TEST REPORT
REACTION TO FIRE TEST

Test Sponsor:

Wellbond Aluminium Composite Panel Co.
22 Ahmed Tayseer Street
el Marwa Buildings, Heliopolis
Cairo, Egypt
T: +20 122 776 5519
Website: www.wellbond.com.eg

Test Material / Assembly:

4mm thick Aluminium Composite Panel – "10th of Ramadan Railway Project LRT"

Test Standard:

BS EN 13823:2020 Reaction to Fire Tests for Building Products — Building Products excluding Floorings exposed to the Thermal Attack by a Single Burning Item

THOMAS BELL-WRIGHT
INTERNATIONAL CONSULTANTS

Test Date: 29-Dec-21
Issue Date: 18-Jan-22
Test Reference No: VJ062-2

PO BOX 26385, DUBAI UAE T +971 (0)4 821 5777 fire@bell-wright.com www.bell-wright.com

DUBAI ABU DHABI DOHA RIYADH

Accreditation

Testing

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

Memberships

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

www.egolf.org.uk

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.**

Table of Contents

1. INTRODUCTION

Determination of Reaction to fire performance of building products excluding floorings when exposed to thermal attack by a Single Burning Item (SBI) (a sand-box burner supplied with propane) in accordance with BS EN 13823:2020.

2. SPONSOR

Name: Wellbond Aluminium Composite Panel Co.
Address: 22 Ahmed Tayseer Street
el Marwa Buildings, Heliopolis
Cairo, Egypt
T: +20 122 776 5519
Website: www.wellbond.com.eg

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 (0)4 821 5777
Website: www.bell-wright.com

4. DATE OF TEST

Sample received: 08-Dec-21
Test date: 29-Dec-21

The test was not witnessed by the sponsor.

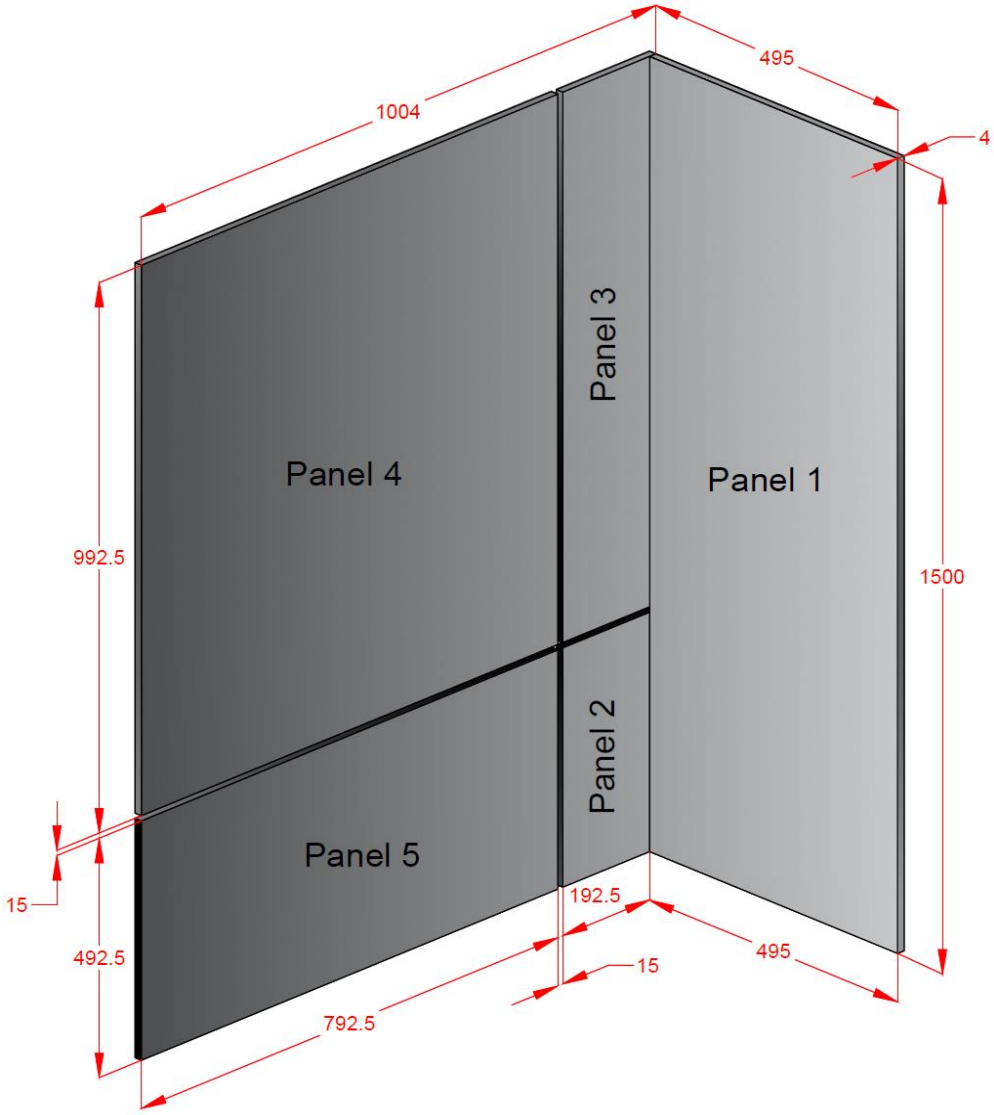
5. SPECIMEN DESCRIPTION

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.

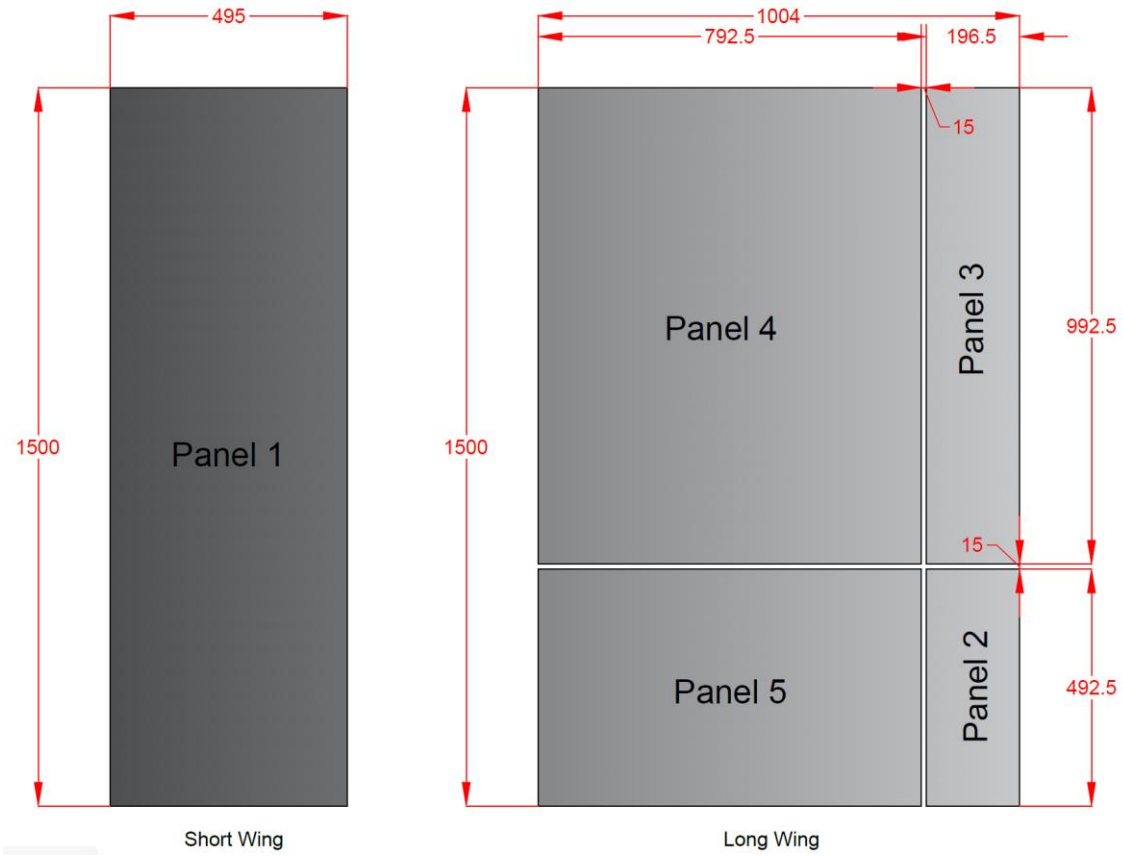
Product Description		4mm thick Aluminium Composite Panel* (stated)	
Product Reference		4mm thick Aluminium Composite Panel – "10th of Ramadan Railway Project LRT"* (stated)	
Manufacturer		Wellbond Aluminium Composite Panel Co.* (stated)	
Thickness		4mm* (stated)	
Area Weight		8.5 kg/m²* (stated) 8.15 kg/m² (measured by TBWIC)	
Product Details	**Top Coat (Fire side)**	Material	PVDF Coating* (stated)
		Manufacturer	PPG* (stated)
		Colour Tested	White (observed)
		Dry Film Thickness	0.03mm* (stated)
		Area Weight	0.04 kg/m²* (stated)
		Dry Density	1333 kg/m³* (stated)
	Aluminium Skin (Top)	Material	Aluminium* (stated)
		Manufacturer	Baililai decorative material Co., Ltd* (stated)
		Alloy Grade	Alloy 3003 H16* (stated)
		Thickness	0.5mm* (stated)
		Area wieght	1.3645 kg/m²* (stated
		Density	2710 kg/m³* (stated)
	Adhesive	Material	Bonding film* (stated)
		Manufacturer	Heyuan PLG New Materials co., Ltd* (stated)
		Film Thickness	0.05mm* (stated)
		Area Weight	0.0465 kg/m²* (stated)
		Dry Density	930 kg/m³* (stated)
	Core	Material	Mineral Core* (stated)
		Manufacturer	Jiangsu Harwal Technology Co. Ltd.* (stated)
		Thickness	3.0mm* (stated)
		Area Weight	5.7 kg/m²* (stated)
		Density	1900 kg/m³* (stated)
	Adhesive	Material	Bonding film* (stated)
		Manufacturer	Heyuan PLG New Materials co., Ltd* (stated)
		Film Thickness	0.05mm* (stated)
		Area Weight	0.0465 kg/m²* (stated)

		Dry Density	930 kg/m^3* (stated)
	Aluminium Skin (Bottom)	Material	Aluminium* (stated)
		Manufacturer	Baililai decorative material Co., Ltd* (stated)
		Alloy Grade	Alloy 3003 H16* (stated)
		Thickness	0.5mm* (stated)
		Density	1.3645 kg/m²* (stated
	Back Coat	Material	Polyester coating (PE)* * (stated)
		Manufacturer	PPG* (stated)
		Colour	Gray* (stated)
		Dry Film Thickness	0.008mm* (stated)
		Area Weight	0.016 kg/m^2* (stated)
Backing board details		Material	Calcium Silicate Board (Verified by TBWIC)
		Density	885 kg/m^3 (measured by TBWIC)
		Thickness	12mm (measured by TBWIC)
		Classification	A2-s1, d0 as per BS EN 13501-1:2018 (Verified by TBWIC)
Exposed Face		Metallic coated side	
Type of joint		1. Vertical Joints: 15mm open joints at 200 mm from the inner corner, measured when the wings were mounted. 2. Horizontal Joints: 15mm open joints at 500 mm from the bottom edge of the specimen, measured when the wings were mounted. Refer to Drawing No.1 for more details.	
Specimen Dimensions		Small Wing: Panel 1 – 495 x 1500 mm (w x h) Long Wing: Panel 2 – 192.5 x 492.5 mm (w x h) Panel 3 – 192.5 x 992.5 mm (w x h) Panel 4 – 792.5 x 992.5 mm (w x h) Panel 5 – 792.5 x 492.5 mm (w x h) Refer to Drawing No.1 & 2 for more information/ details.	Measured by TBWIC
Specimen Placement/ Mounting		The specimen was prepared according to section 5.2.2 of BS EN 13823:2020. The panels were tested with a 40mm air gap between the rear side of the panel and the face of the backing board. The specimen was placed such that the bottom edges of the long and short wings rested against the respective U-profiles on the trolley floor and the side edge of the short wing specimen met the extended long wing specimen at the primary burner side. Refer to Drawing No. 1 & 2 for more details.	

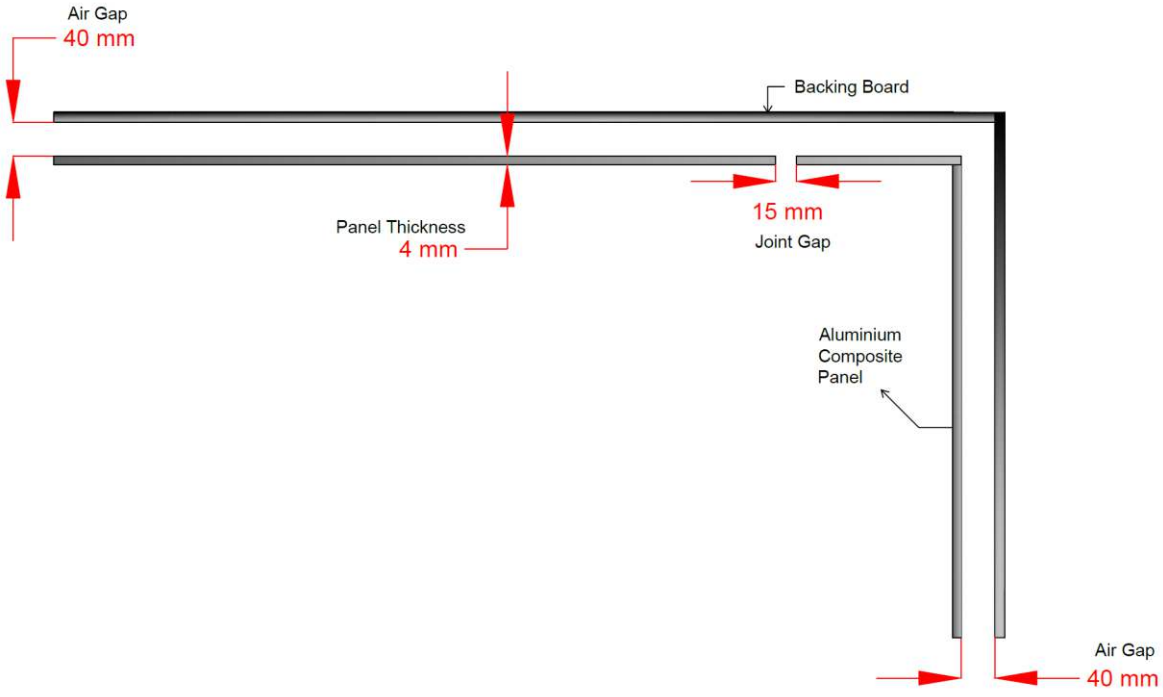
6. SPECIMEN DRAWING



Drawing 1: Isometric view of the test assembly.
All dimensions are in millimeters (mm)



Drawing 2: Dimensions of the long and short wing of the test specimen.
All dimensions are in millimeters (mm)



Drawing 3: Top view of the mounted specimen with airgap.
All dimensions are in millimeters (mm)

7. SPECIMEN VERIFICATION

The choice and design and the definition of the specimen have been made by Wellbond Aluminium Composite Panel Co., and TBWIC Testing Laboratory has not been involved in the selection or design of the specimen. The results apply to the samples 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.

8. METHOD OF TEST

8.1. Test Procedure

The test was performed in accordance with the requirements of BS EN 13823:2020 "Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by the single burning item".

8.2. Conditioning

After delivery on 08-Dec-21, the specimens were conditioned to constant weight at 21 to 25 °C and 45 to 55% relative humidity as per BS EN 13238:2010 "Reaction to fire tests for building products – Conditioning procedures and general rules for selection of substrates".

Note: There were deviations observed in the temperature and relative humidity in 4 separate probes of thermo-hygrometer in our conditioning room, however the average values were within the limit.

9. OBSERVATION

Test Data and Observation

Observations			
Occurrence of sustained flames reaching the far edge of long wing specimen at any height between 500-1000mm at any time during the test - LFS	Nil	Nil	Nil
Flaming droplets/particles within the first 600s	Nil	Nil	Nil
Burning droplets/particles ≥10 s within the first 600s	Nil	Nil	Nil
End of test, s	1560	1560	1560

10. SUMMARY OF RESULTS

The test specimen has been evaluated in accordance with BS EN 13823:2020 Reaction to fire tests for building products — Building products excluding floorings exposed to the thermal attack by a single burning item.
Deviations: No deviations from the test method.

The complete test results for the panels are:

TEST PARAMETERS	TEST RESULTS			Average
	Specimen 1	Specimen 2	Specimen 3	
$FIGRA_{0.2MJ}$, W/s	0	0	0	0
$FIGRA_{0.4MJ}$, W/s	0	0	0	0
THR_{600s}, MJ	0.6	0.6	0.7	0.6
SMOGRA, m^2/s^2 *Note 1*	0	0	0	0
TSP_{600s}, m^2 *Note 1*	21	15	15	17
Occurrence of sustained flames reaching the far edge of long wing specimen at any height between 500-1000mm at any time during the test - LFS	Nil	Nil	Nil	Nil
Flaming droplets/particles ≥ 10s within the first 600s	Nil	Nil	Nil	Nil
Burning droplets/particles ≤10 s within the first 600s	Nil	Nil	Nil	Nil

Note 1: *Corrected value as per Annex A, Clause A.6.1.2 of BS EN 13823:2020.*

11. LIMITATION

"The test results relate to the behavior of the test specimens of a product under the particular conditions of the test; they are not intended to be sole criterion for assessing the potential fire hazard of the product in use"- Clause 10q, BS EN 13823:2020.

Results are valid for the tested configuration only.

This report and all records of the test to which it relates may be 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 by:

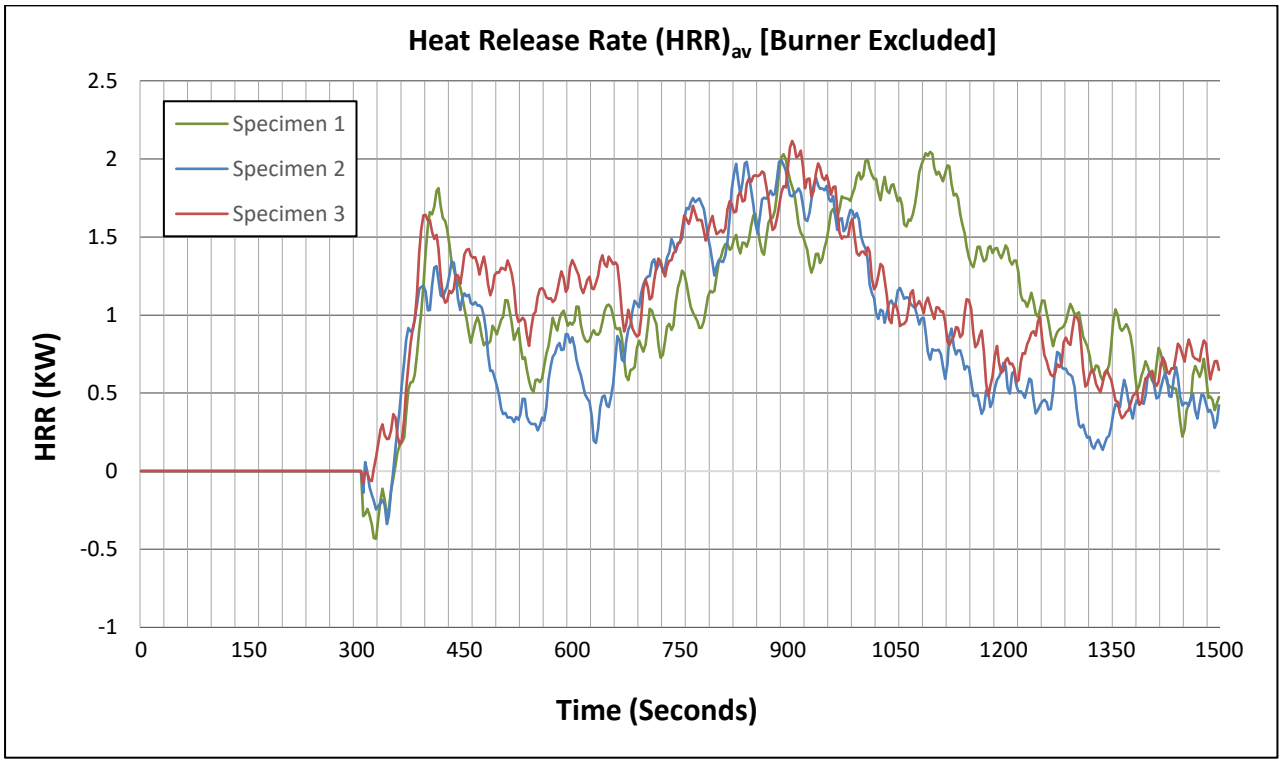
Sam Sancho Thomas
Fire Testing Engineer

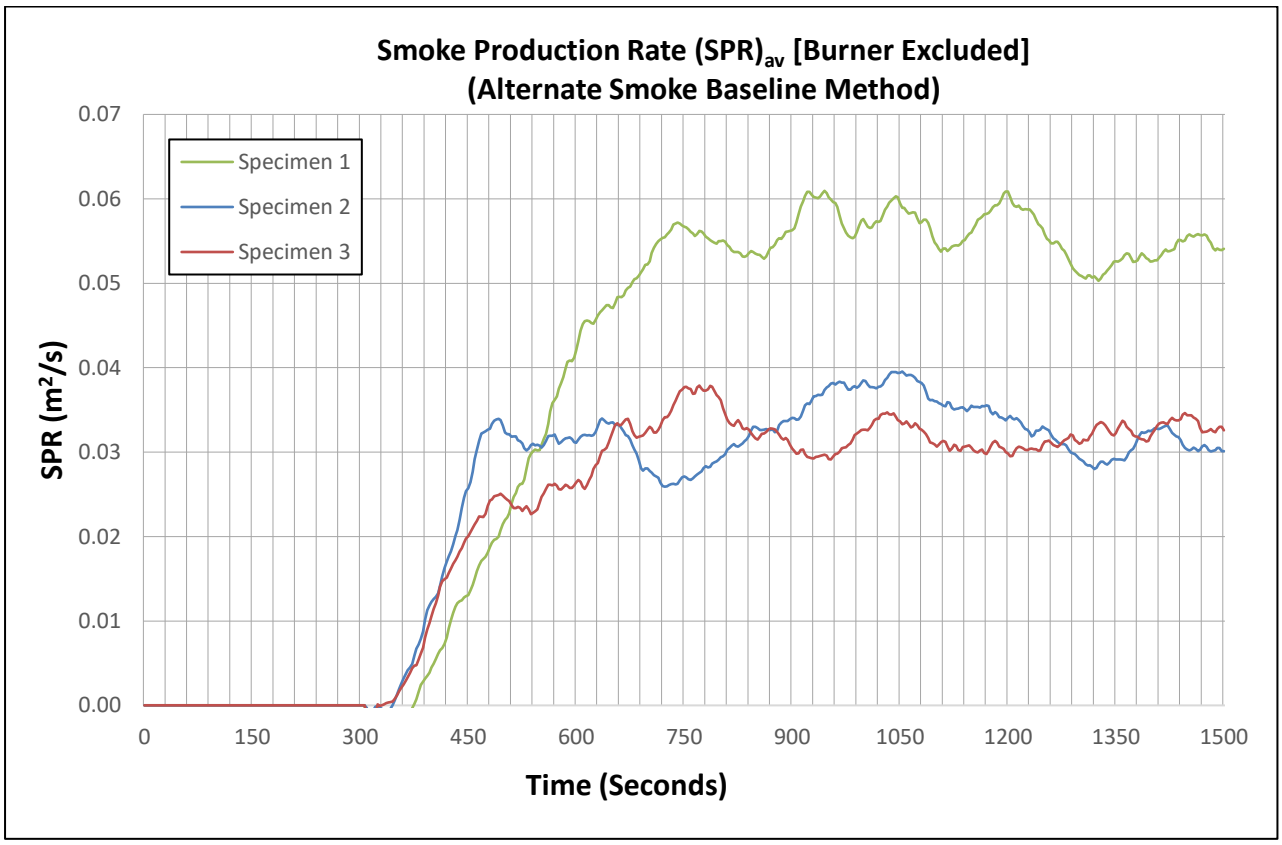
P.O.Box: 26385
DUBAI - U.A.E.
Thomas Bell-Wright Int'l Consultants (Dubai Br.)

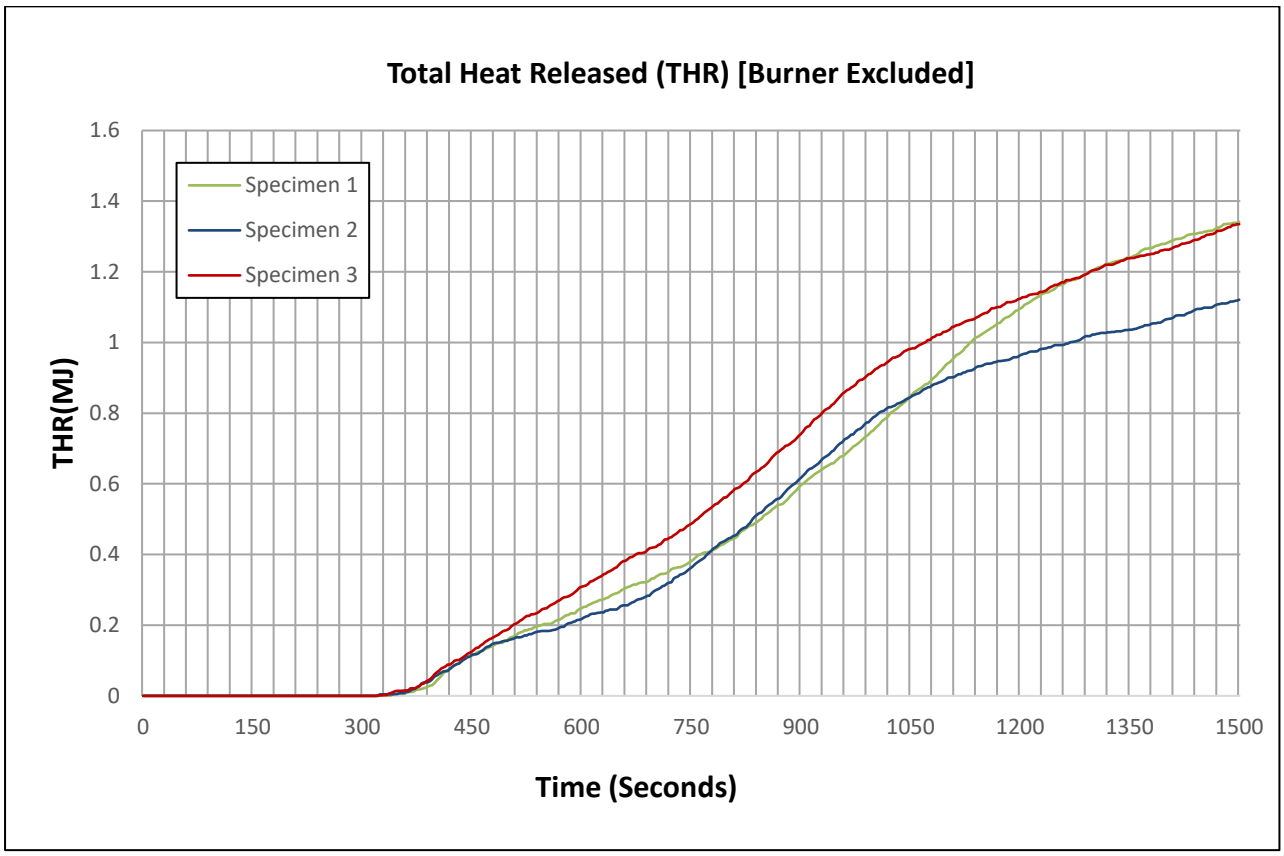
Reviewed and Authorized by:

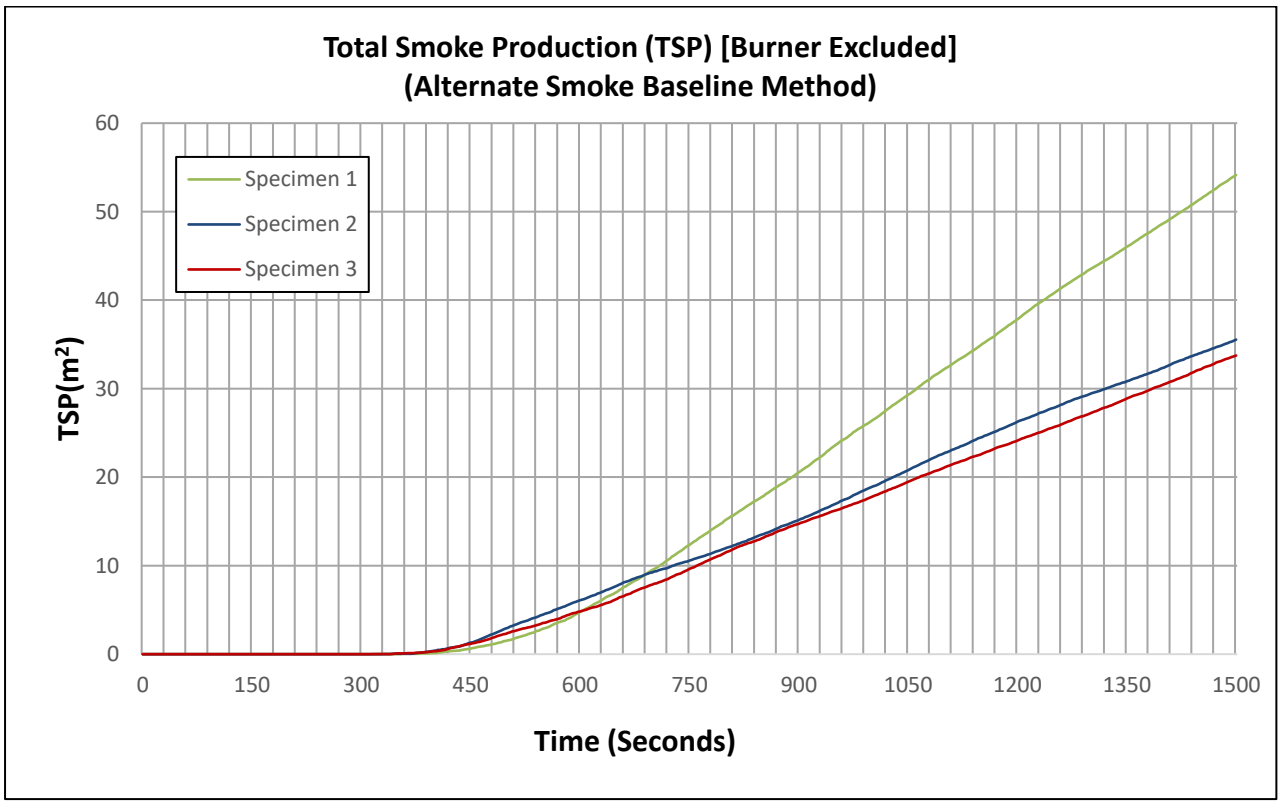
Suketa Tyagi
Manager - Reaction to Fire

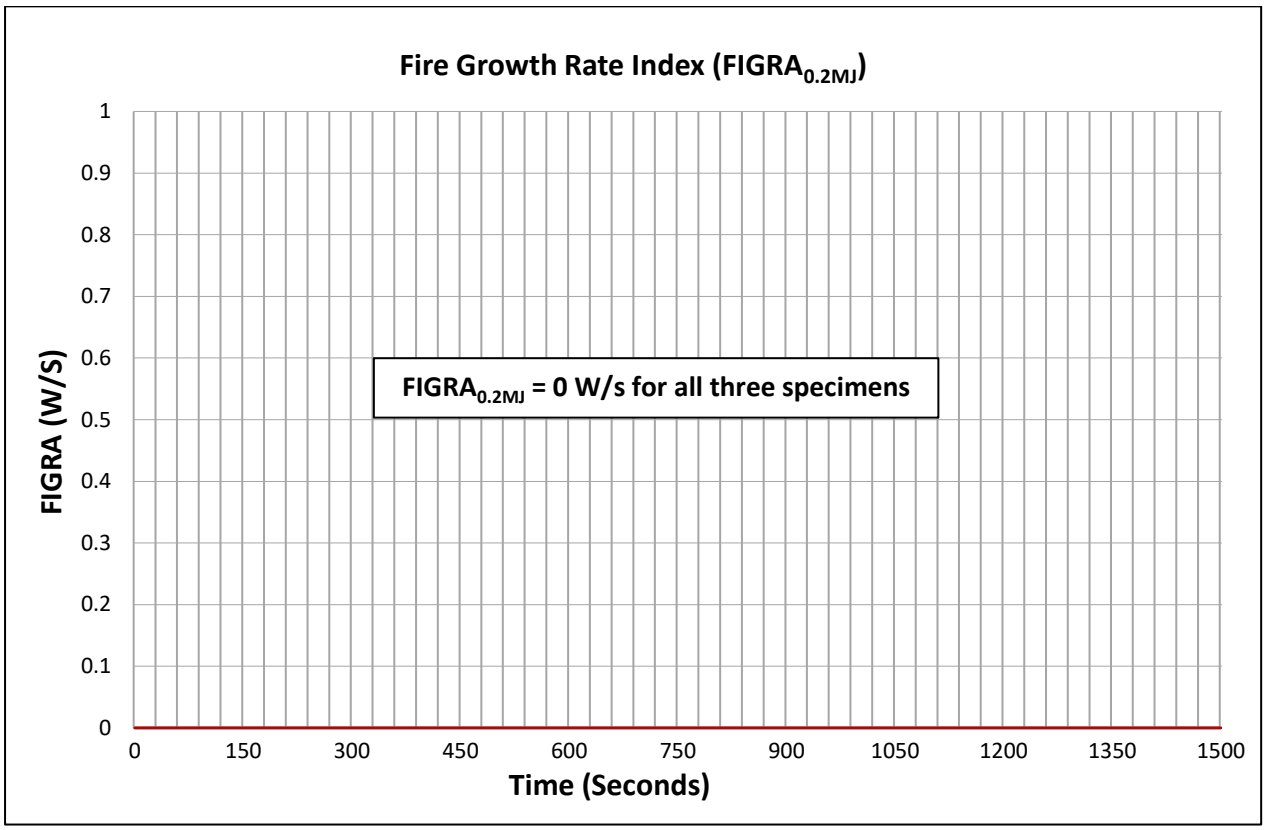
12. APPENDIX 1- GRAPHS

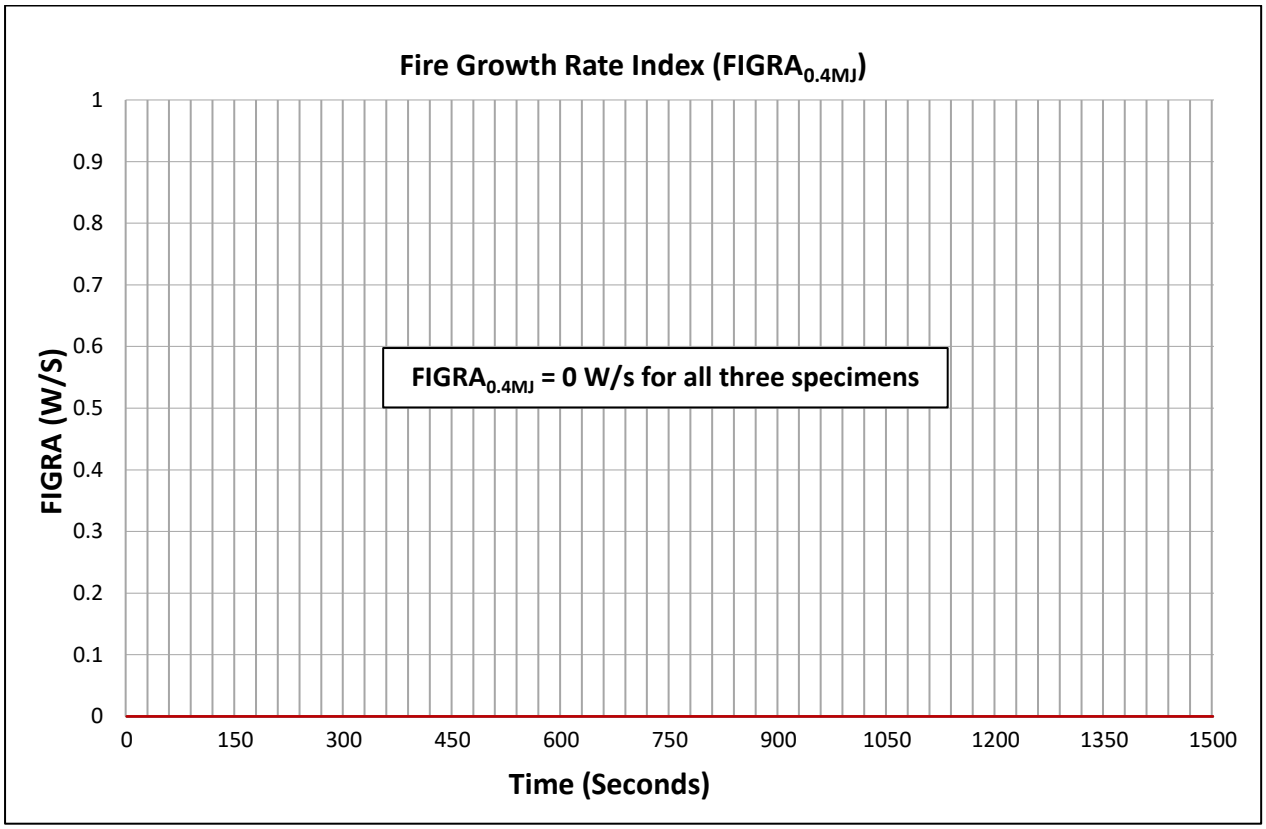


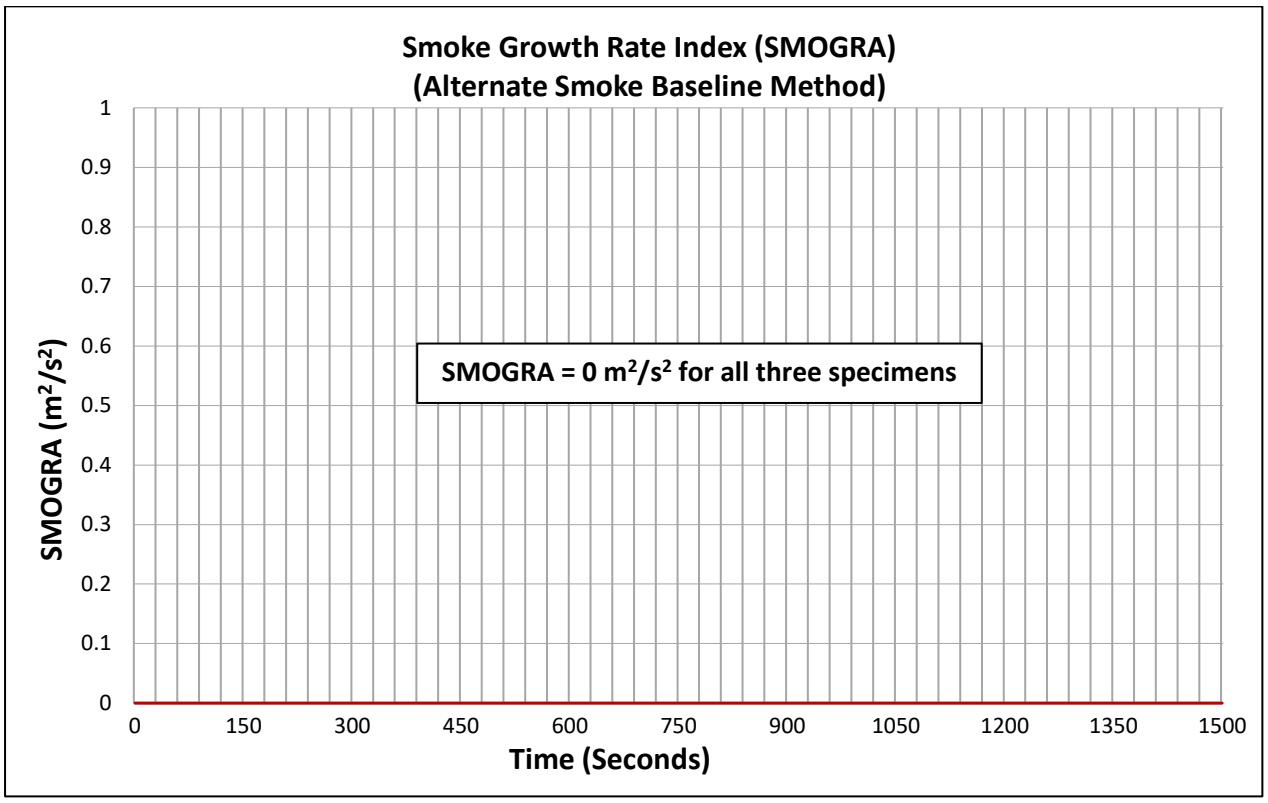



Total Heat Released (THR) [Burner Excluded]
THR(MJ)
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Specimen 1
Specimen 2
Specimen 3
0
150
300
450
600
750
900
1050
1200
1350
1500
Time (Seconds)


Total Smoke Production (TSP) [Burner Excluded]
(Alternate Smoke Baseline Method)
TSP(m²)
60
50
40
30
20
10
0
Specimen 1
Specimen 2
Specimen 3
0
150
300
450
600
750
900
1050
1200
1350
1500
Time (Seconds)


Fire Growth Rate Index (FIGRA0.2MJ)
FIGRA (W/S)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
FIGRA0.2MJ = 0 W/s for all three specimens
0
150
300
450
600
750
900
1050
1200
1350
1500
Time (Seconds)


Fire Growth Rate Index (FIGRA0.4MJ)
FIGRA (W/S)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
FIGRA0.4MJ = 0 W/s for all three specimens
0
150
300
450
600
750
900
1050
1200
1350
1500
Time (Seconds)


Smoke Growth Rate Index (SMOGRA)
(Alternate Smoke Baseline Method)
SMOGRA (m²/s²)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
SMOGRA = 0 m²/s² for all three specimens
0
150
300
450
600
750
900
1050
1200
1350
1500
Time (Seconds)

13. APPENDIX 2- PHOTOS

		
Sample 1	Sample 2	Sample 3

Specimen before the test

		
Sample 1	Sample 2	Sample 3

Specimen after the test

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