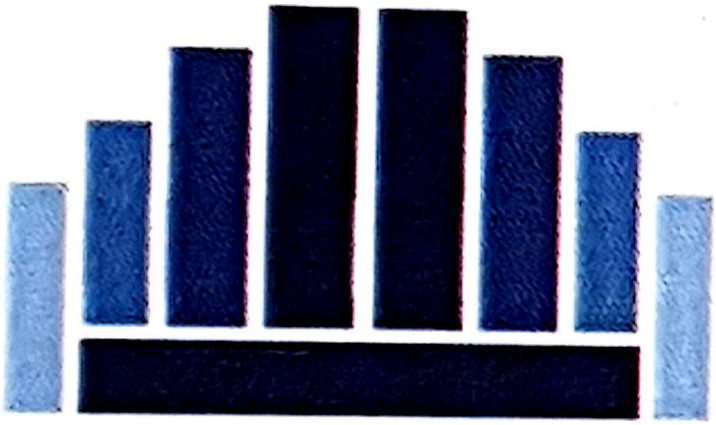


THOMAS BELL-WRIGHT
INTERNATIONAL CONSULTANTS

TEST REPORT

REACTION TO FIRE TEST

TEST SPONSOR:

Fazah Industrial Company
Second Industrial Area, Nr Sabic R&D Office
Al Kharj Road, Riyadh 11557, Kingdom of Saudi Arabia
T: +966 11 265 5467
Website: www.fazah.net

TESTED MATERIAL/ASSEMBLY:

4mm thick Aluminium Composite Panel (ACP)

TEST STANDARD:

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

THOMAS BELL-WRIGHT
INTERNATIONAL CONSULTANTS

Test Date: 13-Nov-16
Issue Date: 23-Feb-17
Test Reference No.: QB110-2

PO BOX 26385, DUBAI UAE T +971 (0)4 333 2692 admin@bell-wright.com www.bell-wright.com

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.**

Table of Contents

1. INTRODUCTION

Determination of the flame spread index and the smoke developed index of 4mm thick Aluminium Composite Panel (ACP) as per ASTM E84; Standard Test Method for Surface Burning Characteristics of Building Materials.

2. SPONSOR

Name: Fazah Industrial Company
Address: Second Industrial Area, Nr Sabic R&D Office
Al Kharj Road, Riyadh 11557, Kingdom of Saudi Arabia
T: +966 11 265 5467
Website: www.fazah.net

3. TESTING LABORATORY

Name: Thomas Bell-Wright International Consultants (TBWIC)
Address: Corner of 46th and 47th Streets,
Jebel Ali Industrial Area 1
Dubai, UAE
T: +971 (0)4 333 7992 | +971 (0)4 821 5777
Website: www.bell-wright.com

4. DATE OF TEST

Sample received: 23-Oct-16
Test date: 13-Nov-16

The test has been witnessed by:

Name	Company	Contact Number
Mr. Subash Sankar Paranki	Fazah Industrial Company	+966 53 472 3645

5. SPECIMEN DESCRIPTION

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

Product Tested		4mm thick Aluminium Composite Panel (ACP)	
Product Name		Fazahbond FR ACP	
Manufacturer		Fazah Industrial Company	
Fire side		Top skin smooth coated surface	
Product Description			
Product Details	**Top skin (fire side)**	Product Name	HDPE Coated Aluminium Coil
		Product Reference	ALLOY 1100/H24
		Coating type	HDPE
		Coating thickness	32 microns
		Colour Reference	Silver
		Thickness	0.5 mm
	Adhesive applied	Product name	DUPONT 60 PE Adhesive Film
		Product reference	DUPONT 60 Adhesive Film
		Manufacturer	NAPCO Adhesive Material, KSA
		Colour Reference	White
		Thickness	0.05 micron
		Area Density	0.95 kg/m²
	Core	Type of Core	Halogen Free Flame Retardant Polyethylene
		Manufacturer	Maqna Industrial Company; KSA
		Colour Reference	White
		Thickness	3
		Area Density	6.8 kg/m²
	Adhesive applied	Product name	DUPONT 60 PE Adhesive Film
		Product reference	DUPONT 60 Adhesive Film
		Manufacturer	NAPCO Adhesive Material, KSA
		Colour Reference	White
		Thickness	0.05 micron
		Specific gravity	0.95 kg/m²
	Bottom skin	Product Name	PE Coated Aluminium Coil
		Product Reference	Alloy 1100/H16
		Coating type	PE
		Coating thickness	10 microns
		Colour Reference	Grey
		Thickness	0.4 mm
Dimensions per panel		1 No. – 2447 x 600 x 4mm (l x w x thk) (measured) 1 No. – 2446 x 600 x 4mm (l x w x thk) (measured) 1 No. – 2344 x 600 x 4mm (l x w x thk) (measured)	
No. of panel		3	
Total dimension		7237 x 600 x 4mm (l x w x thk) (measured)	
Specimen placement		Three (3) sections of ACP were butt jointed end-to-end. The test specimen was placed directly to the tunnel ledges with the top skin	

	smooth coated surface towards the flame source.

The test specimen was submitted by the client and TBWIC has not been involved in the selection and configuration of the specimen.

6. METHOD OF TEST

6.1. Placing of test specimen

The test specimen consisted of three (3) sections of ACP. The total dimensions of the specimen were 7237 x 600 x 4mm (l x w x thk).

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 top skin smooth coated surface of ACP 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 23-Oct-16, the specimen was stored in room temperature for 21 days 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)	03:35
Time to maximum flame front advance (min:sec)	09:58
Maximum flame spread (ft)	10.1
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)	600/316
Dripping (min:sec)	None
Flaming on the floor (min:sec)	08:52
After flame on the top (min:sec)	None
After flame on the floor (min:sec)	None
Delamination (min:sec)	08:28
Sagging (min:sec)	None
Shrinkage (min:sec)	None
Fallout (min:sec)	None
FS*Time Area (ft*min)	09:27
Smoke Area (%A*min)	25.16
Red Oak Smoke Area (%A*min)	85.2

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)	**5**
SMOKE DEVELOPED INDEX (SDI)	**30**

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 By:

Romano Parungao
Fire Testing & Inspection Engineer

Reviewed By:

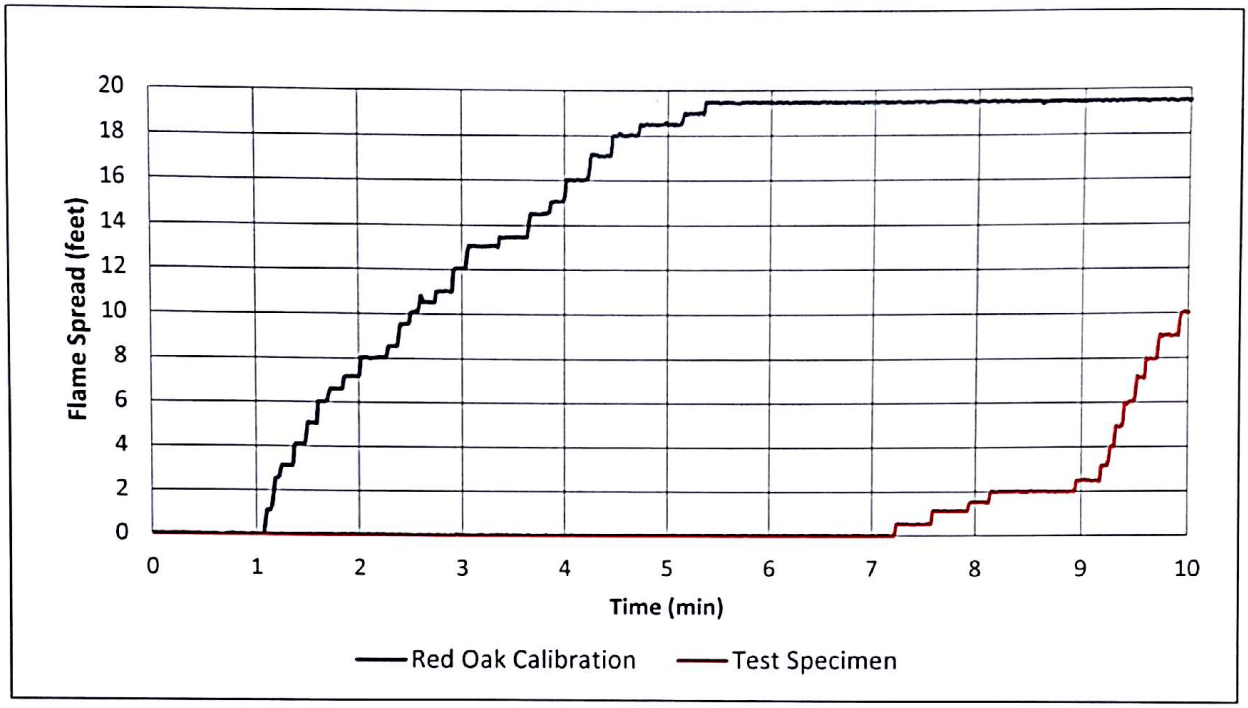
Eredilyn Paragoso
Fire Testing Support Engineer

Approved By:

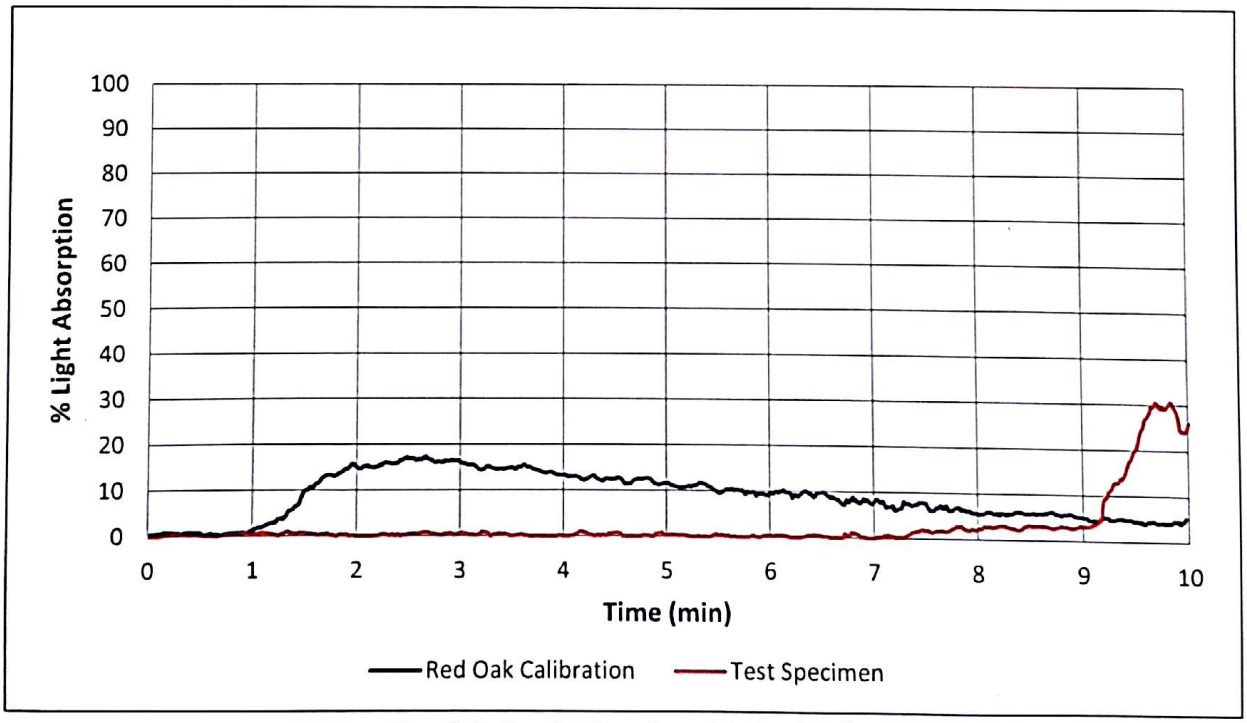
David Campbell, GIFireE
Regional Director of Fire Compliance

P.O.Box: 26385
DUBAI - U.A.E.
Thomas Bell-Wright Int'l Consultants (Dubai Br.)

11. APPENDIX 1- GRAPHS



Graph 1: Flame Spread Index (FSI)



Graph 2: Smoke Developed Index (SDI)

12. APPENDIX 2- PICTURES

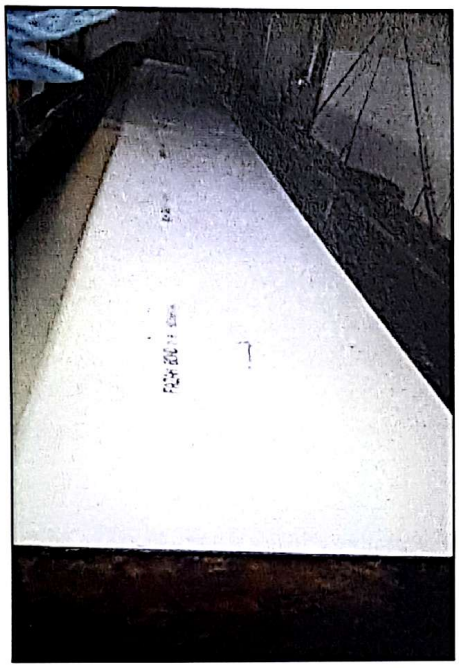


Photo 1: Specimen before the test
(Non-fire side)

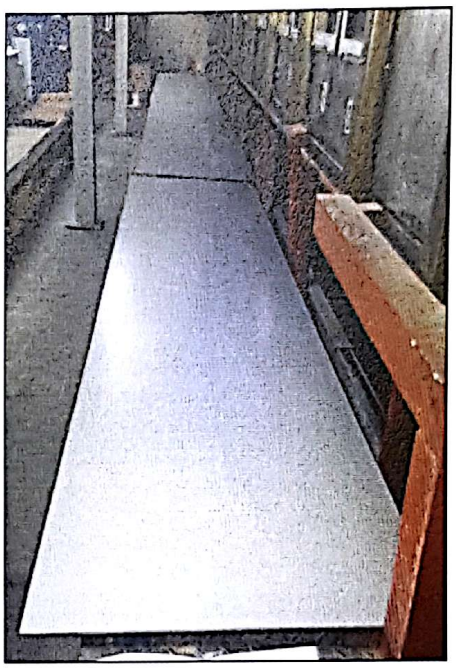


Photo 2: Specimen before the test
(Fire side)

Photo 3: Specimen after the test
(located near the fire end)

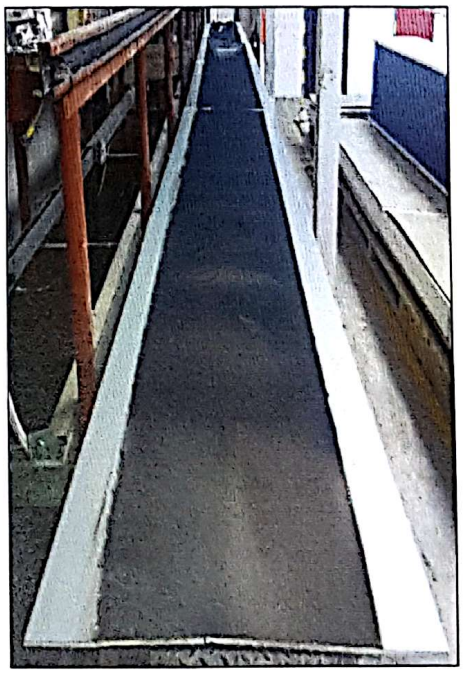


Photo 4: Specimen after the test
(located near the exhaust end)

- End of test report -