TEST REPORT

Report No.: METS-R-4121-04I/2024

Client / Establishment	: M/s. Berger Paints Emirates Ltd Co. (LLC.) Al Quoz Industrial Area-1, Opp. TCTI Factory, PO Box: 27524 Dubai, United Arab Emirates.

Sample ID	: METS-S24-4121-04
Sample Receiving Date	: 01/05/2024
Reporting Date	: 15/07/2024
Date of Analysis	: 01/05/2024 - 13/07/2024
Tested by	: JK
Issue No	: 01 (Re-Issue Date: NA)

Sample Information:

Sample Description	: TUFF EXTERIOR EMULSION

Test Results:

SALT SPRAY FOG TESTING

Test Method: ASTM B117:2019
Dry film thickness: 120µm
Test Duration: 300hrs

Dry film thickness: 120µm
Salt Spray Concentration: 4-6%
Amount of fog collected: 1.4mL/hour

Parameter	Test Method	Unit	Result
Salt Spray Fog Testing	ASTM B117:2019	-	No signs of corrosion observed.

Note: No traceability details were provided by client.
Test Location: Ajman

Prepared by

Chemist
Material Science Division (MSD)
Employee Code: METS AJ EC 180

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Verified by

Team Head
Material Science Division (MSD)
Employee Code: METS AJ EC 220

Issue No: 2
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-End of Report-

TEST REPORT

Report No.: METS-R-4121-04J/2024

Client / Establishment	: M/s. Berger Paints Emirates Ltd Co. (LLC.) Al Quoz Industrial Area-1, Opp. TCTI Factory, PO Box: 27524 Dubai, United Arab Emirates.

Sample ID	: METS-S24-4121-04
Sample Receiving Date	: 01/05/2024
Reporting Date	: 15/07/2024
Date of Analysis	: 01/05/2024 - 13/07/2024
Tested by	: JK
Issue No	: 01 (Re-Issue Date: NA)

Sample Information:

Sample Description	: TUFF EXTERIOR EMULSION

Test Results:

COLOR LRV

Test Method: BS 8493:2018+A1:2010
Test Condition: 23°C at 50% R.H

Dry film thickness: 110µm

Parameter	Test Method	Unit	Result
Color LRV	BS 8493:2018+A1:2010	%	92.39

Note: No traceability details were provided by client.
Test Location: Ajman

Prepared by

Chemist
Material Science Division (MSD)
Employee Code: METS AJ EC 180

Verified by

Team Head
Material Science Division (MSD)
Employee Code: METS AJ EC 220

Issue No: 2

Form MRF 40

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TEST REPORT

Report No.: METS-R-4121-04A/2024

Client / Establishment	: M/s. Berger Paints Emirates Ltd Co. (LLC.) Al Quoz Industrial Area-1, Opp. TCTI Factory, PO Box: 27524 Dubai, United Arab Emirates.

Sample ID	: METS-S24-4121-04
Sample Receiving Date	: 01/05/2024
Reporting Date	: 15/07/2024
Date of Analysis	: 01/05/2024 - 13/07/2024
Tested by	: JK
Issue No	: 01 (Re-Issue Date: NA)

Sample Information:

Sample Description	: TUFF EXTERIOR EMULSION

Test Results:

LIQUID WATER PERMEABILITY

Test Method: BS EN 1062-3:2008

Dry film thickness: 120μm

Test condition: 23⁰C at 50% R.H

Parameter	Test Method	Unit	Result	Class as per BSEN 1062-1:2004
Liquid Water Permeability	BS EN 1062-3:2008	$Kg/m^2.24h^{0.5}$	0.057	Class W3-Low

Classes for Liquid water permeability(W)

Class		Requirement $Kg/m^2.24h^{0.5}$
W_0		No requirement
W_1	High	>0.5
W_2	Medium	≤0.5 >0.1
W_3	Low	≤0.1

Note: No traceability details were provided by client.

Test Location: Ajman

Prepared by

Chemist
Material Science Division (MSD)
Employee Code: METS AJ EC 180

Verified by

Team Head
Material Science Division (MSD)
Employee Code: METS AJ EC 220

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Form MRF 40 Issue No: 2

TEST REPORT

Report No.: METS-R-4121-04C/2024

Client / Establishment	: M/s. Berger Paints Emirates Ltd Co. (LLC.) Al Quoz Industrial Area-1, Opp. TCTI Factory, PO Box: 27524 Dubai, United Arab Emirates.

Sample ID	: METS-S24-4121-04
Sample Receiving Date	: 01/05/2024
Reporting Date	: 15/07/2024
Date of Analysis	: 01/05/2024 - 13/07/2024
Tested by	: JK
Issue No	: 01 (Re-Issue Date: NA)

Sample Information:

Sample Description	: TUFF EXTERIOR EMULSION

Test Results:

DETERMINATION OF WATER VAPOR TRANSMISSION

Test Method: BSEN ISO 7783:2018
Dry film thickness: 120µm
Test condition: 23°C at 50% R.H

Parameter	Test Method	Unit	Result	Class as per BSEN 1062-1:2004
Water Vapor Transmission Rate	BS EN ISO 7783:2018	$g/m^2.d$	3.15	**Class V_3. Low**
Diffusion equivalent air thickness, S_D value		m	6.47	
Water Vapour diffusion factor, µ		-	0.54×10^5	

Form MRF 40 Issue No: 2

Report No.: METS-R-4121-04C/2024

Classes for water vapour permeability(V)

Class		Requirement	
		V (g/m². D)	S_D (m)
V_0		No requirement	
V_1	High	>150	<0.14
V_2	Medium	≤150 >15	≥0.14 <1.4
V_3	Low	≤15	≥1.4

Note: No traceability details were provided by client.

Test Location: Ajman

Prepared by

Chemist
Material Science Division (MSD)
Employee Code: METS AJ EC 180

Verified by

Team Head
Material Science Division (MSD)
Employee Code: METS AJ EC 220

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W : www.metslab.com
E : lab@metslab.com

TEST REPORT

Report No.: METS-R-4121-04H/2024

Client / Establishment	: M/s. Berger Paints Emirates Ltd Co. (LLC.) Al Quoz Industrial Area-1, Opp. TCTI Factory, PO Box: 27524 Dubai, United Arab Emirates.

Sample ID	: METS-S24-4121-04
Sample Receiving Date	: 01/05/2024
Reporting Date	: 15/07/2024
Date of Analysis	: 01/05/2024 - 13/07/2024
Tested by	: JK
Issue No	: 01 (Re-Issue Date: NA)

Sample Information:

Sample Description	: TUFF EXTERIOR EMULSION

Test Results:

PRACTICAL WASHABILITY

Test Method: ASTM D4828-94(2020)

Test condition: 23°C at 50% R.H

Dry film thickness: 120µm

Parameter	Test Method	Unit	Result
Practical Washability			
Crayons	ASTM D4828-94(2020)	-	76 cycles (Rating 10)
Pencil		-	62 cycles (Rating 10)
Water based Ink		-	> 100 cycles (Rating 5)
Ball point -pen		-	> 100 cycles (Rating 0)
lipstick		-	> 100 cycles (Rating 5)
Mineral oil		-	48 cycles (Rating 10)

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Middle East Testing Services - L.L.C

Report No.: METS-R-4121-04H/2024

Rating	Classification
0	No change from original intensity (depth) of soil or stain
3	Slight change from original, but readily visible,
5	Moderate change from original, slightly visible
7	Large change from original, barely visible
10	All soil and stain removed

Note: No traceability details were provided by client.
Test Location: Ajman
Prepared by

Chemist
Material Science Division (MSD)
Employee Code: METS AJ EC 180

Verified by

Team Head
Material Science Division (MSD)
Employee Code: METS AJ EC 220

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TEST REPORT ON SCRUB RESISTANCE

Client	Berger Paints Emirates Co LLC P.O Box: 27524 Dubai, UAE		
Sample Description	Tuff Exterior Emulsion	Lab Report No.	WD-R-240118-0990/29
Sample Type	N.G	Sample No.	WD-S-240118-1006/6
Source	Berger Paints Emirates Co LLC	Request No.	WD-Q-240118-0304
Test Method	DIN 53778	Date Received	18/01/2024
Room Temperature	23ºC	Date Tested	29/01/2024
Room Relative Humidity	50%	Date Reported	30/01/2024
Wimpey Reference	24011871	Tested By	SU

Results of Analysis

Test	Result
Scrub Resistance	Passed 10,000 scrub cycles

Remarks: None

Method Deviation: None

Signed for and on behalf of Wimpey Laboratories LLC

S.Sarath Kumar
Head of Department

Test results relate only to the samples tested.

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E-mail: info.dxb@wimpeylab.com Website: www.wimpeylab.com

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TEST REPORT ON TENSILE STRENGTH & ELONGATION

Client	Berger Paints Emirates Co LLC P.O Box: 27524 Dubai, UAE		
Sample Description	Tuff Exterior Emulsion	Lab Report No.	WD-R-240118-0990/27
Sample Source	Berger Paints Emirates Co LLC	Sample No.	WD-S-240118-1006/6
Client's Ref.	N.G	Request No.	WD-Q-240118-0304
Curing and test condition	Temperature: 23°C Relative Humidity: 50%	Date Received	18/01/2024
Sampling Method	ASTM D412-16(2021)	Casting Date	22/01/2024
Test Method	ASTM D412-16(2021)	Curing Time	7 Days
Specimen Type	Test Method A – Die C	Date Tested	29/01/2024
Rate of Speed	500 mm/minute	Date Reported	30/01/2024
Wimpey Ref No.	24011871	Tested By	SU

Test Results

Specimen Number	Width (mm)	Thickness (mm)	Maximum Force (N)	Tensile Strength (N/mm²)	Elongation (%)
1	6.0	0.37	21.1	9.5	133
2	6.0	0.35	22.3	10.6	140
3	6.0	0.40	21.8	9.1	136
4	6.0	0.43	26.3	10.2	130
5	6.0	0.36	16.4	7.6	144
Average				**9.4**	**137**

Remarks: None.

Signed for and on behalf of Wimpey Laboratories LLC

S.Sarath Kumar
Head of Department

WIMPEY LABORATORIES L.L.C. P.O.BOX: 123279 DUBAI UAE

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TEST REPORT ON ADHESION

Client	Berger Paints Emirates LTD (LLC)		
Project Name	N.G	Lab Report No.	WD-R-240306-0601
Sample Description	Tuff Exterior Emulsion	Request No.	WD-Q-240306-0156
Source	Berger Paints Emirates LTD (LLC)	Sample No.	WD-S-240306-0571
Test Method	ISO 2409:2014	Date Received	06/03/2024
Room Temperature	23°C	Date Tested	23/03/2024
Relative Humidity	50%	Date Reported	25/03/2024
Wimpey Reference	24030658	Tested By	PK

Test Results

Test	Unit	Result
Adhesion	-	Classification 0

Classification

Classification	Description	Appearance of surface of cross-cut area from which flaking has occurred (Example for six parallel cuts)
0	The edges of the cuts are completely smooth; none of the squares of the lattice is detached.	—
1	Detachment of small flakes of the coating at the intersections of the cuts. A cross-cut area not greater than 5 % is affected.	
2	The coating has flaked along the edges and/or at the intersections of the cuts. A cross-cut area greater than 5 %, but not greater than 15 %, is affected.	
3	The coating has flaked along the edges of the cuts partly or wholly in large ribbons, and/or it has flaked partly or wholly on different parts of the squares. A cross-cut area greater than 15 %, but not greater than 35 %, is affected.	
4	The coating has flaked along the edges of the cuts in large ribbons and/or some squares have detached partly or wholly. A cross-cut area greater than 35 %, but not greater than 65 %, is affected.	
5	Any degree of flaking that cannot even be classified by classification 4.	—

Remarks: None.

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

S.Sarath Kumar
Head of Department

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TEST REPORT ON CRACK BRIDGING ABILITY

Client	Berger Paints Emirates Co LLC P.O Box: 27524 Dubai, UAE		
Sample Description	Tuff Exterior Emulsion	Lab Report No.	WD-R-240118-0990/28
Client's Ref.	N.G	Sample No.	WD-S-240118-1006/6
Substrate Dimension(mm)	75 L x 50 W	Request No.	WD-Q-240118-0304
Source	Berger Paints Emirates Co LLC	Wimpey Ref. No.	24011871
Test Method	BS EN 1062-7:2004	Date Received	18/01/2024
Sample Preparation standard	BS EN 1766:2017	Date Tested	29/01/2024
Test Method	Method A	Date Reported	30/01/2024
Sampling Conditioning	Temperature: 23°C Relative Humidity: 50%	No. of coat & Method of application	2 coat
Sample ID	N.G	Test Condition	Temperature: 20°C Relative Humidity: 50%
Coating Thickness	600 microns	Tested By	SU

Test Results

Test	Crack width (mm)	Observation
Crack Bridging Ability	2.02	No sign of cracks, loss of adhesion or any other type of failure was observed up to 2.02 mm

Remarks: None.

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

S.Sarath Kumar
Head of Department

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TEST REPORT ON CARBON DIOXIDE PERMIABILITY

Client	Berger Paints Emirates Co LLC P.O Box: 27524 Dubai, UAE		
Project Name	N.G	Lab Report No.	WD-R-240118-0990/46
Source	Berger Paints Emirates Co LLC	Sample No.	WD-S-240118-1006/6
Sample Description	Tuff Exterior Emulsion	Request No.	WD-Q-240118-0304
Test Method	BS EN 1062-6:2002	Date Received	18/01/2024
Temperature & Relative Humidity	23ºC & 50%	Date Tested	29/01/2024
Tested By	SU	Date Reported	28/03/2024

Carbon dioxide permeability

The determination of the carbon dioxide permeability was carried out in accordance with BS EN 1062-6:2002 Method A "Paints and varnishes – Coating materials and coating systems for exterior masonry and concrete – Part 6: Determination of Carbon dioxide permeability" via Gravimetric method (Method A).

The coating system was brushed upon unglazed tile of area 100 cm^2, which is exposed to the measuring gas, and the diffused carbon dioxide is determined quantitatively. Three test specimens were prepared for determination. Store the test specimens in the standard atmosphere as defined in BSEN 23270 (23±2°C and 50±5%) was placed in a separate conditioning container for 28 days. Afterwards, condition the test specimen at a temperature of 70°C for 7 days and kept at standard atmosphere for 24hrs. The test specimen seals with a test cell containing an absorbent for carbon dioxide so that the cell is gas-tight to the surroundings. The test cell is kept in a dry carbon dioxide atmosphere at 23±2°C and weighed at regular intervals. The carbon dioxide permeability was calculated from the increase of mass. The determination was completed when a steady state is reached. The diffusion coefficient for carbon dioxide (DCO_2) is calculated using Fick's law of Diffusion and Crank's equation.

For control purposes, a standard reference film of known diffusion resistance number was measured in each series of determinations. The test specimens have been tested until the mass increase of the test cell remains constant during two subsequent intervals.

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E-mail: info.dxb@wimpeylab.com Website: www.wimpeylab.com

Report No: WD-R-240118-0990/46
Sample No: WD-S-240118-1006/6

Test Results

Test	Method	Unit	Result
Specimen thickness	BS EN 1062-6:2002 Method A	µm	124
Average carbon dioxide permeability		g/m^2d	0.935
Diffusion equivalent air layer thickness in meters (S_D)		m	265
Diffusion resistance number (µ)		-	2.13×10^6
Carbon dioxide diffusion coefficient of the coating (DCo2)		cm^2s^{-1}	7.04×10^{-8}
Diffusion equivalent thickness of concrete (SC)		cm	0.66
Classification of coating material and coating systems for exterior masonry and concrete	DIN EN 1062-1:2004-08	_	C_1

Classification for Carbon dioxide Permeability as per EN 1062-1		
Class	Requirement	
	$g/m^2.d$	M
C_0	No requirement	
C_1	<5	>50

Notes

i) Sc is calculated assuming an average grade concrete where the µ- value had been estimated at 400
ii) D_{CO2} for an uncoated plate is $1 \times 10^{-3}\ cm^2s^{-1}$
iii) Carbon dioxide diffusion resistance: Class 1 (Classification in accordance with BS EN 1062-1:2004 & BS EN 1062-6:2002)
iv) Klopfer criterion for effective anti-carbonation coating is SD greater than 50 meters.

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

S.Sarath Kumar
Head of Department

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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: 0.013m^2

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.

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S.Sarath Kumar
Laboratory Manager

Test results relate only to the samples tested.

-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

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

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 Spead 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

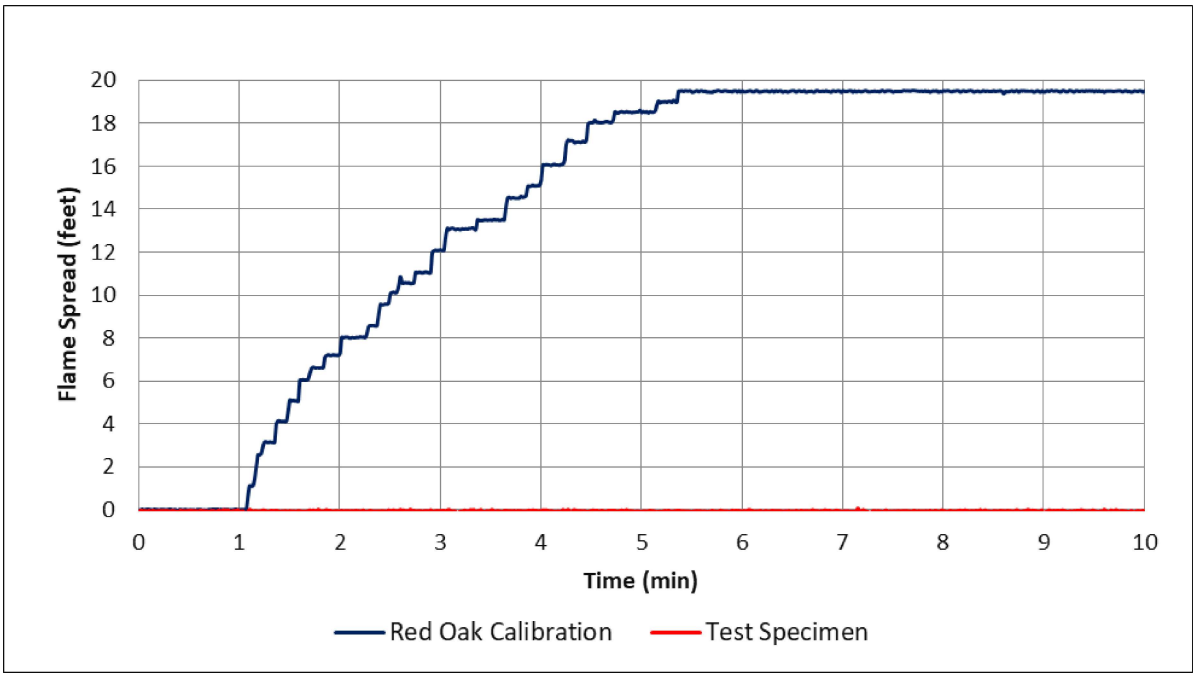
Reviewed & Authorized By:

Daisan Dippi, AIFireE
Fire Testing Director

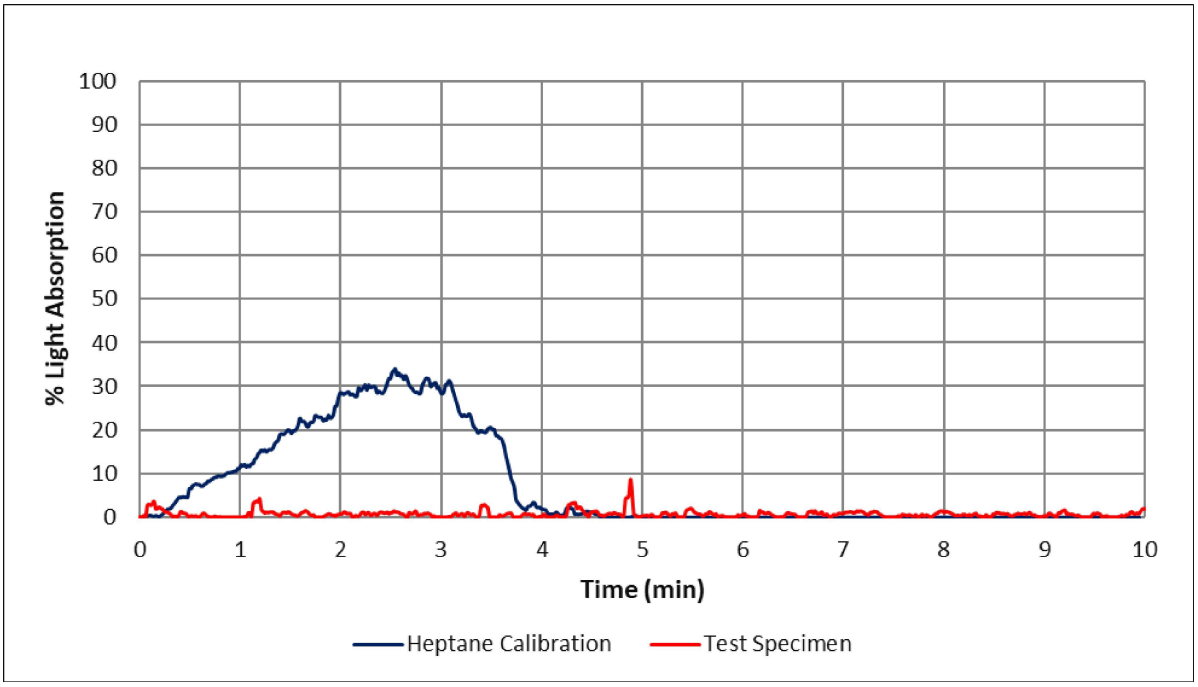
P.O.Box: 26385
DUBAI - U.A.E.
Thomas Bell-Wright Int'l Consultants (Dubai Br.)

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 -----

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TEST REPORT ON DENSITY

Client	Berger Paints Emirates Ltd Co LLC P.O.Box:27524 Dubai,UAE.		
Project Name	N.A	Report No.	WD-R-240523-1175/1
Sample Description	Tuff Advanced Exterior Emulsion	Request No.	WD-Q-240523-0299
Source	Berger Paints Emirates Ltd Co LLC	Sample No.	WD-S-240523-1116
Test Method	ASTM D1475-13:2020	Wimpey Ref. No.	SH-028168
Test Temperature	23°C	Date Received	23/05/2024
Relative Humidity	50%	Date Tested	28/05/2024
Tested By	RB	Date Reported	05/06/2024

Test Result

Test	Unit	Result
Density	g/cc	1.60

Remarks: None.

Signed for and on behalf of Wimpey Laboratories LLC,

WIMPEY LABORATORIES L.L.C. P.O.BOX: 123279, DUBAI, UAE

Syamlal Lalu
Laboratory Supervisor-Specialty

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TEST REPORT ON DRYING TIME

Client	Berger Paints Emirates Ltd Co LLC P.O.Box:27524 Dubai,UAE.		
Project Name	N.A	Report No.	WD-R-240523-1175/2
Sample Description	Tuff Advanced Exterior Emulsion	Request No.	WD-Q-240523-0299
Source	Berger Paints Emirates Ltd Co LLC	Sample No.	WD-S-240523-1116
Test Method	ASTM D1640/D1640M-14(2022)	Date Received	23/05/2024
Room Condition	Température: 23°C RH : 50%	Date Tested	28/05/2024
Wimpey Ref. No.	SH-028168	Date Reported	05/06/2024
Tested By	RB		

Test Result

Test	Unit	Result
Drying Time	Minutes	55 Minutes

Remarks: None.

Signed for and on behalf of Wimpey Laboratories LLC

Syamlal Lalu
Laboratory Supervisor-Specialty

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TEST REPORT ON BEND TEST

Client	Berger Paints Emirates Ltd Co LLC P.O.Box:27524 Dubai,UAE.		
Project Name	N.A	Report No.	WD-R-240523-1175/3
Sample Description	Tuff Advanced Exterior Emulsion	Request No.	WD-Q-240523-0299
Source	Berger Paints Emirates Ltd Co LLC	Sample No.	WD-S-240523-1116
Test Method	ASTM D522/D522M-17(2021)	Wimpey Ref. No.	SH-028168
Devise Type	Cylindrical Mandrel Test Apparatus	Date Received	23/05/2024
Mandrel Diameter	3mm	Date Tested	04/06/2024
Substrate used	Aluminum Panel	Date Reported	05/06/2024
Dry Film Thickness	75 µm	Room Temperature	23°C
Tested By	RB	Relative Humidity	50%

Test Result

Test	Mandrel Diameter	Observation	Result
Mandrel Bend Test	3mm	No Sign of cracks and loss of adhesion or any other type of failure was observed.	Pass

Remarks: None.

Signed for and on behalf of Wimpey Laboratories

Syamlal Lalu
Laboratory Supervisor-Specialty

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TEST REPORT ON COATING THICKNESS

Client	Berger Paints Emirates Ltd Co LLC P.O.Box:27524 Dubai,UAE.		
Project Name	N.A	Report No.	WD-R-240523-1175/4
Sample Description	Tuff Advanced Exterior Emulsion	Request No.	WD-Q-240523-0299
Source	Berger Paints Emirates Ltd Co LLC	Sample No.	WD-S-240523-1116
Test Method	ISO 2808:2019	Wimpey Ref. No.	SH-028168
Room Temperature	23°C	Date Received	23/05/2024
Relative Humidity	50%	Date Tested	28/05/2024
Tested By	RB	Date Reported	05/06/2024

Test Results

Test	Thickness (micron)	Average Thickness (micron)
Coating Thickness	75,78,77,76,75	76

Remarks: None.

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

Syamlal Lalu
Laboratory Supervisor-Specialty

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TEST REPORT ON WATER ABSORPTION

Client	Berger Paints Emirates Ltd Co LLC P.O.Box:27524 Dubai,UAE.		
Project Name	N.A	Report No.	WD-R-240523-1175/5
Sample Description	Tuff Advanced Exterior Emulsion	Request No.	WD-Q-240523-0299
Source	Berger Paints Emirates Ltd Co LLC	Sample No.	WD-S-240523-1116
Test Method	ASTM D570-22	Wimpey Ref. No.	SH-028168
Conditioning Procedure	24 hours at 50°C	Date Received	23/05/2024
Immersion Procedure	Water Immersion at 23°C	Date Tested	04/06/2024- 05/06/2024
Time of Immersion	24 hours	Date Reported	05/06/2024
Dimension of Specimen	50 x 50 mm	Tested By	RB

Test Results

Specimen Number	Unit	Water Absorption
1	%	0.03
2		0.03
3		0.02
Average		0.03
Visual Observation: No Surface damages observed		

Remarks: None.

Signed for and on behalf of Wimpey Laboratories

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Syamlal Lalu
Laboratory Supervisor-Specialty

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TEST REPORT ON PULL-OFF ADHESION STRENGTH

Client	Berger Paints Emirates Ltd Co LLC P.O.Box:27524 Dubai,UAE.		
Project Name	N.A	Report No.	WD-R-240523-1175/6
Sample Description	Tuff Advanced Exterior Emulsion	Request No.	WD-Q-240523-0299
Source	Berger Paints Emirates Ltd Co LLC	Sample No.	WD-S-240523-1116
Client Reference	N.G	Wimpey Ref. No.	SH-028168
Consultant	N.G	Date Received	23/05/2024
Contractor	N.G	Date Tested	04/06/2024
Test Method	ASTM D4541-22	Date Reported	05/06/2024
Test Type	Type 5-Self Aligning Tester	Cast Date	28/05/2024
Machine Details	Manufacturer: Matest Model: E142-01 Serial Number: E142/AC/0390	Substrate Used	Concrete
Location	In-House	Adhesive Used	Two Component Epoxy
Test Temperature& Relative Humidity	23°C & 50%	Age of Test	7 Days
Tested By	RB		

Test Procedure

The general pull-off test is performed by securing a loading fixture (dolly, stud) normal (perpendicular) to the surface of the coating with an adhesive. After the adhesive is cured, a testing apparatus is attached to the loading fixture and aligned to apply tension normal to the test surface. The force applied to the loading fixture is then gradually increased and monitored until either a plug of material is detached, or a specified value is reached, When a plug of material is detached the exposed surface represents the plane of limiting strength within the system.
The nature of the failure is qualified in accordance with the percent of adhesive and cohesive failures, and the actual interfaces and layers involved.
The pull-off strength is computed based on the maximum indicated load

Description	**RESULTS**			
Test Number	1	2	3	4
Test Position	Vertical	Vertical	Vertical	Vertical
Diameter of Dolly (mm)	20	20	20	20
Max. Load Applied (N)	716	757	798	741
Pull off Strength (N/mm^2)	2.28	2.41	2.54	2.36
Average Pull off Strength (N/mm^2)	2.40			
Mode of Failure	Failure observed from Sample			

Remarks: None.

Signed for and on behalf of Wimpey Laboratories,

Syamlal Lalu
Laboratory Supervisor-Specialty

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LABORATORY REPORT

BERGER PAINTS EMIRATES LTD CO (L.L.C.)

Report No: WD-R-240523-0824(A)
Sample No: WD-S-240523-0819
Date of Report: 10/06/2024

Introduction: Further to the request received from **M/s. BERGER PAINTS EMIRATES LTD CO (L.L.C.)** dated on 23th May 2024, the sample of Paint was tested for the below parameters.

Sample Type : Paint
Request Number : WD-Q-240523-0147
Sample Received Date : 23/05/2024
Date of Test : 23/05/2024 – 10/06/2024
Tested By : NG

General Information

Name of the Product : Tuff Matt (ABF)

Chemical Resistance

Test method : ASTM D1308
Test temperature: 23±2ºC, Test humidity: 55±5%, Exposure duration: 24 Hours

Test Simulant	Observation	Result	Type of Effect
Water	No sign of loss of adhesion, blistering, cracking, or discoloration were observed	Resistant	A
Hot Water		Resistant	A
Lubricant oil		Resistant	A
Grease		Resistant	A
Nitric acid (10%)		Resistant	A
Soap (1%)		Resistant	A
Acetic acid (3.0%)		Resistant	A
Ethyl Alcohol (50%)		Resistant	A
Sodium Hydroxide (10%)		Resistant	A
Hydrochloric acid (10%)		Resistant	A
Kerosene		Resistant	A
Olive Oil		Resistant	A
Fruit Juice		Resistant	A
Tea	Discoloration	Non-Resistant	B
Ketchup		Non-Resistant	B
Coffee		Non-Resistant	B

Type of effects
A: No discoloration, change in gloss, blistering, Swelling, Softening, Loss of adhesion or special phenomenon
B: 1.Discoloration 2.Change in gloss 3.Blistering 4.Swelling 5.Softeneing 6.Loss of adhesion 7.Special Phenomenon

Remarks: None
Signed for and on behalf of Wimpey Laboratories

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Anandu VS
Section Incharge Chemistry-Specialty

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LABORATORY REPORT

BERGER PAINTS EMIRATES LTD CO (L.L.C.)

Report No: WD-R-240523-0824(B)
Sample No: WD-S-240523-0819
Date of Report: 10/06/2024

Introduction: Further to the request received from **M/s. BERGER PAINTS EMIRATES LTD CO (L.L.C.)** dated on 23th May 2024, the sample of Paint was tested for the below parameters.

Sample Type	: Paint
Request Number	: WD-Q-240523-0147
Sample Received Date	: 23/05/2024
Date of Test	: 23/05/2024 – 10/06/2024
Tested By	: NG

General Information

Name of the Product : Tuff Matt (ABF)

FTIR Analysis:

Index	Sample Name	Search Best Hit Description
1.	Tuff Matt (ABF)	Acrylic Emulsion

Remarks: None

Signed for and on behalf of Wimpey Laboratories

Anandu VS
Section Incharge Chemistry-Specialty

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TEST REPORT ON WET SCRUB RESISTANCE

Customer Name	Berger Paints Emirates LTD CO (LLC)		
Sample Description	Tuff Matt (ABF)	**Lab Report No.**	WD-R-241125-0031
Source	Berger Paints Emirates LTD CO (LLC)	**Request No.**	WD-Q-241125-0011
Test Method	ISO 11998:2006	**Sample No.**	WD-S-241125-0027
Test Temperature	23°C & 50% RH	**Date Received**	25/11/2024
Tested Location	N.G	**Casting Date**	27/11/2024
Client Ref.	N.G	**Date Tested**	04/12/2024
No. of Cycles	200 Cycles	**Date Reported**	06/12/2024
Wet Film Thickness	200µm	**Wimpey Ref No.**	241125016
Tested By	VIN		

Test Results (Wet Scrub Resistance)

Area traversed by the scrub pad: 0.0133m^2

Test		Result
Wet Scrub Resistance	Loss in coating Mass (g/m^2)	4.6
	Assessment of wet scrub resistance	200 Cycles- Pass

Test Results (Cleanability)

Test	Soiling Agent	Result
Cleanability	Lead Pencil	Cleanable
	Red-Wax Crayon	Cleanable

Remarks: None.

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

S.Sarath Kumar
Head of Department

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TEST REPORT ON SOLIDS CONTENT

Client	Berger Paints Emirates LTD CO		
Project Name	N.G	Lab Report No.	WD-R-250815-0400
Client	N.G	Request No.	WD-Q-250815-0124
Consultant	N.G	Sample No.	WD-S-250815-0577
Sample Description	Tuff Exterior Emulsion Matt (ABF)	Date Received	15/08/2025
Source	N.G	Date Tested	19/08/2025
Sample Identification	N.G	Date Reported	22/08/2025
Test Method	ASTM D2697-03 (2014)	Room Temperature	23°C
Type of Air oven used	Hot Air oven	Relative Humidity	50%
Wimpey Ref No.	250815013	Condition	1 hour@110°C
Sampling Date	N.G	Tested By	MAH

Test Results

Test	Unit	Result
Solid Content by volume	%	45.4

Remarks: None.

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

WIMPEY LABORATORIES L.L.C. P.O.BOX: 123279, DUBAI, UAE

S.Sarath Kumar
Laboratory Manager

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LABORATORY REPORT

BERGER PAINTS EMIRATES LTD CO (L.L.C.)

Report No. WD-R-250919-0340
Sample No. WD-S-250919-0922
Report Date. 23/09/2025

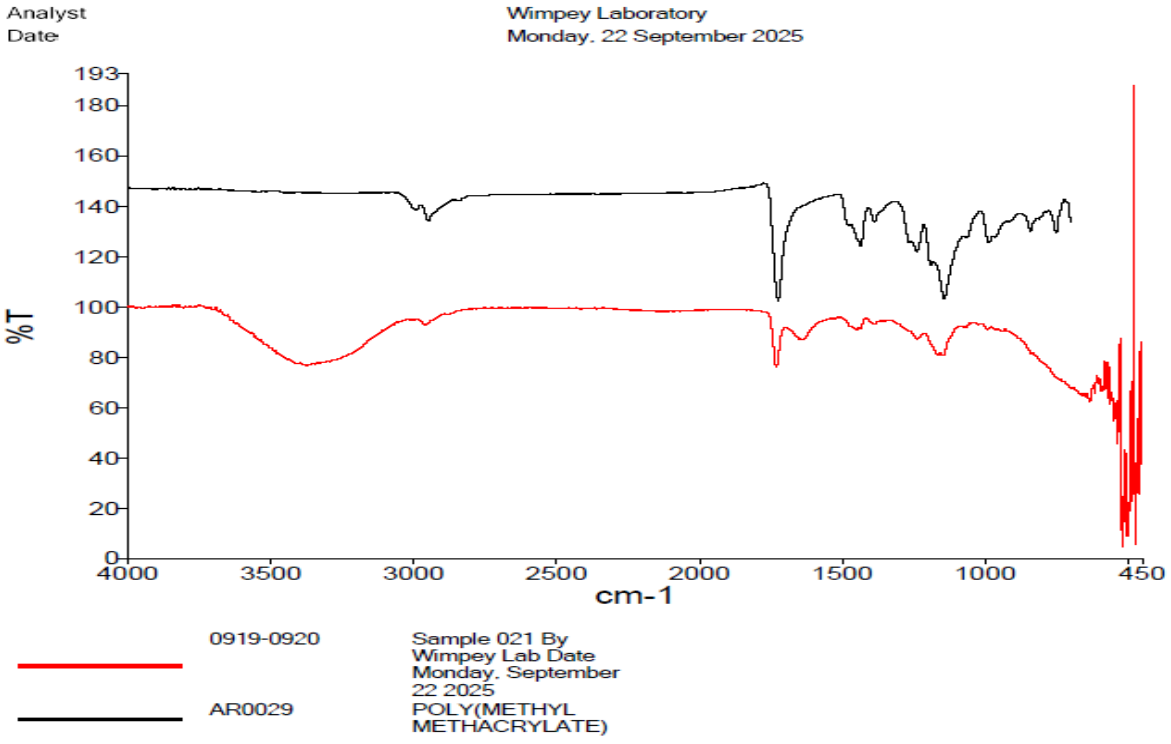
Introduction: Further to the request received from **BERGER PAINTS EMIRATES LTD CO (L.L.C.)** dated 19th September 2025, the sample of Paint was tested, and the results are as follows.

Sample Type : Tuff Exterior Emulsion Matt (ABF)
Request No. : WD-Q-250919-0061
Sample Received Date : 19/09/2025
Date Tested : 19/09/2025-23/09/2025
Tested By : CB

Result of FTIR Analysis

Index	Sample Name	Search Best Hit Description
1	**Tuff Exterior Emulsion Matt (ABF)**	**POLY(METHYL METHACRYLATE)**

Spectra



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E-mail: info.dxb@wimpeylab.com Website: www.wimpeylab.com

Report No. WD-R-250919-0340

Searched References	
Search Score	Search Reference Spectrum Description
0.807198	CALCIUMCARBONAT.SP
0.807198	CALCIUMCARBONAT.SP
0.757018	BUPRPLCT.SP BUPRENORPHIN 20 MG TS-50 PLACEBO-PFLASTER # 8/28013/5; SP.-
0.757018	BUPRPLCT.SP BUPRENORPHIN 20 MG TS-50 PLACEBO-PFLASTER # 8/28013/5; SP.-
0.757018	BUPRPLCT.SP BUPRENORPHIN 20 MG TS-50 PLACEBO-PFLASTER # 8/28013/5; SP.-
0.667015	HICETIOL.SP CETIOL # 5A1799; SP.- NR.1285
0.651519	BLEIGLAETTE LITHARGE L7 (PBO) ;PHX9/92; 321
0.590293	MAGNESIUMCARBONAT. SCHWERES.BASISCHES.SP
0.590293	MAGNESIUMCARBONAT. SCHWERES.BASISCHES.SP
0.584524	F09722.SP F09722AMMONIUM-(15)N CHLORIDE. 98 (ATOM % (15)
0.551508	BLEIMENNIGE TYP FD (PB3O4) ;PHX9/92; 321410
0.545398	F81390.SP F81390POLYVINYLPYRROLIDONE K 15 PRACT
0.539397	F81422.SP F81422POLYVINYLPYRROLIDONE K 30. POWDER PRACT
0.533559	CERTAINTEED (RESIN BONDED GLASS) YELL STAP 0-15U NBS-H0220

Remarks:: Based on the test results, the most probable material match is Polymethyl methacrylate; which is a pure acrylic composition.

Signed for and on behalf of Wimpey Laboratories LLC

Arya Rajeev
Senior Chemist

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-End of text-

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TEL : +971 4 3273123 • FAX: +971 4 2365308 • P.O.BOX : 123279 • DUBAI • UNITED ARAB EMIRATES
E-mail: info.dxb@wimpeylab.com Website: www.wimpeylab.com

Tuff Exterior Emulsion Matt (ABF)
by Berger Paints Emirates Ltd. Co. L.L.C.

Health Product Declaration v2.3

created via: HPDC Online Builder

HPD UNIQUE IDENTIFIER: 26194178048
CLASSIFICATION: 09 90 00 Painting and Coating
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.

Section 1: Summary — Nested Method / Product Threshold

CONTENT INVENTORY

Inventory Reporting Format
- (•) Nested Materials Method
- ( ) Basic Method

Threshold Disclosed Per
- ( ) Material
- (•) Product

Threshold Level
- (•) 100 ppm
- ( ) 1,000 ppm
- ( ) Per GHS SDS
- ( ) Other

Residuals/Impurities Evaluation
Completed in 8 of 8 Materials

Explanation(s) provided for Residuals/Impurities?
(•) Yes ( ) No

For all contents above the threshold, the manufacturer has:

Characterized (•) Yes ( ) No
Provided weight and role.

Screened (•) Yes ( ) No
Provided screening results using HPDC-approved methods.

Identified (•) Yes ( ) No
Provided name and CAS RN or other identifier.

CONTENT IN DESCENDING ORDER OF QUANTITY

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals®. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

NESTED MATERIAL | **MATERIAL OR SUBSTANCE** | *RESIDUAL OR IMPURITY*
GREENSCREEN SCORE | HAZARD TYPE

EXTENDER [LIMESTONE BM-3dg *QUARTZ* BM-1 | CAN | MAM | GEN **]**
WATER [WATER BM-4 **]**
BINDER [METHYL METHACRYLATE LT-P1 | END | SKI | PHY | EYE | MAM **BUTYL ACRYLATE** LT-UNK | SKI | EYE | MAM | REP | AQU **2-ETHYLHEXYL ACRYLATE** BM-2 | SKI | CAN | MAM | EYE | AQU **2-ACRYLAMIDO-2-METHYLPROPANESULFONATE** LT-UNK | EYE **]**
PIGMENT [TITANIUM DIOXIDE BM-1 | CAN | END | MAM **]**
SOLVENT [DIETHYLENE GLYCOL MONO-N-BUTYL ETHER LT-P1 | END | EYE | MAM **]**
COALESCING AGENT [PROPYLENE GLYCOL BM-2 | END | MAM **]**
THICKENER [HYDROXYETHYL CELLULOSE LT-P1 | END **]**
BUFFER [AMMONIA LT-P1 | END | MUL | MAM | SKI | AQU | EYE | PHY **]**

Number of Greenscreen BM-4/BM3 contents ... 2

Contents highest-concern GreenScreen score(s) (BM-1, LT-1, LT-P1) ... BM-1, LT-P1

Nanomaterial ... No

INVENTORY AND SCREENING NOTES:

This HPD was produced using primary information from the manufacturer, including CAS numbers and SDS when needed. The manufacturer has made every effort to report the substances in this product to the listed threshold. This is a voluntary, self-reported effort. Any errors or omissions shall be considered a human error and therefore reported to the manufacturer. The manufacturer shall not be liable for omissions. All materials/substances present in the final product were screened at or above 100 ppm, and all potential hazards associated with the product have been disclosed.

VOLATILE ORGANIC COMPOUND (VOC) CONTENT

Material (g/l): 3.2 Regulatory (g/l): 50
Does the product contain exempt VOCs: No
Are colorants available that do not increase the VOC content of the base paint when tinted: N/A

CERTIFICATIONS AND COMPLIANCE *See Section 3 for additional listings.*

VOC emissions: CDPH Standard Method V1.2 (Section 01350/CHPS) - Classroom & Office scenario
VOC content: MAS Certified Green - VOC Content

CONSISTENCY WITH OTHER PROGRAMS

Pre-checked for LEED v4 Option 1.
Pre-checked for LEED v4.1 Option 1.

Third Party Verified?
( ) Yes
(•) No

PREPARER: Self-Prepared
VERIFIER:
VERIFICATION #:

SCREENING DATE: 2025-06-26
PUBLISHED DATE: 2025-07-31
EXPIRY DATE: 2028-06-26

Section 2: Content in Descending Order of Quantity

This section lists contents in a product based on specific threshold(s) and reports detailed health information including hazards. This HPD uses the inventory method indicated above, which is one of three possible methods:

- *Basic Inventory method with Product-level threshold.*
- *Nested Material Inventory method with Product-level threshold*
- *Nested Material Inventory method with individual Material-level thresholds*

Definitions and requirements for the three inventory methods and requirements for each data field can be found in the HPD Open Standard version 2.3, available on the HPDC website at: www.hpd-collaborative.org/hpd-2-3-standard

EXTENDER

%: 30.0000 - 40.0000

PRODUCT THRESHOLD: 100 ppm

RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes

MATERIAL TYPE: Geologically Derived Material

RESIDUALS AND IMPURITIES NOTES: The threshold applied to Residuals and Impurities (R/I) is the same as that applied to intentionally added substances, i.e., 100 ppm or 1000 ppm. For this product, no actual material has been tested. Therefore, residuals and impurities are for informational purposes only and are not a guarantee of presence in the actual building material. Pharos and PubChem (formerly TOXNOT) are the main databases for researching potential residuals and impurities. Any R/I above the threshold shall be listed on the HPD; otherwise, if none are listed, then no residuals or impurities are common in that substance above the threshold.

OTHER MATERIAL NOTES: Percentages are shown as a range to cover the actual formulation.

LIMESTONE

ID: **1317-65-3**

HAZARD DATA SOURCE: **Pharos Chemical and Materials Library**

HAZARD SCREENING DATE: **2025-06-26 2:38:40**

%: **99.0000 - 99.9000** GreenScreen: **BM-3dg** RC: **None** NANO: **No** SUBSTANCE ROLE: **Filler**

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
None found		No warnings found on HPD Priority Hazard Lists

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
None found		No listings found on Additional Hazard Lists

SUBSTANCE NOTES: "Building materials, such as concrete and dimension stone (sandstone, granite, and limestone are examples) contain crystalline silica in the form of quartz." (USGS Crystalline Silica Primer). Limestone typically contains between 0.1% and 1% quartz. (MSHA MSDS & Specialty MSDS) - Pharos database

QUARTZ

ID: **14808-60-7**

HAZARD DATA SOURCE: **Pharos Chemical and Materials Library**

HAZARD SCREENING DATE: **2025-06-26 2:39:02**

%: **0.1000 - 1.0000** GreenScreen: **BM-1** RC: **None** NANO: **No** SUBSTANCE ROLE: **Impurity/Residual**

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
CAN	US CDC - Occupational Carcinogens	Occupational Carcinogen
CAN	CA EPA - Prop 65	Carcinogen - specific to chemical form or exposure route
CAN	US NIH - Report on Carcinogens	Known to be Human Carcinogen (respirable size - occupational setting)
CAN	MAK	Carcinogen Group 1 - Substances that cause cancer in man
CAN	IARC	Group 1 - Agent is carcinogenic to humans - inhaled from occupational sources
CAN	IARC	Group 1 - Agent is Carcinogenic to humans
CAN	US NIH - Report on Carcinogens	Known to be a human Carcinogen
CAN	GHS - Japan	H350 - May cause cancer [Carcinogenicity - Category 1A]
CAN	GHS - Australia	H350i - May cause cancer by inhalation [Carcinogenicity - Category 1A or 1B]
CAN	GHS - New Zealand	Carcinogenicity category 1
MAM	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
GEN	GHS - Japan	H341 - Suspected of causing genetic defects [Germ cell mutagenicity - Category 2]
MAM	GHS - Australia	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organ toxicity - repeated exposure - Category 1]
MAM	GHS - New Zealand	Specific target organ toxicity - repeated exposure category 1

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
None found		No listings found on Additional Hazard Lists

SUBSTANCE NOTES: Please refer to the substance notes for limestone.

WATER **%: 20.0000 - 30.0000**

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Other: Water

RESIDUALS AND IMPURITIES NOTES: No residuals or impurities are registered for this chemical per the Pharos database.

OTHER MATERIAL NOTES:

WATER ID: **7732-18-5**

HAZARD DATA SOURCE: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2025-06-26 0:33:24**

%: **100.0000** GreenScreen: **BM-4** RC: **None** NANO: **No** SUBSTANCE ROLE: **Solvent**

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
None found		No warnings found on HPD Priority Hazard Lists

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
EXEMPT	European Union / European Commission (EU EC)	EU - REACH Exemptions Exempted from REACH Annex IV listing due to intrinsic safety

SUBSTANCE NOTES:

BINDER **%: 15.0000 - 25.0000**

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: The threshold applied to Residuals and Impurities (R/I) is the same as that applied to intentionally added substances, i.e., 100 ppm or 1000 ppm. For this product, no actual material has been tested. Therefore, residuals and impurities are for informational purposes only and are not a guarantee of presence in the actual building material. Pharos and PubChem (formerly TOXNOT) are the main databases for researching potential residuals and impurities. Any R/I above the threshold shall be listed on the HPD; otherwise, if none are listed, then no residuals or impurities are common in that substance above the threshold.

OTHER MATERIAL NOTES: The actual percenatge of composition has been withheld to protect proprietary formulation details and intellectual property rights.

METHYL METHACRYLATE ID: **80-62-6**

HAZARD DATA SOURCE: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2025-06-26 0:33:25**

%: **40.0000 - 60.0000** GreenScreen: **LT-P1** RC: **None** NANO: **No** SUBSTANCE ROLE: **Monomer**

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
END	TEDX - Potential Endocrine Disruptors	Potential Endocrine Disruptor
SKI	MAK	Sensitizing Substance Sh - Danger of skin sensitization
SKI	EU - GHS (H-Statements) Annex 6 Table 3-1	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
PHY	EU - GHS (H-Statements) Annex 6 Table 3-1	H225 - Highly flammable liquid and vapour [Flammable liquids - Category 2]
EYE	GHS - New Zealand	Eye irritation category 2
SKI	GHS - Australia	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
MAM	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
MAM	GHS - Japan	H370 - Causes damage to organs [Specific target organs/systemic toxicity following single exposure - Category 1]
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation - Category 2]
SKI	GHS - New Zealand	Skin sensitisation category 1
SKI	GHS - Malaysia	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
PHY	GHS - New Zealand	Flammable liquids category 2
PHY	GHS - Japan	H225 - Highly flammable liquid and vapour [Flammable liquids - Category 2]
PHY	GHS - Malaysia	H225 - Highly flammable liquid and vapour [Flammable liquids - Category 2]
PHY	GHS - Australia	H225 - Highly flammable liquid and vapour [Flammable liquids - Category 2]

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Perkins+Will (P+W)	P&W - Precautionary List Precautionary list of substances recommended for avoidance
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes Precautionary List Some Solvents
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4.0 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022 Cosmetics & Personal Care Products

SUBSTANCE NOTES: No GreenScreen score or hazard assessment exists for the given CAS RN per the Pharos database. To disclose all potential hazards associated with the polymer, it was analyzed into its likely constituent components. Data gaps were addressed using information sourced from the Pharos database and publicly available PDS/SDS documentation relevant to the material. It's important to note that the composition and ingredients listed are intended for informational and screening purposes only and are not 100% guaranteed to be present in the actual product.

BUTYL ACRYLATE ID: **141-32-2**

HAZARD DATA SOURCE: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2025-06-26 0:33:25**

%: **20.0000 - 36.0000** GreenScreen: **LT-UNK** RC: **None** NANO: **No** SUBSTANCE ROLE: **Monomer**

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
SKI	MAK	Sensitizing Substance Sh - Danger of skin sensitization
SKI	EU - GHS (H-Statements) Annex 6 Table 3-1	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
EYE	EU - GHS (H-Statements) Annex 6 Table 3-1	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]
SKI	GHS - New Zealand	Skin irritation category 2
EYE	GHS - New Zealand	Eye irritation category 2
SKI	GHS - Australia	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
EYE	GHS - Australia	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]
MAM	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
MAM	GHS - Japan	H370 - Causes damage to organs [Specific target organs/systemic toxicity following single exposure - Category 1]
MAM	GHS - Japan	H331 - Toxic if inhaled [Acute toxicity (inhalation: vapor) - Category 3]
MAM	GHS - New Zealand	Acute inhalation toxicity category 3
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation - Category 2]
SKI	GHS - New Zealand	Skin sensitisation category 1
REP	GHS - New Zealand	Reproductive toxicity category 2
AQU	GHS - Japan	H401 - Toxic to aquatic life [Hazardous to the aquatic environment (acute) - Category 2]
MAM	Québec CSST - WHMIS 1988	Class D1A - Very toxic material causing immediate and serious toxic effects
EYE	GHS - Japan	H319 - Causes serious eye irritation [Serious eye damage / eye irritation - Category 2A]

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes Precautionary List Some Solvents

SUBSTANCE NOTES: Please refer to the substance notes for methyl methacrylate.

2-ETHYLHEXYL ACRYLATE

ID: **103-11-7**

HAZARD DATA SOURCE: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2025-06-26 0:33:23**

%: **5.0000 - 15.0000** GreenScreen: **BM-2** RC: **None** NANO: **No** SUBSTANCE ROLE: **Monomer**

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
SKI	MAK	Sensitizing Substance Sh - Danger of skin sensitization
CAN	CA EPA - Prop 65	Carcinogen
CAN	IARC	Group 2b - Possibly carcinogenic to humans
SKI	EU - GHS (H-Statements) Annex 6 Table 3-1	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
MAM	GHS - Japan	H335 - May cause respiratory irritation [Specific target organ toxicity - Single exposure - Category 3]
SKI	GHS - New Zealand	Skin irritation category 2
EYE	GHS - New Zealand	Eye irritation category 2
SKI	GHS - Australia	H315 - Causes skin irritation [Skin corrosion/irritation - Category 2]
CAN	GHS - Japan	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
MAM	GHS - New Zealand	Specific target organ toxicity - repeated exposure category 1
SKI	GHS - Japan	H315 - Causes skin irritation [Skin corrosion / irritation - Category 2]
AQU	GHS - New Zealand	Hazardous to the aquatic environment - chronic category 3
SKI	GHS - New Zealand	Skin sensitisation category 1
AQU	GHS - Japan	H401 - Toxic to aquatic life [Hazardous to the aquatic environment (acute) - Category 2]
AQU	GHS - Japan	H411 - Toxic to aquatic life with long lasting effects [Hazardous to the aquatic environment (chronic) - Category 2]

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
None found		No listings found on Additional Hazard Lists

SUBSTANCE NOTES: Please refer to the substance notes for methyl methacrylate.

2-ACRYLAMIDO-2-METHYLPROPANESULFONATE

ID: **15214-89-8**

HAZARD DATA SOURCE: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2025-06-26 0:33:24**

%: **1.0000 - 5.0000** GreenScreen: **LT-UNK** RC: **None** NANO: **No** SUBSTANCE ROLE: **Monomer**

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
EYE	GHS - New Zealand	Serious eye damage category 1

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
None found		No listings found on Additional Hazard Lists

SUBSTANCE NOTES: Please refer to the substance notes for methyl methacrylate.

PIGMENT

%: 10.0000 - 20.0000

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Geologically Derived Material

RESIDUALS AND IMPURITIES NOTES: The threshold applied to Residuals and Impurities (R/I) is the same as that applied to intentionally added substances, i.e., 100 ppm or 1000 ppm. For this product, no actual material has been tested. Therefore, residuals and impurities are for informational purposes only and are not a guarantee of presence in the actual building material. Pharos and PubChem (formerly TOXNOT) are the main databases for researching potential residuals and impurities. Any R/I above the threshold shall be listed on the HPD; otherwise, if none are listed, then no residuals or impurities are common in that substance above the threshold.

OTHER MATERIAL NOTES: The actual percenatge of composition has been withheld to protect proprietary formulation details and intellectual property rights.

TITANIUM DIOXIDE

ID: **13463-67-7**

HAZARD DATA SOURCE: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2025-06-26 0:33:23**

%: **100.0000** GreenScreen: **BM-1** RC: **UNK** NANO: **Unknown** SUBSTANCE ROLE: **Pigment**

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
CAN	US CDC - Occupational Carcinogens	Occupational Carcinogen
CAN	CA EPA - Prop 65	Carcinogen - specific to chemical form or exposure route
CAN	IARC	Group 2B - Possibly carcinogenic to humans - inhaled from occupational sources
CAN	MAK	Carcinogen Group 3A - Evidence of carcinogenic effects but not sufficient to establish MAK/BAT value
END	TEDX - Potential Endocrine Disruptors	Potential Endocrine Disruptor
CAN	MAK	Carcinogen Group 4 - Non-genotoxic carcinogen with low risk under MAK/BAT levels
CAN	IARC	Group 2b - Possibly carcinogenic to humans
CAN	EU - GHS (H-Statements) Annex 6 Table 3-1	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
CAN	GHS - Japan	H351 - Suspected of causing cancer [Carcinogenicity - Category 2]
MAM	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4.0 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022 Children's Products
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4.0 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022 Formulated Consumer Products
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4.0 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022 Cosmetics & Personal Care Products
POSITIVE LIST	US Environmental Protection Agency (US EPA)	US EPA - DfE Safer Chemicals Ingredients list (SCIL) Colorants - Green Circle (Verified Low Concern)
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4.1 Product Standard Restricted Substances - Effective July 1, 2024 Cosmetics and Personal Care Products

SUBSTANCE NOTES: No residuals or impurities are expected to be present at or above 100 ppm.

SOLVENT **%: 1.0000 - 3.0000**

PRODUCT THRESHOLD: 100 ppm	RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes	MATERIAL TYPE: Other: Organic compound

RESIDUALS AND IMPURITIES NOTES: The threshold applied to Residuals and Impurities (R/I) is the same as that applied to intentionally added substances, i.e., 100 ppm or 1000 ppm. For this product, no actual material has been tested. Therefore, residuals and impurities are for informational purposes only and are not a guarantee of presence in the actual building material. Pharos and PubChem (formerly TOXNOT) are the main databases for researching potential residuals and impurities. Any R/I above the threshold shall be listed on the HPD; otherwise, if none are listed, then no residuals or impurities are common in that substance above the threshold.

OTHER MATERIAL NOTES:

DIETHYLENE GLYCOL MONO-N-BUTYL ETHER ID: **112-34-5**

HAZARD DATA SOURCE: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2025-06-26 2:51:50**

%: **100.0000** GreenScreen: **LT-P1** RC: **None** NANO: **No** SUBSTANCE ROLE: **Solvent**

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
END	TEDX - Potential Endocrine Disruptors	Potential Endocrine Disruptor
EYE	EU - GHS (H-Statements) Annex 6 Table 3-1	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]
EYE	GHS - New Zealand	Eye irritation category 2
EYE	GHS - Australia	H319 - Causes serious eye irritation [Serious eye damage/eye irritation - Category 2A]
MAM	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
EYE	GHS - Japan	H319 - Causes serious eye irritation [Serious eye damage / eye irritation - Category 2A]

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes Precautionary List Some Solvents
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4.0 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022 Formulated Consumer Products
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4.1 Product Standard Restricted Substances - Effective July 1, 2024 All Products

SUBSTANCE NOTES: No residuals or impurities are expected to be present at or above 100 ppm.

COALESCING AGENT **%: 1.0000 - 3.0000**

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Other: Organic compound

RESIDUALS AND IMPURITIES NOTES: The threshold applied to Residuals and Impurities (R/I) is the same as that applied to intentionally added substances, i.e., 100 ppm or 1000 ppm. For this product, no actual material has been tested. Therefore, residuals and impurities are for informational purposes only and are not a guarantee of presence in the actual building material. Pharos and PubChem (formerly TOXNOT) are the main databases for researching potential residuals and impurities. Any R/I above the threshold shall be listed on the HPD; otherwise, if none are listed, then no residuals or impurities are common in that substance above the threshold.

OTHER MATERIAL NOTES:

PROPYLENE GLYCOL ID: **57-55-6**

HAZARD DATA SOURCE: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2025-06-26 2:52:17**

%: **100.0000** GreenScreen: **BM-2** RC: **None** NANO: **No** SUBSTANCE ROLE: **Coalescent**

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
END	TEDX - Potential Endocrine Disruptors	Potential Endocrine Disruptor
MAM	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]
MAM	GHS - Japan	H370 - Causes damage to organs [Specific target organs/systemic toxicity following single exposure - Category 1]

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes Precautionary List Antimicrobials
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes Precautionary List Some Solvents

SUBSTANCE NOTES: No residuals or impurities are expected to be present at or above 100 ppm.

THICKENER **%: 0.1000 - 0.6000**

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Polymeric Material

RESIDUALS AND IMPURITIES NOTES: The threshold applied to Residuals and Impurities (R/I) is the same as that applied to intentionally added substances, i.e., 100 ppm or 1000 ppm. For this product, no actual material has been tested. Therefore, residuals and impurities are for informational purposes only and are not a guarantee of presence in the actual building material. Pharos and PubChem (formerly TOXNOT) are the main databases for researching potential residuals and impurities. Any R/I above the threshold shall be listed on the HPD; otherwise, if none are listed, then no residuals or impurities are common in that substance above the threshold.

OTHER MATERIAL NOTES:

HYDROXYETHYL CELLULOSE ID: **9004-62-0**

HAZARD DATA SOURCE: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2025-06-26 0:33:25**

%: **99.9000 - 100.0000** GreenScreen: **LT-P1** RC: **None** NANO: **No** SUBSTANCE ROLE: **Viscosity modifier**

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
END	TEDX - Potential Endocrine Disruptors	Potential Endocrine Disruptor

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
None found		No listings found on Additional Hazard Lists

SUBSTANCE NOTES: Residuals or impurities are quantitatively measured and listed in this HPD when greater than or equal to 100 ppm.

BUFFER **%: 0.0100 - 0.0800**

PRODUCT THRESHOLD: 100 ppm RESIDUALS AND IMPURITIES EVALUATION COMPLETED: Yes MATERIAL TYPE: Other: Inorganic compound

RESIDUALS AND IMPURITIES NOTES: The threshold applied to Residuals and Impurities (R/I) is the same as that applied to intentionally added substances, i.e., 100 ppm or 1000 ppm. For this product, no actual material has been tested. Therefore, residuals and impurities are for informational purposes only and are not a guarantee of presence in the actual building material. Pharos and PubChem (formerly TOXNOT) are the main databases for researching potential residuals and impurities. Any R/I above the threshold shall be listed on the HPD; otherwise, if none are listed, then no residuals or impurities are common in that substance above the threshold.

OTHER MATERIAL NOTES:

AMMONIA ID: **7664-41-7**

HAZARD DATA SOURCE: **Pharos Chemical and Materials Library** HAZARD SCREENING DATE: **2025-06-26 0:33:26**

%: **99.9000 - 100.0000** GreenScreen: **LT-P1** RC: **None** NANO: **No** SUBSTANCE ROLE: **Buffer**

HAZARD TYPE	LIST NAME AND SOURCE	WARNINGS
END	TEDX - Potential Endocrine Disruptors	Potential Endocrine Disruptor
MUL	German FEA - Substances Hazardous to Waters	Class 3 - Severe Hazard to Waters
MAM	US EPA - EPCRA Extremely Hazardous Substances	Extremely Hazardous Substances
SKI	EU - GHS (H-Statements) Annex 6 Table 3-1	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1A or 1B or 1C]
AQU	EU - GHS (H-Statements) Annex 6 Table 3-1	H400 - Very toxic to aquatic life [Hazardous to the aquatic environment (acute) - Category 1]
MAM	EU - GHS (H-Statements) Annex 6 Table 3-1	H331 - Toxic if inhaled [Acute toxicity (inhalation) - Category 3]
MAM	GHS - Japan	H372 - Causes damage to organs through prolonged or repeated exposure [Specific target organs/systemic toxicity following repeated exposure - Category 1]

MAM	GHS - Japan	H370 - Causes damage to organs [Specific target organs/systemic toxicity following single exposure - Category 1]
EYE	GHS - New Zealand	Serious eye damage category 1
EYE	GHS - Japan	H318 - Causes serious eye damage [Serious eye damage / eye irritation - Category 1]
SKI	GHS - Japan	H314 - Causes severe skin burns and eye damage [Skin corrosion / irritation - Category 1]
SKI	GHS - Australia	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1A or 1B or 1C]
MAM	GHS - New Zealand	Acute inhalation toxicity category 3
AQU	GHS - New Zealand	Hazardous to the aquatic environment - acute category 1
AQU	GHS - Korea	H400 - Very toxic to aquatic life [Hazardous to the aquatic environment (acute) - Category 1]
SKI	GHS - Korea	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1]
SKI	GHS - New Zealand	Skin corrosion category 1B
MAM	Québec CSST - WHMIS 1988	Class D1A - Very toxic material causing immediate and serious toxic effects
MAM	GHS - Malaysia	H331 - Toxic if inhaled [Acute toxicity (inhalation) - Category 3]
SKI	GHS - Malaysia	H314 - Causes severe skin burns and eye damage [Skin corrosion/irritation - Category 1A or 1B or 1C]
EYE	GHS - Malaysia	H318 - Causes serious eye damage [Serious eye damage/eye irritation - Category 1]
MAM	GHS - Australia	H331 - Toxic if inhaled [Acute toxicity (inhalation) - Category 3]
PHY	GHS - Korea	H220 - Extremely flammable gas [Flammable gases - Category 1]
PHY	Québec CSST - WHMIS 1988	Class B1 - Flammable gases
PHY	GHS - Japan	H220 - Extremely flammable gas [Flammable gases - Category 1]
AQU	GHS - Malaysia	H400 - Very toxic to aquatic life [Hazardous to the aquatic environment (acute) - Category 1]
AQU	GHS - Australia	H400 - Very toxic to aquatic life [Hazardous to the aquatic environment (acute) - Category 1]
MAM	GHS - Korea	H331 - Toxic if inhaled [Acute toxicity (inhalation) - Category 3]

ADDITIONAL LISTINGS	LIST NAME AND SOURCE	NOTIFICATION
RESTRICTED LIST	Green Science Policy Institute (GSPI)	GSPI - Six Classes Precautionary List Antimicrobials
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4.0 Product Standard Restricted Substances List (RSL) - Effective July 1, 2022 Cosmetics & Personal Care Products
RESTRICTED LIST	Cradle to Cradle Products Innovation Institute (C2CPII)	C2C Certified v4.1 Product Standard Restricted Substances - Effective July 1, 2024 Cosmetics and Personal Care Products

SUBSTANCE NOTES: Residuals or impurities are quantitatively measured and listed in this HPD when greater than or equal to 100 ppm.

Section 3: Certifications and Compliance

This section lists applicable certification and standards compliance information for VOC emissions and VOC content. Other types of health or environmental performance testing or certifications completed for the product may be provided.

VOC EMISSIONS — **CDPH Standard Method V1.2 (Section 01350/CHPS) - Classroom & Office scenario**

CERTIFYING PARTY: Third Party
APPLICABLE FACILITIES: Berger Paints Emirates Ltd. Co. L.L.C. P.O. Box 27524, Al Qouz 1, Dubai, U.A.E.
CERTIFICATE URL:

ISSUE DATE: 2024-09-06 00:00:00
EXPIRY DATE:

CERTIFIER OR LAB: Middle East Testing Services L.L.C.

CERTIFICATION AND COMPLIANCE NOTES: Report # MR-220824-235

VOC CONTENT — **MAS Certified Green - VOC Content**

CERTIFYING PARTY: Third Party
APPLICABLE FACILITIES: Berger Paints Emirates Ltd. Co. L.L.C. P.O. Box 27524, Al Qouz 1, Dubai, U.A.E.
CERTIFICATE URL:

ISSUE DATE: 2022-02-28 00:00:00
EXPIRY DATE:

CERTIFIER OR LAB: Wimpey Laboratories LLC

CERTIFICATION AND COMPLIANCE NOTES: This is not a MAS Certified Green – VOC Content certification; however, it is the only available option to comply with the HPDC requirements. The third-party certifier reported the VOC content, Wimpey Laboratories LLC, under report # WD-R-220215-0901/3

Section 4: Accessories

This section lists related products or materials that the manufacturer requires or recommends for installation (such as adhesives or fasteners), maintenance, cleaning, or operations. For information relating to the contents of these related products, refer to their applicable Health Product Declarations, if available.

No accessories are required for this product.

Section 5: General Notes

Recommended Areas Of Application

Area of use : Interior and Exterior
Substrate : Concrete, Plaster, Masonry, Brickwork, Block Work.

Application Data

Method of application : Brush, Roller or Spray application.
Thinner: Sweet water
Thinning ratio (by vol.) : Use 30 – 50% for ease of application depending on the method of application

Surface Preparation

The performance of this coating is directly related to the degree of surface preparation.
Ensure surface is clean, dry and free from all contaminants.
Surface must be sound and free from laitance.
Remove laitance by wire brush or sweep blast.
Note: Fungal growth should be treated with Bison Fungicidal Solution. After drying, one coat of Plastaseal Penetrating Sealer can be applied if required.

Application Details

Ensure adequate ventilation during application and drying.
Do not apply when humidity exceeds 85% and condensation is likely.
Surface temperature should be 3°C or more above dew point.
Stir the contents thoroughly before and during use, with a broad flat stirrer, using and upwardlifting action.

Section 6: References

MANUFACTURER INFORMATION

MANUFACTURER: **Berger Paints Emirates Ltd. Co. L.L.C.**
ADDRESS: **P.O. Box 27524, Al Qouz 1, Dubai, U.A.E.**
Dubai, Dubai 27524
COUNTRY: **United Arab Emirates**

WEBSITE: **https://www.asianpaints.com/**
CONTACT NAME: **Shirouz Sharafuddeen**
TITLE: **Officer - Technology**
PHONE: **00971-43391000**
EMAIL: **shirouz.sharafuddeen@asianpaints.com**

The listed contact is responsible for the validity of this HPD and attests that it is accurate and complete to the best of his or her knowledge.

KEY

Hazard Types

AQU Aquatic toxicity
CAN Cancer
DEV Developmental toxicity
END Endocrine activity
EYE Eye irritation/corrosivity
GEN Gene mutation
GLO Global warming
LAN Land toxicity
MAM Mammalian/systemic/organ toxicity
MUL Multiple
NEU Neurotoxicity
NF Not found on Priority Hazard Lists
OZO Ozone depletion
PBT Persistent, bioaccumulative, and toxic
PHY Physical hazard (flammable or reactive)
REP Reproductive
RES Respiratory sensitization
SKI Skin sensitization/irritation/corrosivity
UNK Unknown

GreenScreen (GS)

BM-4 Benchmark 4 (prefer-safer chemical)
BM-3 Benchmark 3 (use but still opportunity for improvement)
BM-2 Benchmark 2 (use but search for safer substitutes)
BM-1 Benchmark 1 (avoid - chemical of high concern)
BM-U Benchmark Unspecified (due to insufficient data)
LT-P1 List Translator Possible 1 (Possible Benchmark-1)
LT-1 List Translator 1 (Likely Benchmark-1)
LT-UNK List Translator Benchmark Unknown
NoGS No GreenScreen.

GreenScreen Benchmark scores sometimes also carry subscripts, which provide more context for how the score was determined. These are DG (data gap), TP (transformation product), and CoHC (chemical of high concern). For more information, see 2.2.2.4 GreenScreen® for Safer Chemicals, www.greenscreenchemicals.org, and Best Practices for Hazard Screening on the HPDC website (hpd-collaborative.org).

Recycled Types

PreC Pre-consumer recycled content
PostC Post-consumer recycled content
UNK Inclusion of recycled content is unknown
None Does not include recycled content

Other Terms:

GHS SDS Globally Harmonized System of Classification and Labeling of Chemicals Safety Data Sheet

Inventory Methods:

Nested Method / Material Threshold Substances listed within each material per threshold indicated per material
Nested Method / Product Threshold Substances listed within each material per threshold indicated per product
Basic Method / Product Threshold Substances listed individually per threshold indicated per product

Nano Composed of nano scale particles or nanotechnology
Third Party Verified Verification by independent certifier approved by HPDC
Preparer Third party preparer, if not self-prepared by manufacturer
Applicable facilities Manufacturing sites to which testing applies

The Health Product Declaration (HPD) Open Standard provides for the disclosure of product contents and potential associated human and environmental health hazards. Hazard associations are based on the HPD Priority Hazard Lists, the GreenScreen List Translator™, and when available, full GreenScreen® assessments. The HPD Open Standard v2.1 is not:

- *a method for the assessment of exposure or risk associated with product handling or use,*
- *a method for assessing potential health impacts of: (i) substances used or created during the manufacturing process or (ii) substances created after the product is delivered for end use.*

Information about life cycle, exposure and/or risk assessments performed on the product may be reported by the manufacturer in appropriate Notes sections, and/or, where applicable, in the Certifications section.

The HPD Open Standard was created and is supported by the Health Product Declaration Collaborative (the HPD Collaborative), a customer-led organization composed of stakeholders throughout the building industry that is committed to the continuous improvement of building products through transparency, openness, and innovation throughout the product supply chain.

The product manufacturer and any applicable independent verifier are solely responsible for the accuracy of statements and claims made in this HPD and

for compliance with the HPD standard noted.