

TEST REPORT FOR REACTION TO FIRE

Test Sponsor:

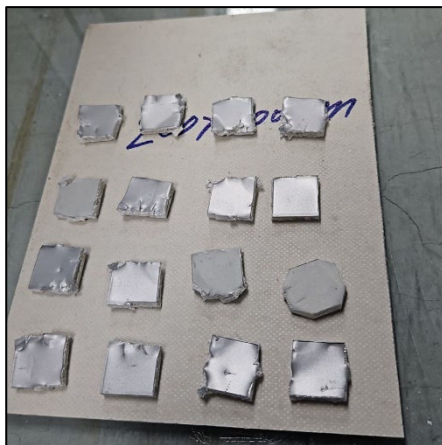
Modern Industrial Co. Ltd
Sudair Industrial & Business City,
Sudair, Riyadh,
Kingdom of Saudi Arabia
T: +966 920005774
Website: www.unibond.sa

Test Specimen:

4 mm thick "Unibond" FR-A2 Aluminium Composite Panel

Test Standard:

ASTM D1929: Standard Test Method for Determining Ignition Temperature of Plastics



Test Reference No.: YI069-2
Test Date: 24-Jul-25
Issue Date: 13-Oct-25

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

Copyright© This document shall not be reproduced except in full without written approval of Thomas Bell-Wright International Consultants



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	4
2. SPONSOR	4
3. TESTING LABORATORY	4
4. DATE OF TEST & WITNESSES	4
5. TEST SAMPLES	4
5.1. Specimen Description.....	4
5.2. Standard Specific Conditions.....	5
6. SPECIMEN DEFINITION & VERIFICATION.....	6
6.1. Specimen Definition & Verification of the Test Specimen	6
6.2. Specimen Conditioning.....	6
7. METHOD OF TEST	6
7.1. Test Procedure.....	6
7.2. Performance Criteria	6
7.3. Method Variations.....	6
8. FIRE TEST.....	7
8.1. Observations & Measurements.....	7
9. SUMMARY OF RESULTS	7
9.1. Limitation.....	8

1. INTRODUCTION

Determination of the flash ignition temperature and spontaneous ignition temperature of 4 mm thick "Unibond" FR-A2 Aluminium Composite Panel using hot-air ignition furnace in accordance with:

ASTM D1929 – 23; Standard Test Method for Determining Ignition Temperature of Plastics.

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.
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 24-Jul-25 and was not witnessed by the sponsor.

5. TEST SAMPLES

5.1. Specimen Description

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	1 st Layer (Fire Side)	Product Name	PVDF Topcoat*
		Reference	CF101 PVDF Ultramar 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*
	2 nd Layer	Product Name	Primer*
		Type	Polyester*
		Reference	CP445, Yellow*
		Manufacturer	Spectrum Industries LLC*
		Thickness, DFT	5 - 8 microns*
		Specific Gravity	1.122*

	3 rd 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 *
	4 th 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 *
	5 th 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
	6 th 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 *
	7 th 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 *
	8 th 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	
Mass per specimen		3.0 ± 0.2 g (measured by TBWIC)	
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 (*).			

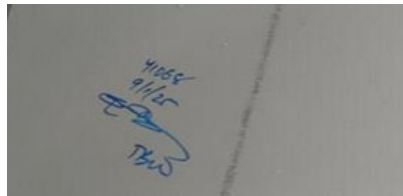
5.2. Standard Specific Conditions

In accordance with §7.2 of ASTM D1929-23, the specimen was cut into pieces of mass 3.0 ± 0.2 g as it had a density greater than 100 kg/m³.

6. SPECIMEN DEFINITION & VERIFICATION

6.1. 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 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.

6.2. Specimen Conditioning

In accordance with §7.4 of ASTM D1929-23, after delivery of the specimen on 14-Jul-25, the specimen was placed in a conditioned spaced for not less than 40 h where temperature and relative humidity were maintained between $23 \pm 2^{\circ}\text{C}$ and $50 \pm 10\%$, respectively, until constant weight was achieved.

7. METHOD OF TEST

7.1. Test Procedure

The test was conducted in accordance with the procedures outlined in §8 of ASTM D1929-23, Standard Test Method for determining Ignition Temperature of Plastics whereby Flash Ignition Temperature (FIT) and Spontaneous Ignition Temperature (SIT) were determined.

7.2. Performance Criteria

The ASTM D1929 standard does not itself outline performance criteria in the context of formal ratings, classifications, or pass/fail criteria, but instead reports the two results of Flash Ignition Temperature (FIT) and Spontaneous Ignition Temperature (SIT), defined as follows:

- i. ASTM D1929 §3.2.1 – Flash Ignition Temperature (FIT): the minimum temperature at which, under specified test conditions, sufficient flammable gases are emitted to ignite momentarily upon application of a small external pilot flame.
- ii. ASTM D1929 §3.2.3 – Spontaneous Ignition Temperature or Self-Ignition Temperature (SIT): the minimum temperature at which the self-heating properties of the specimen lead to ignition or ignition occurs of itself, under specified test conditions, in the absence of any additional flame ignition source.

7.3. Method Variations

With respect to §6.2 *Specimen Conditioning* of this report, there were deviations observed in the consistency of the temperature and relative humidity in the four separate probes of monitoring equipment in the laboratory's conditioning room. However, the materials were still conditioned to constant mass, in accordance with the test standard, and it was agreed upon by both the laboratory and the sponsor to proceed with the test.

8. FIRE TEST

8.1. Observations & Measurements

Observations	Results
1. Flash Ignition	
Specimen mass (g)	3.2
Air flow rate, Q_v , L/min	2.6
Flash Ignition at nozzle, (mm:ss)	Not observed
Flaming combustion of the specimen, (mm:ss)	3:14
Glowing combustion of the specimen, (mm:ss)	Not observed
Explosion, (mm:ss)	Not observed
Rapid rise in temperature T_1 above that of T_2	Observed
Lowest Air Temperature, T_2 at which flash observed, °C	471
2. Spontaneous Ignition	
Specimen mass (g)	3.0
Air flow rate, Q_v , L/min	2.6
Flaming combustion of the specimen, (mm:ss)	2:53
Glowing combustion of the specimen, (mm:ss)	Not observed
Rapid rise in temperature T_1 above that of T_2	Observed
Lowest Air Temperature, T_2 at which specimen burns, °C	481

9. SUMMARY OF RESULTS

The test specimen has been evaluated in accordance with ASTM D1929-23; *Standard Test Method for Determining Ignition Temperature of Plastics*.

The test results are as follows:

Flash Ignition Temperature (FIT) - °C	471
Spontaneous Ignition Temperature (SIT) - °C	481

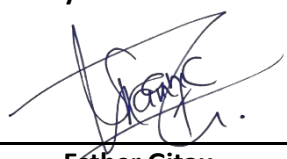
9.1. Limitation

These test results relate only to the behaviour of test specimens under the particular conditions of the test. They are not intended to be used, and shall not be used, to assess the potential fire hazards of a material 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.

Prepared By:



Esther Gitau
Fire Testing Engineer

Reviewed & Authorized By:




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.

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