



مختبرات ويمبي ش.ذ.م.م.
WIMPEY LABORATORIES L.L.C.

TEST REPORT ON VOC

Customer Name	M/s. Berger Paints Bahrain WLL, POBox 26688, Kingdom of Bahrain.		
Sample Description	Tuff Exterior Silk	Lab Report No.	WD-R-220215-0901/6
Source	M/s. Asian Paints Berger	Lab Request No.	WD-Q-220215-0229
Test Method	USEPA 24	Sample No.	WD-S-220215-0856/4
Room Temperature	23°C	Date Received	15/02/2022
Room Relative Humidity	50%	Date Tested	08/03/2022
Wimpey Ref. No.	220215-32	Date Reported	14/03/2022
Client Reference	N.G	Tested By	AP

Results of Analysis

Test	Unit	Result
VOC	g/L	5

Remarks: None

Method Deviation: None

Signed for and on behalf of Wimpey Laboratories

S.Sarath Kumar
Head of Department

Test results relate only to the samples tested.
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TEST REPORT ON SRI

Client	M/s. Berger Paints Bahrain WLL, POBox 26688, Kingdom of Bahrain.		
Sample Description	Tuff Exterior Silk	Lab Report No.	WD-R-220215-0901/7
Source	M/s. Asian Paints Berger	Sample No.	WD-S-220215-0856/4
Test Temperature Relative Humidity	23°C 50%	Date Received	15/02/2022
Wimpey Ref. No.	220215-32	Date Tested	16/03/2022
Tested By	AP	Date Reported	22/03/2022

Solar Reflectance Index (SRI)

Test methods

Emissivity : ASTM C 1371
Solar reflectance : ASTM C 1549
SRI for wind condition (Low, Medium, High): ASTM E 1980:01

Thermal emissivity: 0.76		Solar reflectance (%): 86.17	
Condition	Low wind (0-2 m/s)	Medium wind (2-6 m/s)	High wind (6-30 m/s)
Convective coefficient, (W/(m ² K))	5.0	12.0	30.0
Roof surface temperature (°C)	45.6	42.1	39.4
Solar reflectance index, SRI	107	107	107

Remarks: None

Signed for and on behalf of Wimpey Laboratories



S. Sarath Kumar
Head of Department

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TEST REPORT ON HEAVY METALS

Client	M/s. Berger Paints Bahrain WLL, POBox 26688, Kingdom of Bahrain.		
Project Name	N.G	Lab Report No.	WD-R-220215-0901/8
Sample Description	Tuff Exterior Silk	Lab Request No.	WD-Q-220215-0229
Reference	N.G	Sample No.	WD-S-220215-0856/4
Manufacturer	N.G	Date Received	15/02/2022
Test Method	ICP-AES/IHP	Date Tested	08/03/2022
Tested Location	Wimpey-Dubai	Date Reported	14/03/2022
Wimpey Ref. No.	220215-32	Tested By	AP

Test Results

Test	Unit	Result
Lead (Pb)	ppm	<0.05
Cadmium (Cd)	ppm	<0.01
Mercury (Hg)	ppm	<0.1
Chromium (Cr)	ppm	<0.01
Antimony (Sb)	ppm	<0.1
Arsenic (As)	ppm	<0.1

Remarks: None.

Signed for and on behalf of Wimpey Laboratories


S. Sarath Kumar
Head of Department

Test results relate only to the samples tested.

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TEST REPORT ON WET SCRUB RESISTANCE

Client	Berger Paints Emirates LTD Co (LLC)		
Sample Description	Tuff Exterior Emulsion	Lab Report No.	WD-R-250603-0710
Source	Berger Paints Emirates LTD CO (LLC)	Lab Request No.	WD-Q-250603-0125
Test Method	ISO 11998:2006	Sample No.	WD-S-250603-1479
Test Temperature	23°C & 50% RH	Date Received	03/06/2025
Tested Location	Wimpey-Dubai	Casting Date	09/06/2025
Coating Thickness	200 µm	Date Tested	18/06/2025
No. of Cycles	200 Cycles	Date Reported	23/06/2025
Wimpey Ref No.	SH-048279	Tested By	VIN

Test Results (Wet Scrub Resistance)

Area traversed by the scrub pad: 0.013m²

Test	Result	
Wet Scrub Resistance	Mean loss in thickness (µm)	2.6
	Assessment of wet scrub resistance	200 Cycles- Pass
Classification as per EN 13300:2022		Class 1

Test Results (Cleanability)

Test	Result
Cleanability	Satisfactory

Remarks:

Signed for and on behalf of Wimpey Laboratories L.L.C.



S.Sarath Kumar
Laboratory Manager

Test results relate only to the samples tested.

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-End of text-



TEST REPORT FOR REACTION TO FIRE

Test Sponsor:

Berger Paints Emirates Ltd. Co. L.L.C.
P.O. Box 27524
Al Qouz 1 Dubai, United Arab Emirates
T: +971 4 339 1000 | F: +971 4 339 1322
Website: www.asianpaints.com

Test Specimen:

0.17 mm thick Tuff Exterior Emulsion applied on a fiber cement board substrate

Test Standard:

ASTM E84 – 23d: Standard Test Method for Surface Burning Characteristics of Building Materials



Test Reference No.: ZF003-1
Test Date: 23-Jun-25
Issue Date: 30-Jun-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

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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

Determination of the flame spread index and the smoke developed index of a 0.17 mm thick Tuff Exterior Emulsion applied on a fiber cement board substrate as per:

ASTM E84 – 23d; Standard Test Method for Surface Burning Characteristics of Building Materials.

2. SPONSOR

Name: Berger Paints Emirates Ltd. Co. L.L.C.
Address: P.O. Box 27524
 Al Qouz 1 Dubai, United Arab Emirates
 T: +971 4 339 1000 | F: +971 4 339 1322
 Website: www.asianpaints.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 23-Jun-25 and has not been witnessed by the Sponsor:

5. TEST SAMPLES

5.1. Product Details

Product Details			
Product Tested	0.17 mm thick Tuff Exterior Emulsion applied on a fiber cement board substrate		
Product Name	Tuff Exterior Emulsion		
Manufacturer	Berger Paints Emirates Ltd. Co. L.L.C., Al Qouz 1, P.O.Box 27524, Dubai, UAE		
Product Description	An emulsion based on pure & nano acrylic emulsion pigmented with titanium dioxide and other light-fast and alkali resisting pigments. Further, Tuff Exterior Emulsion provides excellent long-lasting adhesion on a variety of textured surfaces coupled with good anti-microbial resistance. In addition, its high scrub resistance due to the excellent binding capability of nano emulsion makes it ideal for the tough Middle East climate. Further, it has excellent UV resistance to provide long-lasting aesthetics to exterior facades and it also has very good Anti-Carbonation Properties.		
Product Details	Topcoat (Fire side)	Product Name	Tuff Exterior Emulsion
		Manufacturer	Berger Paints Emirates Ltd. Co. L.L.C.
		Thickness, DFT	0.12 mm (stated)
		Density	1.61 kg/m ³ (stated)
	Primer	Product Name	Tuff AR Primer
		Manufacturer	Berger Paints Emirates Ltd. Co. L.L.C.
		Thickness	0.05 mm (stated)
		Density	1.38 kg/m ³ (stated)
Substrate Details	Product Name	Cement Board	
	Manufacturer	Ramco Hicem	

	Thickness	6.3 mm (stated)
	Density	1.6 gm/cm ³ (stated)
Dimensions per panel	2400 x 600 x 6.6 mm (l x w x t) (measured by TBWIC)	
Quantity of panels	3 Nos.	
Total dimension	7200 x 600 x 6.6 mm (l x w x t) (measured by TBWIC)	
Area Weight	7.93 kg/m ² (measured by TBWIC)	
Specimen placement	The 3 panels of 0.17 mm thick Tuff Exterior Emulsion applied on a fiber cement board substrate were butt jointed end-to-end. The test specimen was placed directly to the tunnel ledges with the topcoat (fire side) towards the flame source.	
Specimen preparation	Refer to next section.	

5.2. Standard Specific Conditions

With respect to §6.8 and 11.1.4.3 of ASTM E84-23d, the specimen was prepared by the Sponsor and applied to the fiber cement substrate as specified in the manufacturer's instructions at the thickness/coverage rate recommended by the manufacturer and was fully cured prior to submission in the laboratory.

In accordance with §6.1 of ASTM E84-23d, the specimen was representative of the materials which the test was intended to examine, as informed by the sponsor of the test.

With respect to, and in accordance with, §6.2 of ASTM E84-23d, the specimen was delivered to the lab and tested as multiple lengths butt-jointed together at their ends. There were a total 3 Nos. of sections forming aggregate dimensions of 7200 x 600 x 6.6 mm (l x w x t).

Also in accordance with §6.2 of ASTM E84-23d, the specimen was placed in the ceiling position of the ASTM E84 furnace, supported on the ledged of the tunnel lid. The fire side was exposed, face down to the ignition source during the 10:00 minute test duration.

In accordance with §5.1.5.3 of ASTM E84-23d, several sections of cement board with aggregate dimensions of 7350 x 600 mm (l x w) were placed along the back (non-fire side) of the specimen to protect the furnace lid.

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 Berger Paints Emirates Ltd. Co. L.L.C., 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

In accordance with §6.4 of ASTM E84-23d, after delivery of the specimen on 19-Jun-25, the specimen was placed in a conditioned spaced for 4 days where temperature and relative humidity were maintained between 23 ± 2.8°C and 50 ± 5%, 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 E84-23d and both flame spread and smoke density were recorded. The results of both flame spread and smoke density were compared against the standard calibration materials of fiber cement board, heptane, and Red Oak outlined in §7 of ASTM E84-23d.

7.2. Performance Criteria

The ASTM E84-23d standard collects data on two metrics, the Flame Spread Index (FSI) and Smoke Development Index (SDI), but does not itself outline performance criteria, a result classification, or specific guidance on a formal fire rating.

However, and to provide context on use, the FSI and SDI information from the ASTM E84 test are often used by regulatory agencies to approve materials for various applications. For example, the International Building Code (IBC) 2024, §803.1.2 requires that:

Interior wall and ceiling finish materials shall be classified in accordance with ASTM E84 or UL 723. Such interior finish materials shall be grouped in the following classes in accordance with their flame spread and smoke-developed indices:

- 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.

The above criteria is an example of the IBC requirements for wall and ceiling finished only. The application and requirements of the tested specimen may differ.

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
Ignition Time (mm:ss)	1:41
Time to maximum flame front advance (mm:ss)	None
Maximum flame spread (ft)	None
Time to end of tunnel reached (mm:ss)	Not Reached
Maximum temp recorded at the exposed thermocouple located near the end of the tunnel (°C/°F)	317 °C / 602 °F
Dripping (mm:ss)	None
Flaming on the floor (mm:ss)	None
After flame on the top (mm:ss)	None
After flame on the floor (mm:ss)	None
Delamination (mm:ss)	None
Sagging (mm:ss)	None
Shrinkage (mm:ss)	None
Fallout (mm:ss)	None
FS*Time Area (ft*min)	0
Smoke Area (%A*min)	6.76
Heptane Smoke Area (%A*min)	86.8

9. SUMMARY OF RESULTS

The test specimen has been evaluated in accordance with ASTM E84-23d; *Standard Test Method for Surface Burning Characteristics of Building Materials*.

The test results are as follows:

Flame Spread Index (FSI)	0
Smoke Developed Index (SDI)	10

Results are valid for the tested configuration only.

9.1. Limitation

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 beyond 5 years from the date of testing.

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

Tested By:



Esther Gitau
Fire Testing Engineer

Prepared By:



Fredilyn Paragoso
Fire Testing Support Engineer

Reviewed & Authorized By:

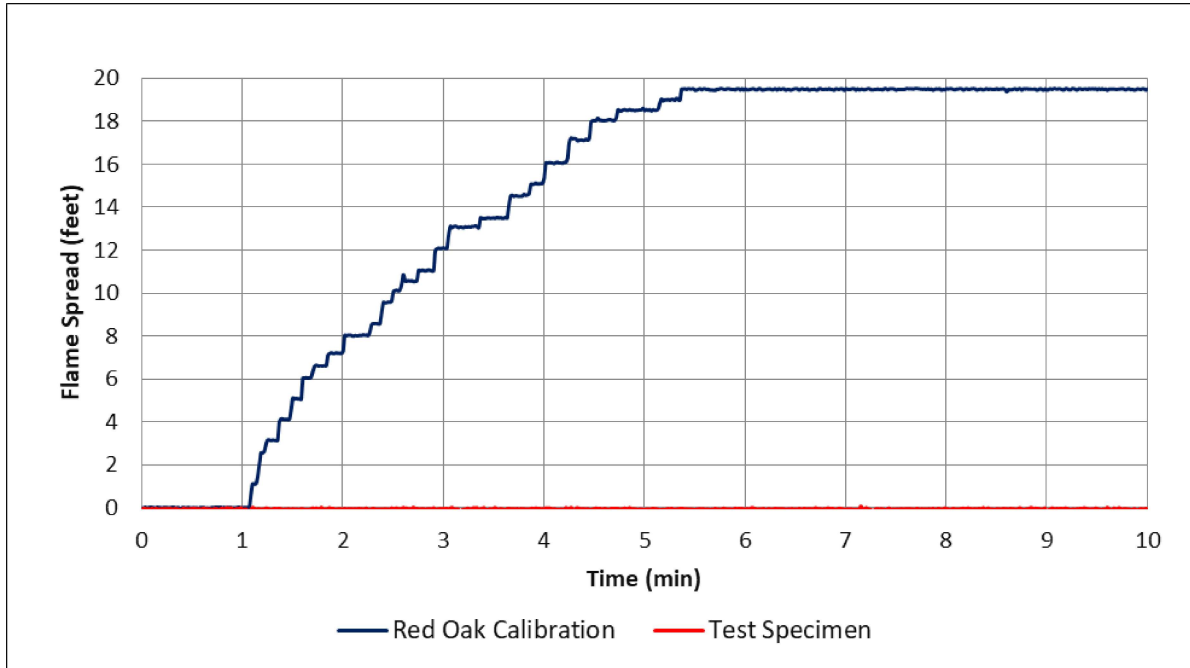


Daisan Dippi, AIFireE
Fire Testing Director

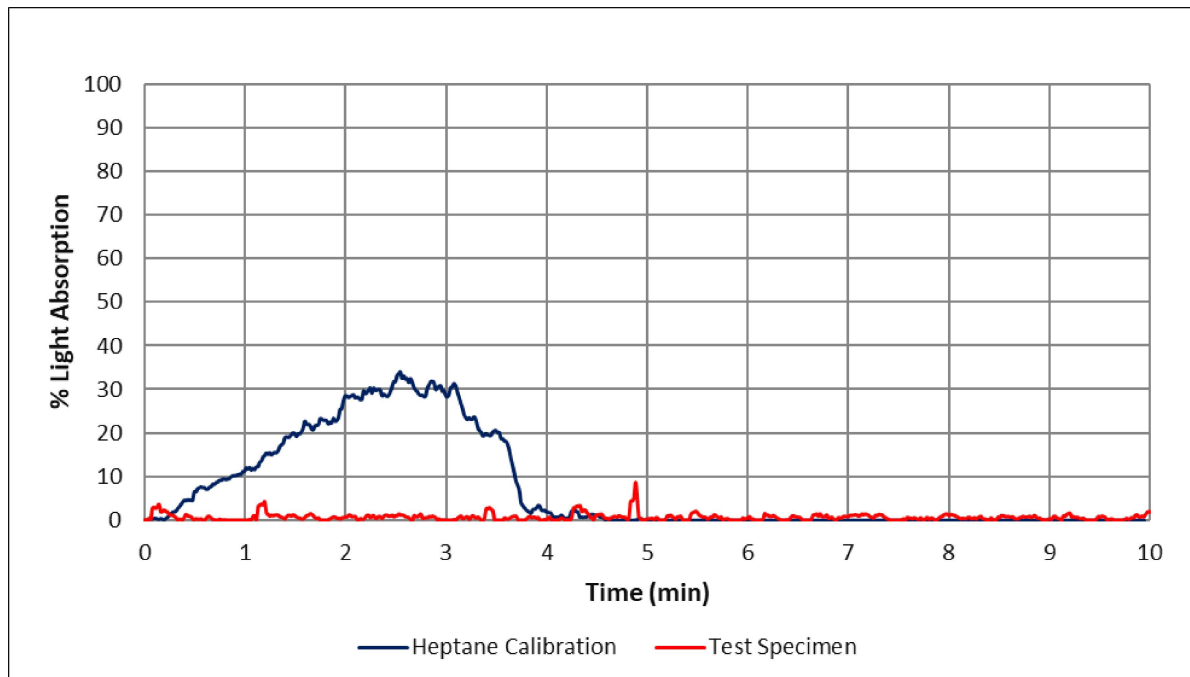


Report Revision Tracking		
Revision No.	Issue Date	Notes & Amendments
Rev. 00	01-Jul-25	This is the first issue of the report. No revisions are included.

10. APPENDIX 1 – GRAPHS



Graph 1: Flame Spread Index (FSI)



Graph 2: Smoke Developed Index (SDI)

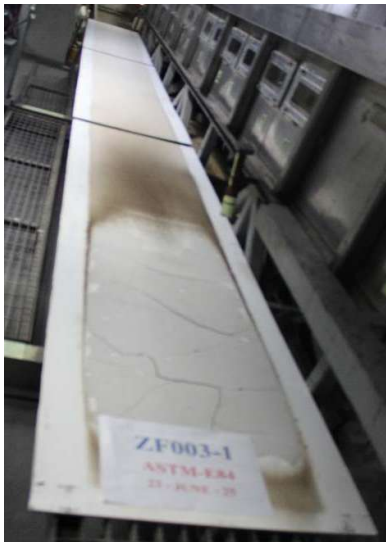
11. APPENDIX 2 – PICTURES



**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 -----