THOMAS BELL-WRIGHT
A PHENNA GROUP COMPANY

CLASSIFICATION OF REACTION TO FIRE PERFORMANCE IN ACCORDANCE WITH BS EN 13501-1:2018

Test Sponsor:

Modern Industrial Co. Ltd
Sudair Industrial & Business City,
Sudair, Riyadh,
Kingdom of Saudi Arabia
T: +966 920005774
Website: www.unibond.sa

Test Specimen:

4 mm thick “Unibond” FR-A2 Aluminium Composite Panel

Test Standard:

BS EN 13501-1:2018 – *Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests.*

Classification Reference No.: YI069-10
Issue Date: 13-Oct-25

Thomas Bell-Wright International Consultants (Dubai Branch)
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UAE ● KSA ● Qatar ● UK

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.

TABLE OF CONTENTS

1. INTRODUCTION

This classification report defines the classification assigned to 4 mm thick "Unibond" FR-A2 Aluminium Composite Panel, as described in §4 *Details Of Classified Product* of this report, in accordance with the procedures given in:

> *BS EN 13501-1:2018 – Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire tests.*

It has been prepared specifically with respect to §8 and Table 1 of EN 13501-1: *Testing of construction products, excluding flooring and linear pipe thermal insulation products.*

This classification report consists of 9 pages and may only be used or reproduced in its entirety. It has not been completed by a notified body in the context of CE marking.

2. SPONSOR

Name: Modern Industrial Co. Ltd
Address: Sudair Industrial & Business City,
Sudair, Riyadh,
Kingdom of Saudi Arabia
T: +966 920005774
Website: www.unibond.sa

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.
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www.bell-wright.com

4. DETAILS OF CLASSIFIED PRODUCT

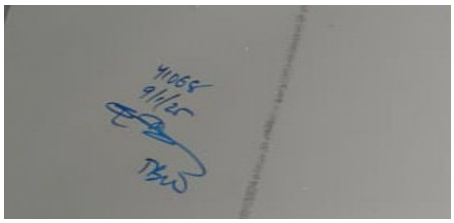
Product Description		4 mm thick "Unibond" FR-A2 Aluminium Composite Panel*	
Product Reference		"Unibond" FR-A2*	
Manufacturer		Modern Industrial Co. Ltd*	
Overall Thickness		4.15 mm (measured by TBWIC)	
		4 ± 2 mm (stated)	
Overall Area Weight		8.61 kg/m^2 (measured by TBWIC)	
		8.35 kg/m^2 (stated)	
Density		2178 kg/m^3 (stated)	
Product Details	1st Layer (Fire Side)	Product Name	PVDF Topcoat*
		Reference	CF101 PVDF Ultranar Bright Silver., SI – G1545*
		Manufacturer	Spectrum Industries LLC*
		Colour	Bright Silver*
		No. of coats	2*
		Total Thickness, DFT	19 - 21 microns*
		Specific Gravity	1.12 - 1.18*
	2nd Layer	Product Name	Primer*
		Type	Polyester*
		Reference	CP445, Yellow*
		Manufacturer	Spectrum Industries LLC*

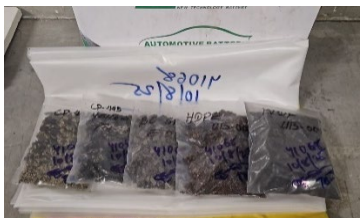
		Thickness, DFT	5 - 8 microns*
		Specific Gravity	1.122*
	3rd Layer	Reference	Aluminium top skin*
		Alloy & Temper	3003H46*
		Manufacturer	Good Luck Decorative Materials Manufacturer L.L.C.*
		Coated Thickness	0.5 ± 0.02 mm*
		Area Weight	1.355 kg/m^2*
		Density	2710 kg/m^3*
	4th Layer	Reference	Adhesive Film*
		Manufacturer	Rixin Plastic Industries LLC*
		Thickness	Stated: 0.1 mm | Measured: 0.08 mm
		Area Weight	Stated: 0.093 kg/m^2 | Measured: 0.073 kg/m^2
		Density	926 kg/m^3*
	5th Layer	Reference	FR A2 (Fire Retardant A2) core*
		Manufacturer	Jiangsu Beike Decoration Materials Technology Co., Ltd.*
		Thickness	3.2 mm*
		Area Weight	5.92 kg/m^2*
		Density	Stated: 1700 – 1850 kg/m^3| Measured: 1734 kg/m^3
	6th Layer	Reference	Adhesive Film*
		Manufacturer	Rixin Plastic Industries LLC*
		Thickness	Stated: 0.1 mm | Measured: 0.08 mm
		Area Weight	Stated: 0.093 kg/m^2 | Measured: 0.073 kg/m^2
		Density	926 kg/m^3*
	7th Layer	Reference	Aluminium top skin*
		Alloy & Temper	3003H46*
		Manufacturer	Good Luck Decorative Materials Manufacturer L.L.C.*
		Coated Thickness	0.5 ± 0.02 mm*
		Area Weight	1.355 kg/m^2*
		Density	2710 kg/m^3*
	8th Layer	Reference	Back coat*
		Type	PE*
		Manufacturer	Spectrum Industries LLC*
		Colour	Grey*
		No. of coats	1*
		Thickness, DFT	6 – 12 microns*
		Specific Gravity	1.22 – 1.30

Note: 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. SPECIMEN DEFINITION & VERIFICATION OF THE TEST SPECIMEN

TBWIC testing laboratory has not been involved in the selection or design of the specimen. However, the materials were selected, marked, and signed by Mr. Suresh Kumar from TBWIC Certification (Certification Body) on 09-Jan-25 and 10-Aug-25 as shown below.





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. Similarly, the results of the test apply only to the samples as received.

6. SUPPORTING TEST REPORTS

6.1. TEST REPORTS

Name Of Laboratory	Test Sponsor	Test Report Ref. No	Test Method / Field of Application Rules
Thomas Bell-Wright International Consultants (TBWIC)	Modern Industrial Co. Ltd	YI069-4 Dated 7-Oct-25	BS EN ISO 1716:2018
		YI069-9 Dated 7-Oct-25	BS EN 13823:2020+A1:2022

7. TEST RESULTS

Test Method	Component Type	Limits	Layer	No. of Tests	Continuous Parameter – Mean		Compliance Parameter
BS EN ISO 1716:2018	**Criteria for class "A2"**						
	External Non-substantial	PCS $\leq$ 4.0 MJ/m^2	Topcoat	3	0.5	0.7	Compliant
			Primer	3	0.2		
			Back coat	3	0.2		Compliant
	Substantial	PCS $\leq$ 3.0 MJ/kg	Aluminium Top & Bottom skins	-	0.0[Note 1]		Compliant
			Core	3	0.8		Compliant
	Internal Non-substantial	PCS $\leq$ 4.0 MJ/m^2	Adhesive Film	3	3.3		Compliant
							Compliant
	Product as a whole PCS $\leq$ 3.0 MJ/kg				1.4		Compliant

Note 1: Value deemed to be 0 in accordance with §9.4.1 of BS EN ISO 1716:2018

Test Method	Limits	No. of Tests	Continuous Parameter – Mean	Compliance Parameter
BS EN 13823:2020 + A1:2022	**Criteria for class "A2"**			
	$FIGRA_{0.2MJ} \leq$ 120 W/s	3	10	Compliant
	$THR_{600s} \leq$ 7.5 MJ	3	1.3	Compliant
	Lateral Flame Spread < Edge of Specimen	3	Nil	Compliant
	Criteria for subclass "s1"			
	SMOGRA $\leq$ 30 m^2/s^2 Note 2	3	0	Compliant
	$TSP_{600s} \leq$ 50 m^2 Note 2	3	19	Compliant
	Criteria for subclass "d0"			
	Flaming droplets/particles within 600 s	3	Nil	Compliant
Note 2: Resulting values were corrected in accordance with Annex A, §A.6.1.2 of BS EN 13823:2020+A1:2022				

8. CLASSIFICATION & FIELD OF APPLICATION

This classification has been prepared in accordance with §8 of BS EN 13501-1:2018.

The product,4 mm thick "Unibond" FR-A2 Aluminium Composite Panel, in relation to its reaction fire behaviour is classified as indicated in the table below. Additional reference information on broader available classifications available for this product type but not specifically the specimens in this report are provided in §9 *Appendix 1: Classification Definitions & Supporting Information* of this report.

Fire behavior		Smoke production			Flaming droplets	
A2	-	s	1	,	d	0
REACTION TO FIRE CLASSIFICATION:						
A2- s1, d0						
This classification document does not represent type approval or certification of the product.						

8.1. FIELD OF APPLICATION

The classification is valid for the following product parameters:

Parameter	Allowance
Overall Product Thickness	No Variations Allowed
Overall Product Density	No Variations Allowed
Overall Product Composition	No Variations Allowed
Coating Type	No Variations Allowed
Coating Colour	Valid only for tested colour, as specified in §4 of this report
Coating Thickness	No Variations Allowed
Metal Facings Type & Thickness	No Variations Allowed
Core Thickness	No Variations Allowed
Core Type & Composition	No Variations Allowed

This classification is also valid for the following end-use application:

Parameter	Allowance
Product Construction	No Variations Allowed
Joints	Valid for product applications with or without vertical and horizontal joints of width ≥ 15 mm

8.2. LIMITATION

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.

Prepared By:

Esther Gitau
Fire Testing Engineer

Reviewed & Authorized By:

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

Daisan Dippi, AlFireE
Fire Testing Director

Report Revision Tracking	
Revision No.	**Notes & Amendments**
Rev. 00	This is the first issue of the report. No revisions are included.

9. APPENDIX 1: CLASSIFICATION DEFINITIONS & SUPPORTING INFORMATION

The following table has been transcribed directly from Table 1 of EN 13501-1:2018 for reaction to fire construction products excluding floorings and linear pipe thermal insulation products and has been provided for supporting information. The classifications below do not indicate additional performance of the product outlined in the body of this classification report.

Class	Test method(s)	Classification criteria	Additional classification
A1	EN ISO 1182 [a] and	$\Delta T \leq 30$ °C; and $\Delta m \leq 50$ %; and $t_f = 0$ sec. (i.e. no sustained flaming)	-
	EN ISO 1716	PCS ≤ 2,0 MJ/kg [a] and PCS ≤ 2,0 MJ/kg [b c] and PCS ≤ 1,4 MJ/m² [d] and PCS ≤ 2,0 MJ/kg [e]	-
A2	EN ISO 1182 [a] or	$\Delta T \leq 50$ °C; and $\Delta m \leq 50$ %; and $t_f \leq 20$ sec.	-
	EN ISO 1716 and	PCS ≤ 3,0 MJ/kg [a] and PCS ≤ 4,0 MJ/m² [b] and PCS ≤ 4,0 MJ/m² [d] and PCS ≤ 3,0 MJ/kg [e]	-
	EN 13823	FIGRA ≤ 120 W/s and LFS < edge of specimen and $THR_{600s} \leq 7,5$ MJ	Smoke production [f] and Flaming droplets/particles [g]
B	EN 13823 and	FIGRA ≤ 120 W/s and LFS < edge of specimen and $THR_{600s} \leq 7,5$ MJ	Smoke production [f] and Flaming droplets/particles [g]
	EN ISO 11925-2 [i]: Exposure = 30 s	$F_s \leq 150$ mm within 60 s	
C	EN 13823 and	FIGRA ≤ 250 W/s and LFS < edge of specimen and $THR_{600s} \leq 15$ MJ	Smoke production [f] and Flaming droplets/particles [g]
	EN ISO 11925-2 [i]: Exposure = 30 s	$F_s \leq 150$ mm within 60 s	
D	EN 13823 and	FIGRA ≤ 750 W/s	Smoke production [f] and Flaming droplets/particles [g]
	EN ISO 11925-2 [i]: Exposure = 30 s	$F_s \leq 150$ mm within 60 s	
E	EN ISO 11925-2 [i]: Exposure = 15 s	$F_s \leq 150$ mm within 20 s	Flaming droplets/particles [h]
F	No performance determined		

[a] For homogeneous products and substantial components of non-homogeneous products.
[b] For any external non-substantial component of non-homogeneous products.
[c] Alternatively, any external non-substantial component having a PCS ≤ 2,0 MJ/m², provided that the product satisfies the following criteria of EN 13823: FIGRA ≤ 20 W/s, and LFS < edge of specimen, and $THR_{600s} \leq 4,0$ MJ, and s1, and d0.
[d] For any internal non-substantial component of non-homogeneous products.
[e] For the product as a whole.
[f] In the last phase of the development of the test procedure, modifications of the smoke measurement system have been introduced, the effect of which needs further investigation. This may result in a modification of the limit values and/or parameters for the evaluation of the smoke production.
***s1** = SMOGRA ≤ 30m²/s² and $TSP_{600s} \leq 50m^2$; **s2** = SMOGRA ≤ 180m²/s² and $TSP_{600s} \leq 200m^2$; **s3** = not s1 or s2*
*[g] **d0** = No flaming droplets/ particles in EN 13823 within 600 s;*
***d1** = no flaming droplets/ particles persisting longer than 10 s in EN 13823 within 600 s;*
***d2** = not d0 or d1.*
Ignition of the paper in EN ISO 11925-2 results in a d2 classification.
[h] Pass = no ignition of the paper (no classification);
Fail = ignition of the paper (d2 classification).
[i] Under conditions of surface flame attack and, if appropriate to the end–use application of the product, edge flame attack.

----- End of Classification Report -----