

TEST REPORT REACTION TO FIRE TEST

Test Sponsor:

International Development Company Metal Industries – Sole Proprietorship L.L.C (IDCMI)
Al Mafraq, P.O.Box 2621
Abu Dhabi, United Arab Emirates
T: +971 2 505 6300 | F: +971 2 582 3088
Website: www.idcuae.com

Test Material/Assembly:

4mm thick "Aluclad", Aluminium Composite Panel with PVDF Coating

Test Standard:

ASTM E84-19a: Standard Test Method for Surface Burning Characteristics of Building Materials



**THOMAS BELL-WRIGHT
INTERNATIONAL CONSULTANTS**

Test Date: 29-Mar-20
Issue Date: 5-Apr-20
Test Reference No: UC142

PO BOX 26385, DUBAI UAE

T +971 (0)4 821 5777

fire@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 under the accreditations of **ISO 17025 UKAS** and **ISO 17025 GAC**.



Table of Contents

1. INTRODUCTION	4
2. SPONSOR.....	4
3. TESTING LABORATORY	4
4. DATE OF TEST	4
5. SPECIMEN DESCRIPTION	4
6. SPECIMEN VERIFICATION	5
7. METHOD OF TEST.....	5
7.1. Placing of test specimen	5
7.2. Test Method.....	6
7.3. Conditioning.....	6
8. OBSERVATION	6
9. SUMMARY OF RESULTS.....	6
10. CLASSIFICATIONS	7
11. LIMITATIONS	8
12. APPENDIX 1 – GRAPHS.....	9
13. APPENDIX 2- PICTURES	10



1. INTRODUCTION

Determination of the flame spread index and the smoke developed index of 4mm thick “Aluclad”, Aluminium Composite Panel with PVDF Coating as per ASTM E84; Standard Test Method for Surface Burning Characteristics of Building Materials.

2. SPONSOR

Name: International Development Company Metal Industries – Sole Proprietorship L.L.C (IDCMI)
 Address: Al Mafrqa, P.O.Box 2621
 Abu Dhabi, United Arab Emirates
 T: +971 2 505 6300 | F: +971 2 582 3088
 Website: www.idcuae.com

3. TESTING LABORATORY

Name: Thomas Bell-Wright International Consultants (TBWIC)
 Address: Corner of 46th and 47th streets, Jebel Ali Industrial Area 1
 P.O. Box 26385, Dubai, U.A.E.
 T: +971 (0) 4 821 5777
 www.bell-wright.com

4. DATE OF TEST

Sample received: 25-Mar-20
 Test date: 29-Mar-20

The test had not been witnessed by the sponsor.

5. SPECIMEN DESCRIPTION

Note: The testing laboratory does not hold any responsibility for the information that has been provided by the test sponsor which could not be verified by the testing laboratory, as this could affect the validity of the test result. All information that could not be verified will be indicated by an asterisk () mark.*

Description		Aluminium Composite Panel with PVDF coating	
Product name		“Aluclad”* (Stated)	
Manufacturer		International Development Company Metal Industries – Sole Proprietorship L.L.C (IDCMI)* (Stated)	
Fire side		Top coated Aluminium sheet	
Total thickness		4mm (measured by TBWIC)	
Area weight		8.47 kg/m ² (measured from 2440 x 600mm panel)	
Product Details	Top coated Aluminium sheet	Topcoat	Manufacturer: Good Luck Decorative Materials Manufacturer LLC* (Stated) Thickness: 0.02mm* (Stated) Coverage rate: 0.055 kg/m ² * (Stated)
		Primer	Manufacturer: Good Luck Decorative Materials Manufacturer LLC* (Stated) Thickness: 0.006mm* (Stated) Coverage rate: 0.007 kg/m ² * (Stated)



		Description	Aluminium sheet* (Stated)
		Manufacturer	Good Luck Decorative Materials Manufacturer LLC* (Stated)
		Thickness	0.5mm*(Stated)
	Adhesive in between the top Aluminium sheet and core	Manufacturer: Emirates Panel Plastic Industries* (Stated)	
		Thickness: 0.08mm* (Stated)	
		Coverage rate: 0.084 kg/m ² * (Stated)	
	Core	Manufacturer	Alubotec* (Stated)
		Thickness	3.1mm* (Stated)
		Area weight	5.61 kg/m ² * (Stated)
	Adhesive in between the bottom Aluminium sheet and core	Manufacturer: Emirates Panel Plastic Industries* (Stated)	
		Thickness: 0.08mm* (Stated)	
		Coverage rate: 0.084 kg/m ² * (Stated)	
	Bottom coated Aluminium sheet	Service coat	Manufacturer: Jiangsu Metcoplus* (Stated)
		Thickness: 0.006mm* (Stated)	
		Coverage rate: 0.007 kg/m ² * (Stated)	
Description		Aluminium sheet* (Stated)	
	Manufacturer	Jiangsu Metcoplus* (Stated)	
	Thickness	0.5mm*(Stated)	
Number of panels	3		
Dimensions per panel	2440 x 600 x 4mm (l x w x t)		
Total dimensions	7320 x 600 x 4mm (l x w x t)		
Specimen placement	The three Aluclad panels were butt jointed end-to-end and were placed directly to the tunnel ledges with the top coated Aluminium sheet towards the flame source.		

6. SPECIMEN VERIFICATION

The choice and design and the definition of the specimen have been made by International Development Company Metal Industries – Sole Proprietorship L.L.C (IDCMI), and TBWIC testing laboratory has not been involved in the selection or design of the specimen. The results apply to the sample as received.

Note: There are contexts where information has been provided by the sponsor and verification of information has been done through either technical datasheet or other document submission, or as indicated directly by the sponsor. For this reason, materials have been tested in an as-received condition and TBWIC bears no liability for the legitimacy of the submitted information.

7. METHOD OF TEST

7.1. Placing of test specimen

The test specimen consisted of three Aluclad panels. The total dimensions of the specimen were 7320 x 600mm (l x w).

Three cement boards of size of 2450 x 600mm butt jointed end-to-end were placed at the back of the sample to protect the furnace lid assembly from direct fire exposure.



7.2. Test Method

The specimen was placed in the ceiling position, supported horizontally on the ledges of the Steiner Tunnel. The top Aluminium foil surface was exposed face down to the ignition source during the 10-minute test duration.

Flame Spread and Smoke Density were measured, and the results were compared against standard calibration materials (fiber-cement board, heptane and red oak flooring).

7.3. Conditioning

After delivery on 25-Mar-20, the specimen was placed in a conditioned space where temperature and relative humidity were maintained between $23 \pm 2.8^{\circ}\text{C}$ and $50 \pm 5\%$ respectively, until constant weight was attained.

8. OBSERVATION

Test Data and Observation

Observations	Result
Ignition Time (min:sec)	1:11
Time to maximum flame front advance (min:sec)	2:10
Maximum flame spread (ft)	0.6
Time to end of tunnel reached (min:sec)	Not reached
Maximum temp recorded at the exposed thermocouple located near the end of the tunnel ($^{\circ}\text{F}$ / $^{\circ}\text{C}$)	524/273
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)	None
Sagging (min:sec)	None
Shrinkage (min:sec)	None
Fallout (min:sec)	None

FS x Time Area (ft x min)	5.02
Smoke Area (%A x min)	5.32
Heptane Smoke Area (%A x min)	79.6

9. 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)	5

Results are valid for the tested configuration only.



10. 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 2018, Section 803.1.2 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; the application of the tested specimen may differ.



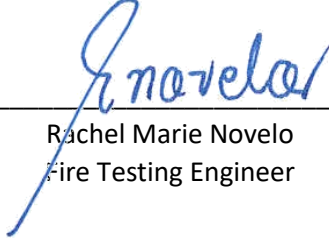
11. LIMITATIONS

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.

This report and all records of the test to which it relates may not be retained by TBWIC further than 5 years from the date of testing.

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

Prepared/Tested By:



Rachel Marie Novelo
Fire Testing Engineer

Reviewed By:



Fredilyn Paragoso
Fire Testing Support Engineer

Approved By:

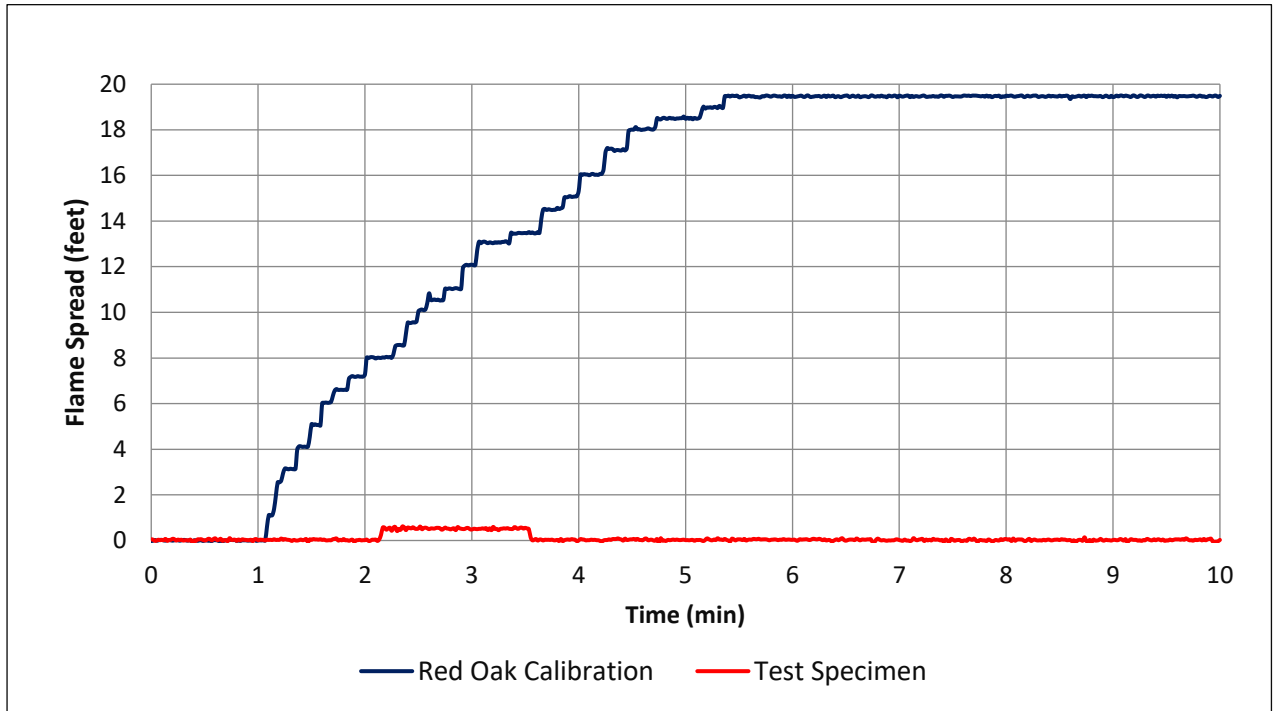


Suketa Tyagi
Reaction to Fire - Manager

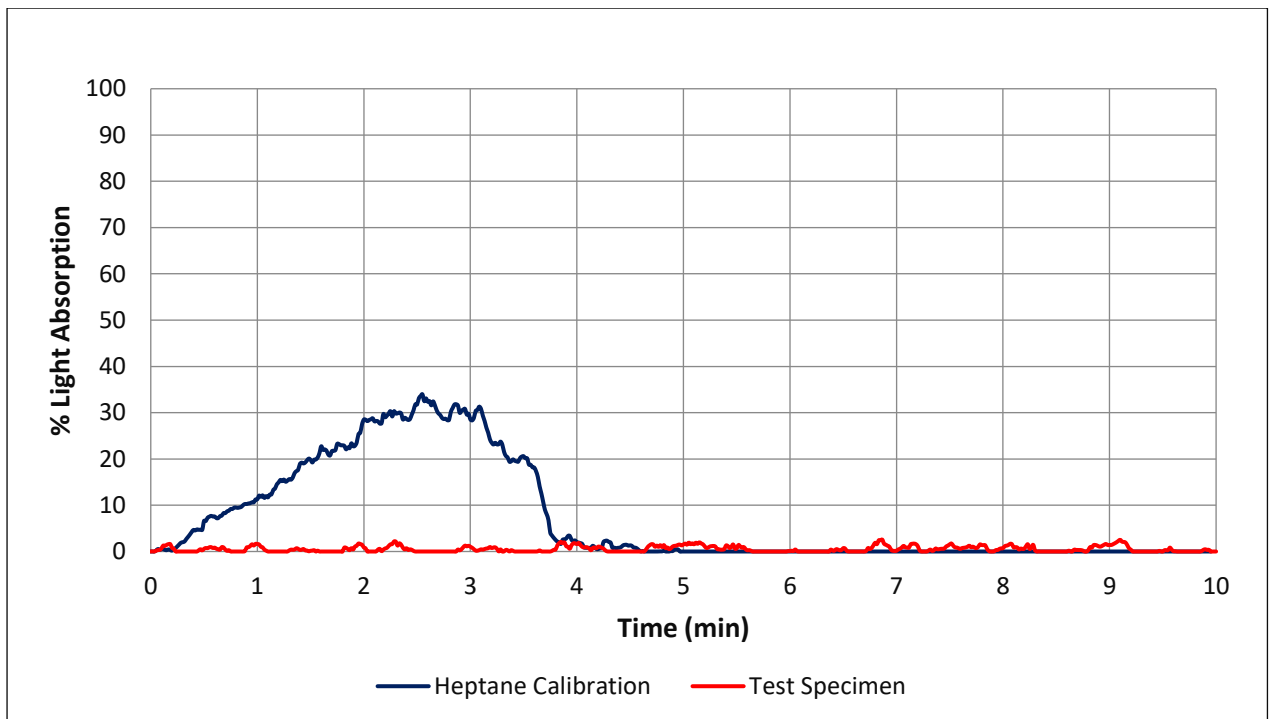




12. APPENDIX 1 – GRAPHS



Graph 1: Flame Spread Index (FSI)



Graph 2: Smoke Developed Index (SDI)



13. 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)**

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