THOMAS BELL-WRIGHT
A PHENNA GROUP COMPANY

TEST REPORT FOR REACTION TO FIRE

Test Sponsor:

PRA Panels PVT LTD
PRA Campus near CRPF Camp Baradera,
Mandir Hasod Raipur – 492101,
India
T: +91 8282828959
Website: www.alustic.com

Test Specimen:

4 mm thick “Alustic” FR B1 Aluminium Composite Panel

Test Standard:

BS EN 13823:2020+A1:2022 – Reaction to Fire Tests for Building Products — Building Products excluding Floorings exposed to the Thermal Attack by a Single Burning Item



Test Reference No.:	AQ103-2
Test Date:	06-Jul-26
Issue Date:	05-Aug-26

Thomas Bell-Wright International Consultants (Dubai Branch)
Plot 599 8987, Corner of 46th and 47th Streets, Jebel Ali Industrial Area 1, Dubai, U.A.E
T: +971 4 821 5777 | fire@bell-wright.com | www.bell-wright.com
UAE ● KSA ● Qatar ● UK

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Accreditation

ISO/IEC 17025 General requirements for the competence of testing and calibrating 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 within the scope of the listed ISO/IEC 17025 accreditation above.

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1. INTRODUCTION

This report outlines the determination of Reaction to Fire Performance of 4 mm thick "Alustic" FR B1 Aluminium Composite Panel when exposed to thermal attack by a Single Burning Item (SBI) in accordance with:

> BS EN 13823:2020+A1:2022 – Reaction to Fire Tests for Building Products — Building Products excluding Floorings exposed to the Thermal Attack by a Single Burning Item.

Throughout this report, reference will be made to BS EN 13823 in short form, but it is understood that it is with reference to the 2020+A1:2022 version, unless otherwise specified.

2. SPONSOR

Name: PRA Panels PVT LTD
Address: PRA Campus near CRPF Camp Baradera,
Mandir Hasod Raipur – 492101,
India
T: +91 8282828959
Website: www.alustic.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, F: +971 (0) 4 333 26 93
www.bell-wright.com

4. DATE OF TEST & WITNESSES

The test was conducted on 06-Jul-26 and was not witnessed by the sponsor.

5. TEST SAMPLES

5.1. Product Details

Product Details				
Product Reference	4 mm thick "Alustic" FR B1 Aluminium Composite Panel			
Manufacturer	PRA Panels PVT LTD			
Overall Thickness	4.15 mm (measured by TBWIC)			
Overall Area Weight	Stated: 7.20 kg/m^2 | Measured: 7.74 kg/m^2			
Density	1850 kg/m^3*			
Product Details	Topcoat (Fire Side)	1st Layer	Reference	Topcoat
			Manufacturer	Jiangsu
			Type	H-16*
			Colour	Bright silver
			Thickness, DFT	29 microns*
			Area Weight	1.26 kg/m^2*
			Density	2620 kg/m^3*
		2nd Layer	Reference	Primer
			Manufacturer	Jiangsu
			Type	H-16*

			Thickness, DFT	8 - 9 microns*
			Area Weight	1.23 kg/m^2*
			Density	2600 kg/m^3*
	Aluminium Skin (Top)	Reference	Aluminium skin	
		Manufacturer	Jiangsu	
		Alloy	AA-3003, H-16*	
		Thickness	0.45 mm*	
		Area Weight	1.26 kg/m^2 *	
		Density	2620 kg/m^3 *	
	Adhesive (Top)	Reference	LDPE	
		Manufacturer	PRA Panel Pvt Ltd	
		Thickness	0.05 mm *	
		Area Weight	0.046 kg/m^2 *	
		Density	920 kg/m^3 *	
	Core	Reference	$Mg(OH)_2$ core	
		Manufacturer	PRA Panel Pvt Ltd	
		Thickness	3 mm *	
		Area Weight	4.58 kg/m^2 *	
		Density	1480 kg/m^3 *	
	Adhesive (Bottom)	Reference	LDPE	
		Manufacturer	PRA Panel Pvt Ltd	
		Thickness	0.05 mm *	
		Area Weight	0.046 kg/m^2 *	
		Density	920 kg/m^3 *	
	Aluminium Skin (Bottom)	Reference	Aluminium skin	
		Manufacturer	Jiangsu	
		Alloy	AA-3003, H-16*	
		Thickness	0.45 mm*	
		Area Weight	1.23 kg/m^2 *	
		Density	2600 kg/m^3 *	
	Back coat	Reference	Aluminium	
		Manufacturer	Jiangsu	
		Type	H-16*	
		Colour	Grey	
		Thickness, DFT	0.45 mm *	
		Area Weight	1.23 kg/m^2 *	
		Density	2600 kg/m^3 *	
Backing Board		Material	Calcium Silicate Board (verified by TBWIC)	
		Thickness	11 mm (measured by TBWIC)	
		Density	890 kg/m^3 (measured by TBWIC)	
		Classification	A2-s1, d0 as per EN 13501-1:2018 (verified by TBWIC)	

Notes: The testing laboratory does not hold responsibility for information that has been provided by the sponsor and which could not be verified by the testing laboratory. As this could affect the validity of the tests results, any and all such information which could not be verified has been marked with an asterisk (*).

5.2. Standard Specific Conditions

In accordance with §5.1.1 of BS EN 13823, the specimen consisted of two wings, a short and long, with respective dimensions of 495 mm x 1500 mm (w x h) and 1004 mm x 1500 mm (w x h). The dimensions of each panel unit which comprise the specimen are provided in §10 *Appendix 1 – Drawings* of this report.

In accordance with §5.1.3 of BS EN 13823, and to allow for observation of lateral flame spread, two horizontal lines were drawn on the front side of the long wing near the edge of the specimen farthest from the corner at a height of 500 ± 3 mm and 1000 ± 3 mm above the bottom edge of the specimen.

The specimens were mechanically fastened with screws to a metal substructure comprising 65 mm-wide vertical studs with 1 mm wall thickness.

In accordance with §5.2.2(a) of BS EN 13823, the boards were intended to be installed in end-use with a ventilated cavity behind them and, as such, were tested with a 40 mm cavity behind them. Also, in accordance with §5.2.2 (a) of BS EN 13823, the sides of the cavity farthest away from the corner were left open.

In accordance with §5.2.2 (e) of BS EN 13823, the specimen was tested with both 10 mm horizonal and vertical open joints placed, respectively, at a height of 500 mm from the bottom of the specimen and 200mm from the corner line as measured when the specimen was mounted and ready for testing. Refer to §10 *Appendix 1 – Drawings* for details.

In accordance with §5.4 of BS EN 13823, three (3) specimens were tested.

6. SPECIMEN DEFINITION & VERIFICATION

6.1. Specimen Definition & Verification of the Test Specimen

The choice and design and the definition of the specimen have been made by PRA Panels PVT LTD, and TBWIC testing laboratory has not been involved in the selection or design of the specimen. Similarly, the results of the test apply only to the samples as received.

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.

6.2. Specimen Conditioning

The specimens were delivered on 29-Jun-26 and conditioned to constant mass at 23 ± 2°C and 50 ± 5% relative humidity, in accordance with §6 of BS EN 13823 and as prescribed in EN 13238:2010 - *Reaction to fire tests for building products – Conditioning procedures and general rules for selection of substrates.*

7. METHOD OF TEST

7.1. Test Procedure

The test was performed in accordance with the requirements of §8 of BS EN 13823:2020+A1:2022 - *Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by the single burning item.*

7.2. Performance Criteria

The BS EN 13823 test method does not itself provide a formal fire rating but instead produces a series of measurements and calculations to be reported. Actual fire classifications are the subject of a parent, classification standard, EN 13501-1, which is not a subject of this test report. A summary of measurements to be reported are as follows with definition from the indicated sections of BS EN 13823. Additional calculations using these measurements are also reported.

Metric	Definition
$HRR_{av}(t)$	Graphical representation of the average Heat Release Rate for the time interval $0 \leq t \leq 1500s$.
THR(t)	Graphical representation of the average Total Heat Release for the time interval $0 \leq t \leq 1500s$.
THR_{600s}	§3.4 | Total heat release from the specimen on the first 600 seconds of exposure to the main (primary) burner flames.
$FIGRA_{0.2\ MJ}$	§3.7 | Maximum of the quotient of heat release rate from the specimen and the time of it's occurrence using a THR-threshold of 0.2MJ.
$FIGRA_{0.4\ MJ}$	§3.8 | Maximum of the quotient of heat release rate from the specimen and the time of it's occurrence using a THR threshold of 0.4 MJ.
TSP(t)	Graphical Representation of the Total Smoke Production for the time interval $0 \leq t \leq 1500s$.
TSP_{600S}	§3.7 total smoke production from the specimen in the first 600 seconds of exposure to the main (primary) burner flames.
SMOGRA	§3.9 | Smoke Growth Rate: Maximum of the quotient of smoke production rate from the specimen and the time of it's occurrence.
Lateral Flame Spread	§3.5 | Lateral from spread on the long specimen wing.
Flaming particles & Droplets	§8.3.4 (a) & (b) | Occurrences of the fall of flaming droplets / particles, in the given time interval that remain flaming for both *not more* and *more than* 10 seconds after falling.

8. FIRE TEST

8.1. Observations & Measurements

OBSERVATIONS	SPECIMEN		
	1	2	3
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 600 sec.	Nil	Nil	Nil
Burning droplets/particles ≥10 s within the first 600 sec.	Nil	Nil	Nil
End of test, sec.	1560	1560	1560

9. SUMMARY OF RESULTS

The test specimen has been evaluated in accordance with BS EN 13823:2020+A1:2022 - *Reaction to fire tests for building products – Building products excluding floorings exposed to the thermal attack by the single burning item.*

9.1. Test Results

OBSERVATIONS	SPECIMEN			Mean
	1	2	3	
$FIGRA_{0.2MJ}$ (W/s)	5	22	18	15
$FIGRA_{0.4MJ}$ (W/s)	5	22	18	15
THR_{600s}, MJ	0.4	3.3	2.2	2.0
SMOGRA, m^2/s^2 Note 1	0	0	0	0
TSP_{600s}, m^2 Note 1	19	12	15	15
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 $\geq$ 10s within the first 600 sec.	Nil	Nil	Nil	Nil
Burning droplets/particles $\leq$10 s within the first 600 sec.	Nil	Nil	Nil	Nil
Note 1: Resulting values were corrected in accordance with Annex A, §A.6.1.2 of BS EN 13823:2020+A1:2022				

9.2. Limitation

The test results relate only 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 for the product in use.

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

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

Tested & Prepared By:

Esther Gitau
Fire Testing Engineer

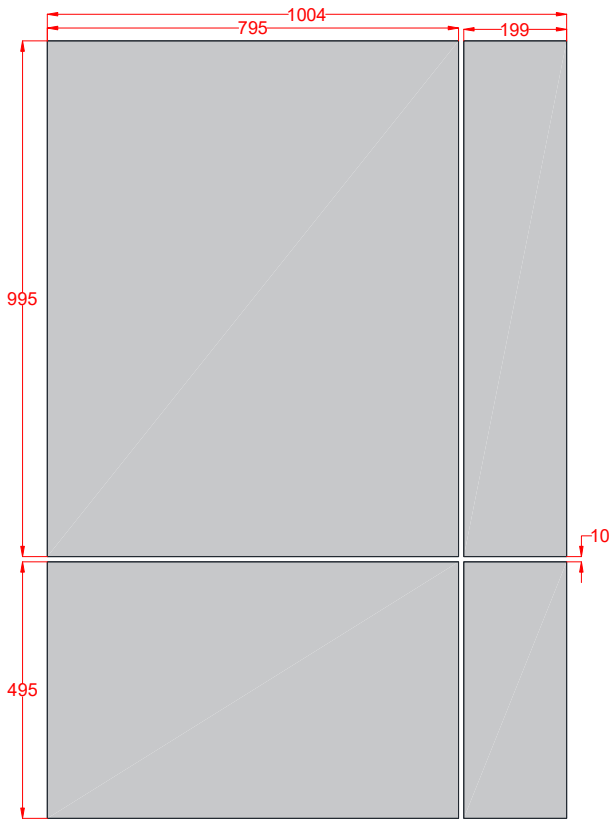
P.O.Box: 26385
DUBAI - U.A.E.
Thomas Bell-Wright Int'l Consultants (Dubai Br.)

Authorized By:

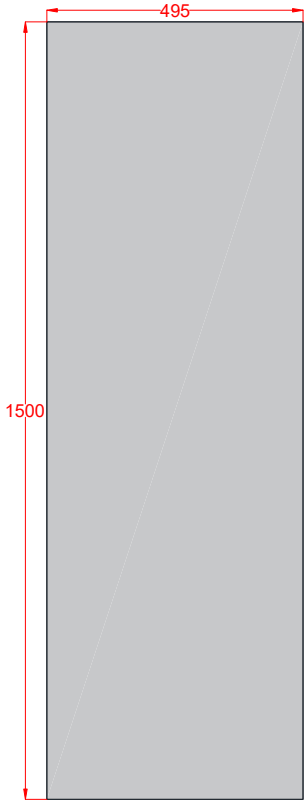
Daisan Dippi, AIFireE
Director Fire Compliance

Report Revision Tracking		
Revision No.	**Issue Date**	**Notes & Amendments**
Rev. 00	05-Aug-26	This is the first issue of the report. No revisions are included.

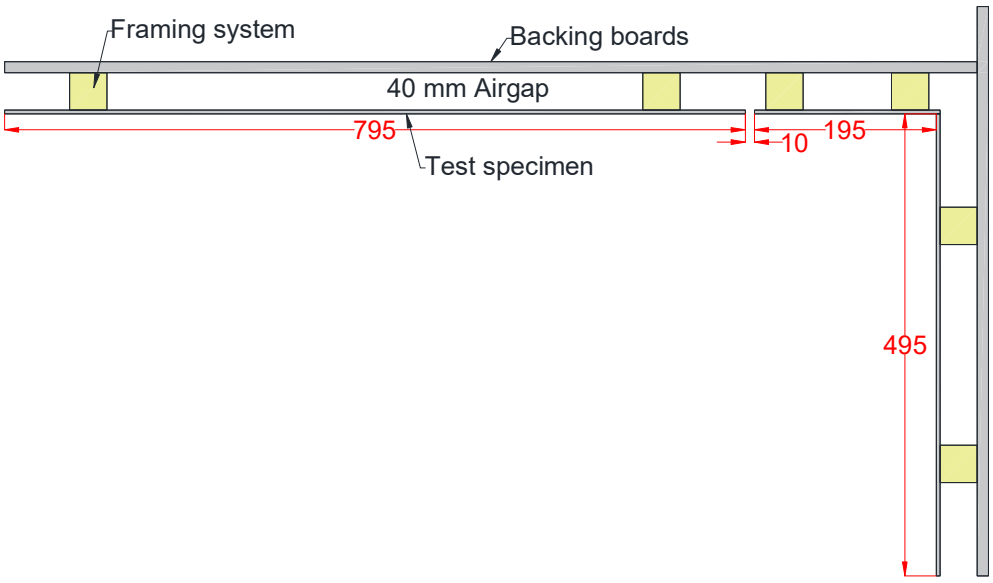
10. APPENDIX 1 – DRAWINGS



Long wing

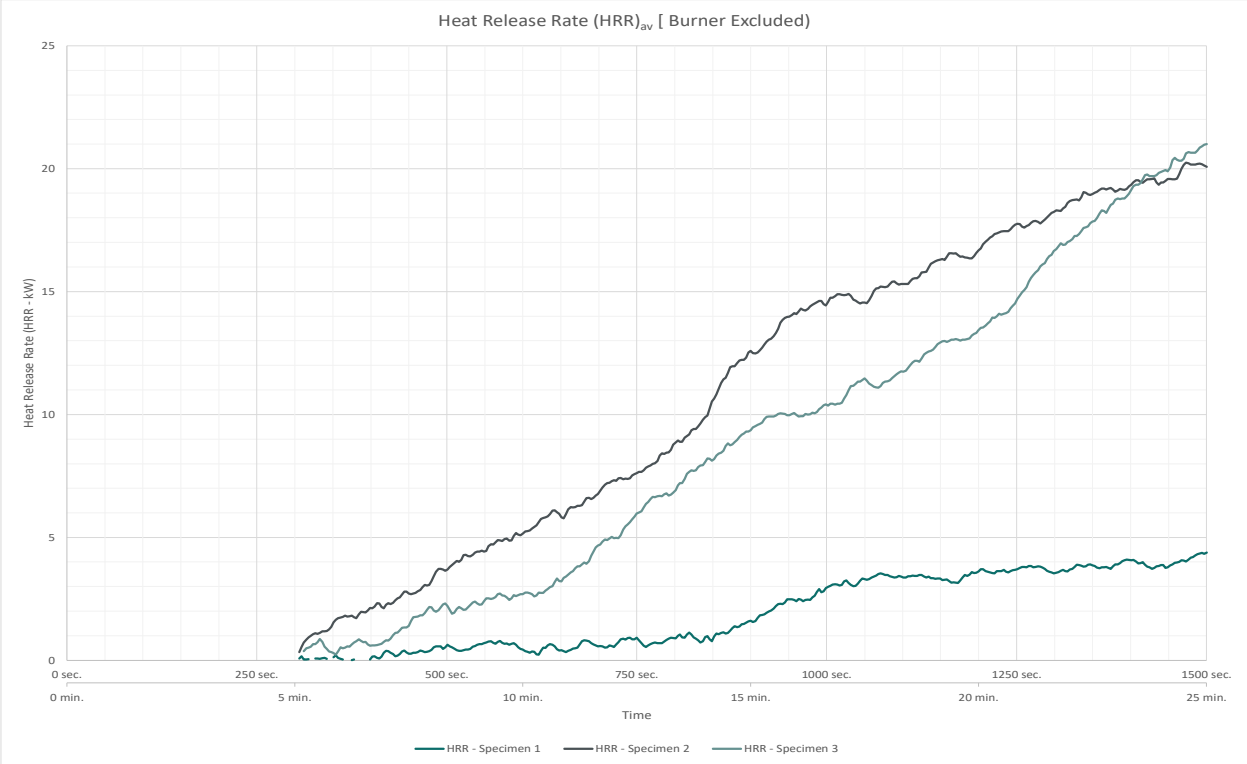


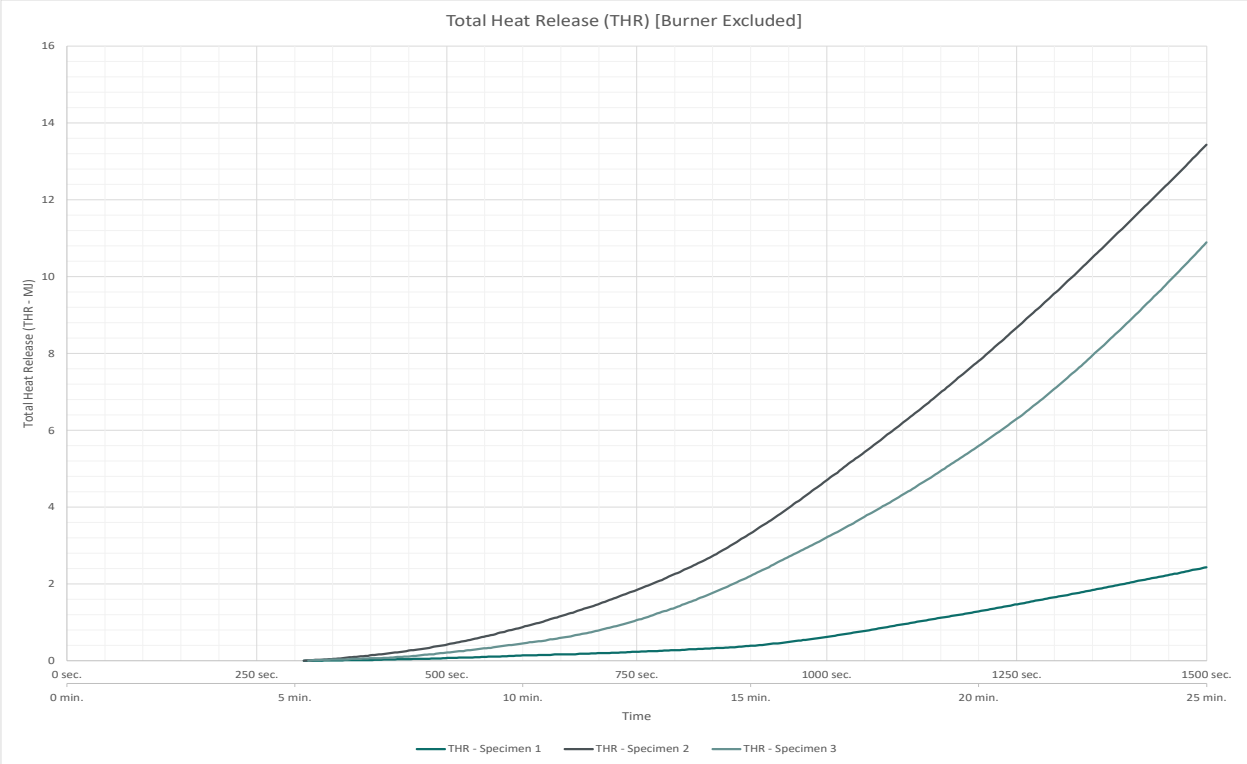
Short wing

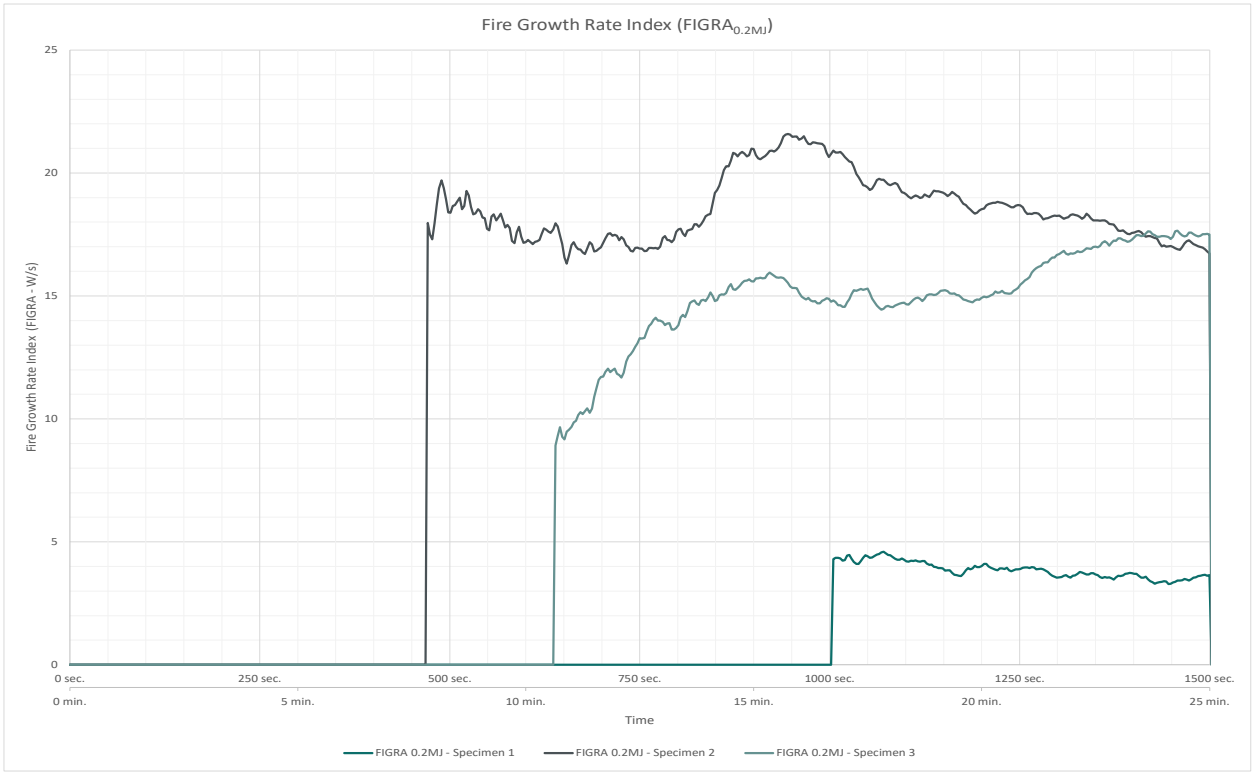


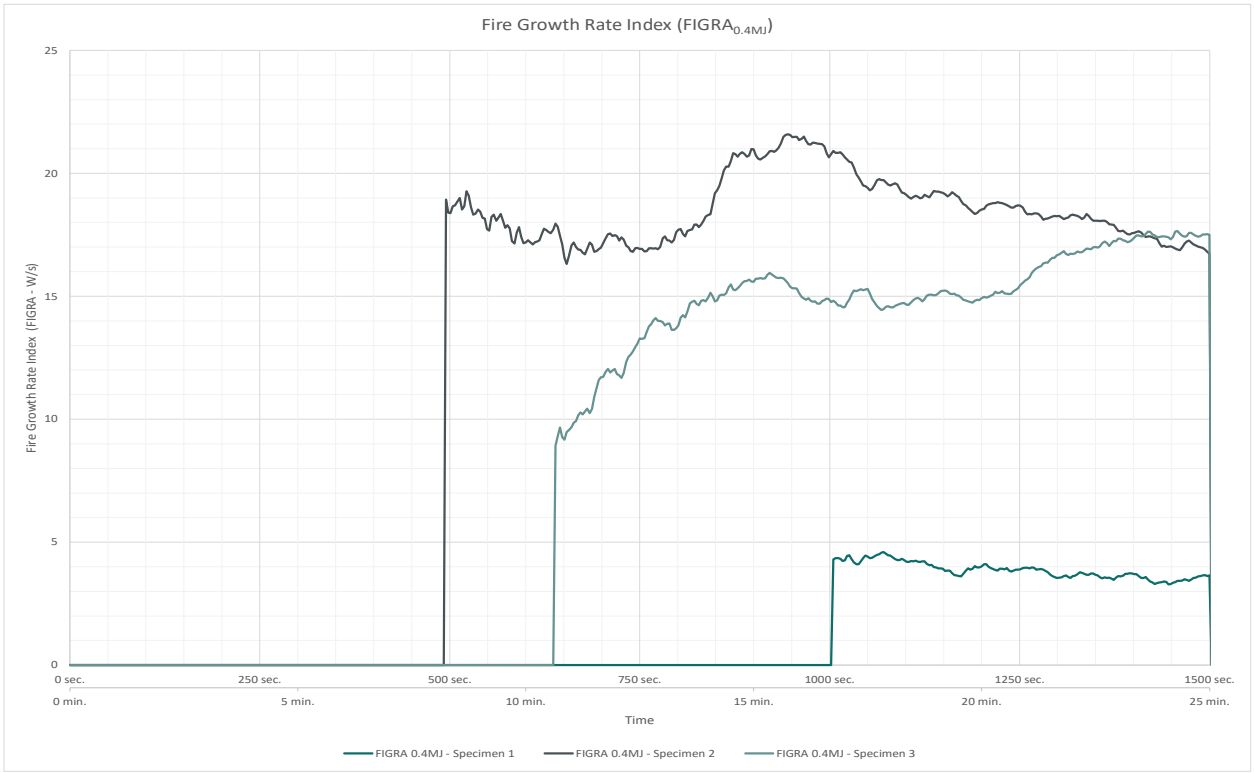
All dimensions are in mm

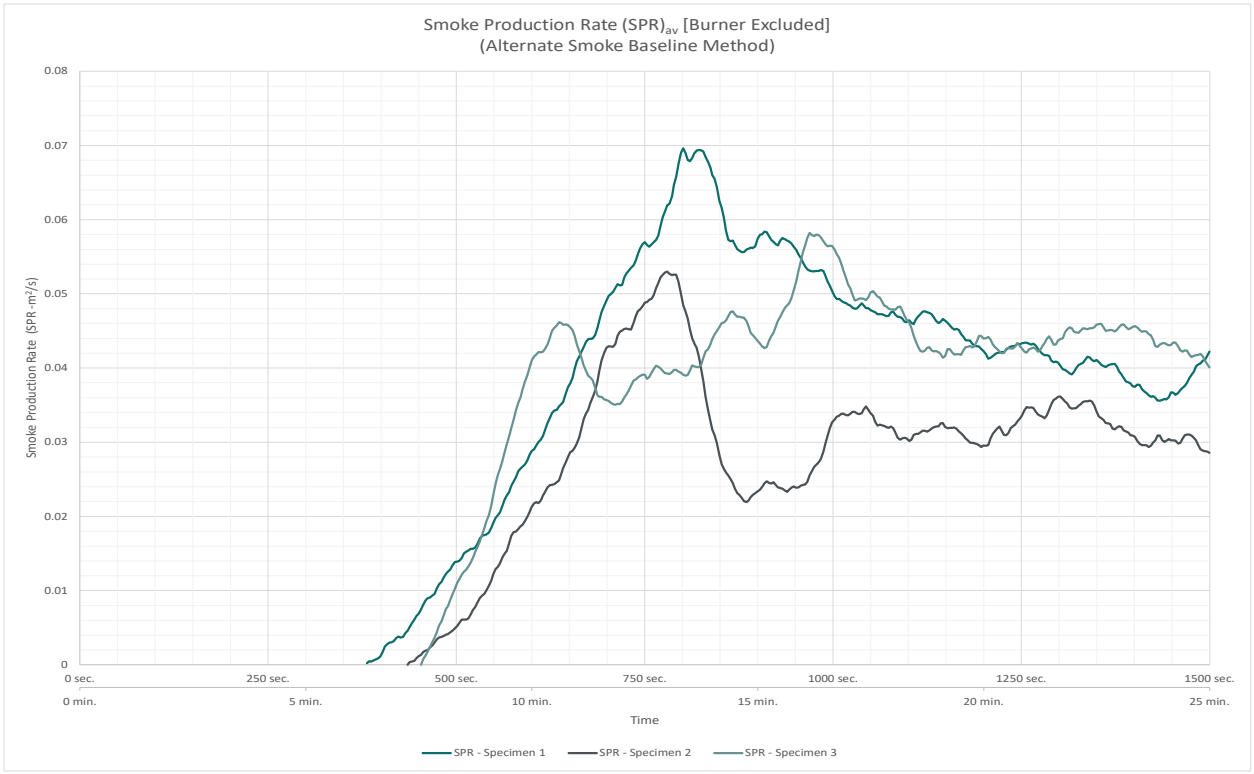
11. APPENDIX 2 – GRAPHS

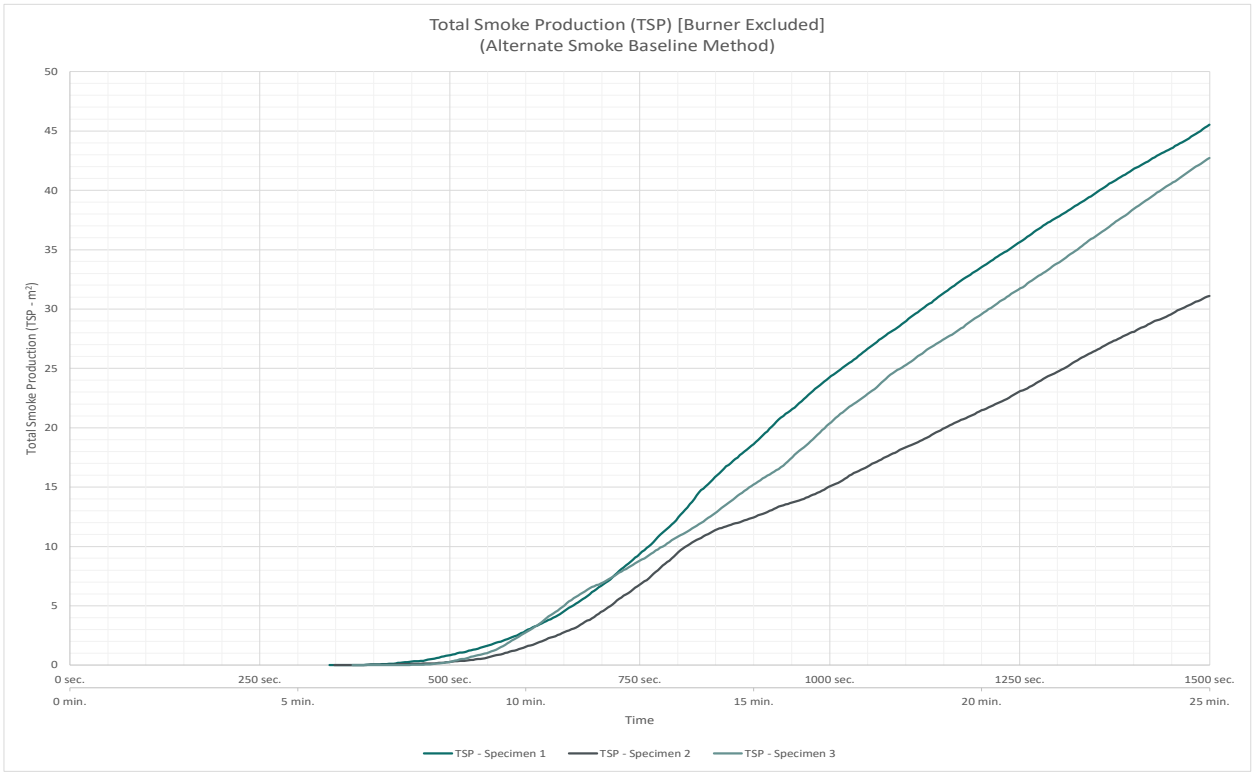


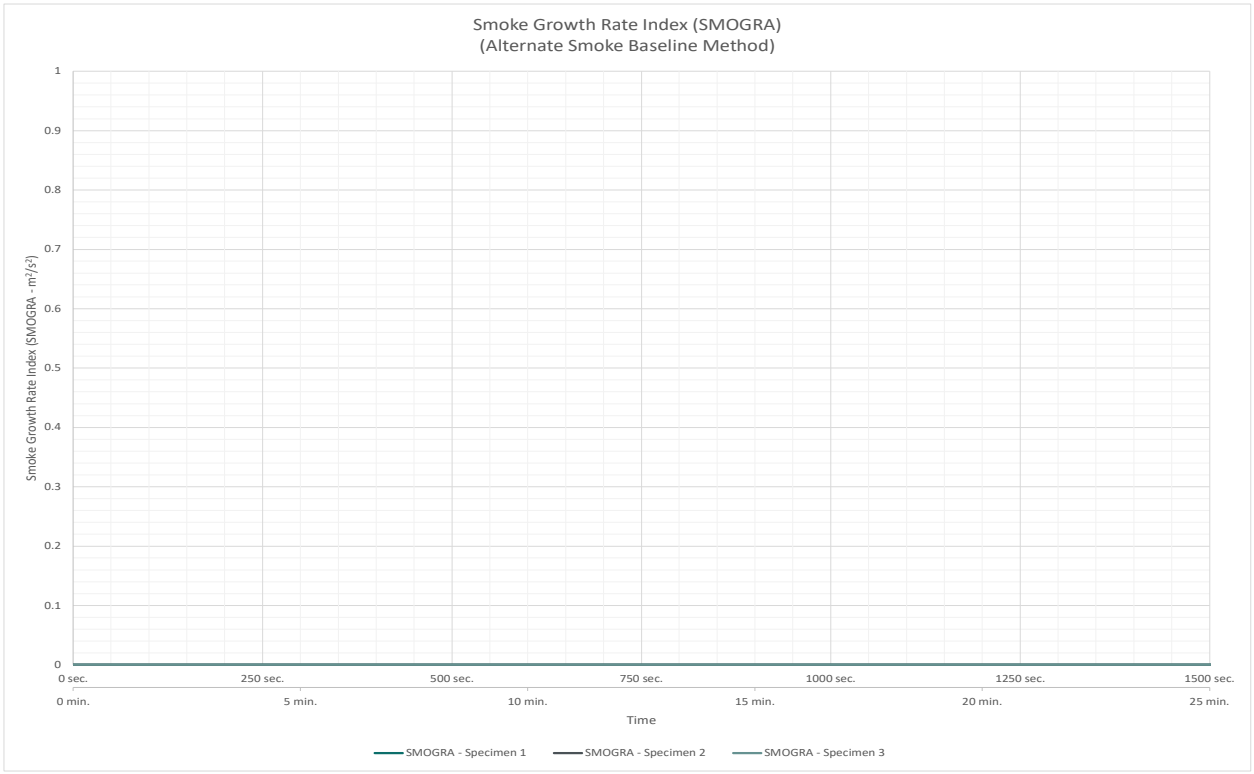



Fire Growth Rate Index (FIGRA0.2MJ)
Fire Growth Rate Index (FIGRA - W/s)
25
20
15
10
5
0
0 sec.
250 sec.
500 sec.
750 sec.
1000 sec.
1250 sec.
1500 sec.
0 min.
5 min.
10 min.
15 min.
20 min.
25 min.
Time
FIGRA 0.2MJ - Specimen 1
FIGRA 0.2MJ - Specimen 2
FIGRA 0.2MJ - Specimen 3


Fire Growth Rate Index (FIGRA0.4MJ)
Fire Growth Rate Index (FIGRA - W/s)
25
20
15
10
5
0
0 sec.
250 sec.
500 sec.
750 sec.
1000 sec.
1250 sec.
1500 sec.
0 min.
5 min.
10 min.
15 min.
20 min.
25 min.
Time
FIGRA 0.4MJ - Specimen 1
FIGRA 0.4MJ - Specimen 2
FIGRA 0.4MJ - Specimen 3


Smoke Production Rate (SPR)av [Burner Excluded]
(Alternate Smoke Baseline Method)
Smoke Production Rate (SPR -m²/s)
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
0 sec.
250 sec.
500 sec.
750 sec.
1000 sec.
1250 sec.
1500 sec.
0 min.
5 min.
10 min.
15 min.
20 min.
25 min.
Time
SPR - Specimen 1
SPR - Specimen 2
SPR - Specimen 3


Total Smoke Production [TSP] [Burner Excluded]
(Alternate Smoke Baseline Method)
Total Smoke Production (TSP - m²)
50
45
40
35
30
25
20
15
10
5
0
0 sec.
250 sec.
500 sec.
750 sec.
1000 sec.
1250 sec.
1500 sec.
0 min.
5 min.
10 min.
15 min.
20 min.
25 min.
Time
TSP - Specimen 1
TSP - Specimen 2
TSP - Specimen 3


Smoke Growth Rate Index (SMOGRA)
(Alternate Smoke Baseline Method)
Smoke Growth Rate Index (SMOGRA - m²/s²)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0 sec.
250 sec.
500 sec.
750 sec.
1000 sec.
1250 sec.
1500 sec.
0 min.
5 min.
10 min.
15 min.
20 min.
25 min.
Time
SMOGRA - Specimen 1
SMOGRA - Specimen 2
SMOGRA - Specimen 3

12. APPENDIX 3 – TEST PHOTOS

 Specimen 1	 Specimen 2	 Specimen 3
Specimens before the test		
 Specimen 1	 Specimen 2	 Specimen 3
Specimens after the test		

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