

## Index

Sl. No	Description	Page Nos
1	<b>Compressive Strength at HOH Glen Classic Site, JMC Infra</b> Comparison between conventionally water cured mortar specimens Vs Mortar cubes left in Sun in open air with RenderCon 'Super'	2
2	<b>Compressive Strength at SPRE Park West Site, SPCL</b> No curing done, left in Sun cubes strength at 7 and 28 days using RenderCon 'Super'	3
3	<b>Pull-off Strength at HOH Glen Classic Site, JMC Infra</b> External plastering, no curing done. Tested at 28 days	4-11
4	<b>Pull-off Strength at Brigade Orchards, MFAR</b> External plastering, no curing done, tested after 28 days	12-20
5	<b>Pull-off Strength at SPRE Park West Site, SPCL</b> 30mm single coat, external plastering, no curing done, tested after 28 days	21-29
6	<b>Pull-off on Tile at SPRE Park West Site, SPCL</b> Tiling completed in the flat with 40mm thickness. Then, apertures to meet the dollies of the Dyna Pull equipment were cut in the 2x2ft tiles to pull them off. Point to note is that there was lot of disturbance to the tiles while the cutting was done, still the pull-off has recorded very good strength.	30-34
7	<b>Integral Waterproofing compliance</b> As per IS2645, RenderCon Super complies to Integral waterproofing compound	35



### COMPRESSIVE STRENGTH OF MANUFACTURE SAND Vs RENDRCON

Sl.no	Description	Date of Casting	Age in Days	Weight (Gms)	Load (KN)	Strength (N/mm <sup>2</sup> )	Avg. Strength (N/mm <sup>2</sup> )	Remarks
1	Site Mixing 1 : 4 Ratio Cement : Manufacture Sand & Rendercon 'Super'(with out curing)	05.07.2017	28	714	73.8	14.82	15.29	
2				718	74.3	14.92		
3				716	80.4	16.14		
Sl.no	Description	Date of Casting	Age in Days	Weight (Gms)	Load (KN)	Strength (N/mm <sup>2</sup> )	Avg. Strength (N/mm <sup>2</sup> )	Remarks
1	Site Mixing 1 : 4 Ratio Cement : Manufacture sand (with curing)	05.07.2017	28	778	48.10	9.66	9.53	
2				828	49.80	10.00		
3				766	44.50	8.94		

**SPRE SITE - PARKWEST PHASE-01  
BANGALORE  
PLASTERING CUBE REGISTER**



**ENGINEERING &  
CONSTRUCTION**

Cube ID	Location	MIX	Casting Date	Testing Date		Cube Weight	Load kN	Comp. Strength		Avg. Comp. Strength		Signature		Remarks
				7th Day	28th Day			7 Days	28 Days	7 Days	28 Days	SPCL	Client	
1	T3 External plastering with Rendercon "SUPER " Admixture.	Mortar Mix 1:4	3-Jun-17	10-Jun-17	1-Jul-17	0.740	90	18.36						(with Crushed Sand, No curing done)
						0.740	74	15.10	16.93					
						0.730	85	17.34						
						0.727	102		20.81					
						0.727	102		20.81	20.67				
0.735	100		20.4											



**REPORT ON:**

**PULL OFF TEST ON EXTERNAL PLASTERED  
SURFACE OF WALL OF GLEN CLASSIC AT HOUSE  
OF HIRANANDANI, KODIGEHALLI MAIN ROAD,  
BHADRAPPA LAYOUT  
HEBBAL, BANGALORE**

**REPORT FOR:**

**M/s. Rendercon Chem Private Limited  
6-2-47, 1<sup>st</sup> Floor  
A C Guards, Lakdipaul  
Hyderabad-500 004**

**MONTH / YEAR:**

**AUGUST -2017**

**Bureau Veritas India Pvt. Ltd.  
# 1030, 13th Cross, Banashankari,  
2nd Stage,  
Bangalore 560070**



**BUREAU  
VERITAS**

**Report on** : Pull off test on external plastered surface of wall of Glen Classic at House of Hiranandani, Kodigehalli Main Road, Bhadrappa layout Hebbal, Bangalore.

**Report for** : M/s. Rendercon Chem Pvt Ltd  
6-2-47, 1<sup>st</sup> Floor, A C Guards , Lakdikapaul  
Hyderbad-500 004

**Reference** : email dt. 3<sup>rd</sup> August 2017

**Period of Test** : 8<sup>th</sup> August 2017

**Test carried out under the guidance of** : Sri. S Manoranjan  
Manager  
NDT R & R Services

**Test carried out by** : Mr. Prasanna N Hegde  
Engineer (NDT)  
Mr. Srikanth  
Testing Assistant

**Test carried out in presence of :** Mr.M Srinivasa Reddy  
M/s. Rendrcon Chem Pvt Ltd  
Mr. Krishna and Mr.G S Sridhar  
M/s. JMC  
Bangalore  
Mr. K Daniel Deen Dayal  
Sr. Manager (QA)  
House of Hiranandani

**Date of submission of report :** 14<sup>th</sup> August 2017

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## CONTENTS

- A. INTRODUCTION
- B. DETAILS OF TEST
- C. CONCLUDING REMARKS

## APPENDIX

TABLE

PHOTOGRAPHS

## **A. INTRODUCTION**

The construction of " House of Hiranandani at Kodigehalli Main Road, Bhadrappa Layout Hebbal Bangalore is under progress. The concerned authorities of M/s. Rendercon Chemicals Pvt Ltd desired to verify the bond strength / adhesion strength of external wall plaster at Wing C using manufactured sand and Rendercon super admixture .

Hence, a reference was made to Bureau Veritas India Private Limited, Bangalore to carry out the appropriate test to ascertain the bond strength of the plaster using manufactured sand and Rendercon Super admixture.

In response to this, Dyna Pull Off test was carried out by us during 7<sup>th</sup> & 8<sup>th</sup> August 2017 on identified regions of wall plaster in order to assess the bond/adhesion strength of plaster using Dyna Pull Off tester. This report, in brief, summarizes the outcome of the test carried out and conclusion made there on.

## **B. DETAILS OF TEST**

### **Dyna Pull-Off tester**

In order to verify/assess the bond /adhesion strength of plaster , Pull Off test was carried out using **Dyna Pull-Off tester** from **M/s. Proceq, Switzerland**.

The identified region of plaster was separated from the surrounding area using core cutting equipment, to achieve defined circular surface. The test disc of the pull off test was fixed / glued to the plastering using quick setting adhesive and the same was pulled off after completion of setting time. The failure load was recorded for further interpretation. The test was carried out at three identified plastered locations of wall plastering manufactured sand & Rendercon Super. The results are furnished in **Table-1**.

From the results of Dyna Pull-Off test, it is revealed that ;

The bond/adhesion strength of plaster on identified regions of wall plaster using manufactured sand is in the range of 0.53 to 0.84 N/mm<sup>2</sup> as against the minimum tensile strength of 0.14 N/mm<sup>2</sup>.

**C. CONCLUDING REMARKS**

However, the minimum tensile strength of mortar required as per IS 1905 , cl.5.4.2 is specified as 0.14 N/mm<sup>2</sup> . Hence the test results are satisfactory.

*For BUREAU VERITAS INDIA PRIVATE LIMITED*



**PADMANABHA P**  
ASST. Manager  
NDT & R R Services



**TABLE-1**  
**RESULTS OF PULL OFF TEST**

**Project** : Hiranandani Glen Classic, Kodigehalli Main Road, Bhadrappa layout, Hebbal, Bangalore.

**Members Tested** : Wall Plaster

**Period of Test** : 7<sup>th</sup> & 8<sup>th</sup> August 2017

**Proportion of Mortar** : 1:4

**Age of plaster at test** : More than 28 days\*

**Test Instrument** : Dyna Z Pull Off Tester

**Make** : M/s. Proceq, Switzerland

**Type of adhesive used for:** Araldite - Klear (Superfast)  
test disc

**Technical reference** : ASTM-D 4541 - 85

SL. No	Building/ Floor / Tested member*	Thickness of plaster	Maximum Force Applied (KN)	Adhesion/ Bond Strength (N/Sq.mm)	Remarks
Plaster using manufactured sand & Rendercon Super admixture 370 gm per bag of cement					
1	Glen Classic Wing-C- 1 <sup>st</sup> floor Flat No.	15mm	1.66	0.84	Bond Failure
2	107 Living Room Rain Water Shaft	15mm	1.06	0.53	Failure within the plaster
3	Column No. SW/2	15mm	1.10	0.56	Bond Failure

\*As furnished by the customer.

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**M/s.Rendercon, Bangalore (AUGUST-2017)**  
**(Pull-off test)**



**View of Demo Wall**

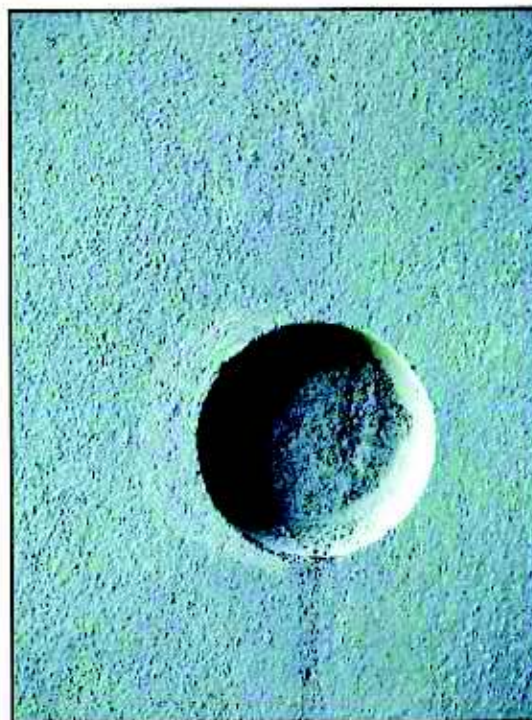


**View of dolly fixing**

*M/s.Rendercon, Bangalore (AUGUST-2017)*  
**(Pull-off test)**



**View of Pull-off test**



**View of failure mode**



**REPORT ON:**

**PULL OFF TEST ON EXTERNAL PLASTERED  
SURFACE OF WALL AT BRIGADE ORCHARDS  
SCHOOL, BANGALORE**

**REPORT FOR:**

**M/s. Rendercon Chemical Private Limited  
6-2-47, 1<sup>st</sup> Floor  
A C Guards, Lakdipaul  
Hyderabad-500 004**

**MONTH / YEAR:**

**OCTOBER -2017**

**Bureau Veritas India Pvt. Ltd.  
# 1030, 13th Cross, Banashankari,  
2nd Stage,  
Bangalore 560070**



**Report on** : Pull off test on external plastered surface of wall at Brigade Orchards School, Bangalore.

**Report for** : M/s. Rendercon Chemical Pvt Ltd  
6-2-47, 1<sup>st</sup> Floor, A C Guards , Lakdikapaul  
Hyderabad-500 004

**Reference** : E-mail dt. 21.10.2017

**Period of Test** : 24<sup>th</sup> & 25<sup>th</sup> October 2017

**Test carried out under the guidance of** : Sri. S Manoranjan  
Manager  
NDT R & R Services

**Test carried out by** : Mr. Prasanna N Hegde  
Engineer (NDT)  
Mr. Swamynayaka H R  
Testing Assistant

**Test carried out in presence of :** Mr. Budhan Bera Engineer (QA & QC)  
M/s. MFAR Constructions  
Mr. Rumaan Ahmed, Technical Executive  
M/s. Rendrcon Chem Pvt Ltd

**Date of submission of report :** 27.10.2017

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## CONTENTS

- A. INTRODUCTION
- B. DETAILS OF TEST
- C. CONCLUDING REMARKS

### APPENDIX

TABLE

PHOTOGRAPHS

## **A. INTRODUCTION**

The construction of " Brigade Orchards School" building at Devahnahalli, Bangalore is under progress. The concerned authorities of M/s. Rendercon Chemicals Pvt Ltd desired to verify the bond strength / adhesion strength on external wall plaster using manufactured sand and Rendercon super admixture .

Hence, a reference was made to Bureau Veritas India Private Limited, Bangalore to carry out the appropriate test to ascertain the bond strength of the plaster using manufactured sand and Rendercon Super admixture.

In response to this, Dyna Pull Off test was carried out by us during 24<sup>th</sup> & 25<sup>th</sup> October 2017 on identified regions of wall plaster in order to assess the bond/adhesion strength of plaster using Dyna Pull Off tester. This report, in brief, summarizes the outcome of the test carried out and conclusion made there on.

## **B. DETAILS OF TEST**

### **Dyna Pull-Off tester**

In order to verify/assess the bond /adhesion strength of plaster , Pull Off test was carried out using Dyna Pull-Off tester from M/s. Proceq, Switzerland.

The identified region of plaster was separated from the surrounding area using core cutting equipment, to achieve defined circular surface. The test disc of the pull off test was fixed / glued to the plastering using quick setting adhesive and the same was pulled off after completion of setting time. The failure load was recorded for further interpretation. The test was carried out at three identified locations of wall using manufactured sand & Rendercon Super. The results are furnished in **Table**.

From the results of Dyna Pull-Off test, it is revealed that ;

The bond/adhesion strength of plaster on identified regions of wall plaster using manufactured sand is in the range of 0.29 to 0.57 N/mm<sup>2</sup> .

**C. CONCLUDING REMARKS**

However, the minimum tensile strength of mortar required as per IS 1905 , cl.5.4.2 is specified as 0.14 N/mm<sup>2</sup> . Hence the test results are satisfactory.

  
**PADMANABHA P**  
Assistant Manager- NDT





**TABLE**

**RESULTS OF PULL OFF TEST**

**Project** : Brigade Orchards School at Devanahalli, Bangalore  
(Mfar Constructions Pvt. Ltd.)  
**Members Tested** : External wall plaster  
**Thickness of Plaster** : 20 mm\*  
**Dates of Test** : 24<sup>th</sup> & 25<sup>h</sup> October 2017  
**Test Instrument** : Dyna Z Pull Off Tester  
**Make** : M/s. Proceq, Switzerland  
**Type of adhesive used for test disc** : Araldite - Klear (Superfast)  
**Technical reference** : ASTM-D 4541 - 85

Sl. No.	Test Location*	Thickness of Plaster* (mm)	Maximum Force Applied (KN)	Adhesion/Bond Strength (N/Sq.mm)	Remarks
<b>Admin block - Near Principle room</b>					
1.	Left side	20	1.12	0.57	Bond failure b/w wall & plaster
2.	Centre	20	0.71	0.36	
3.	Right side	20	0.57	0.29	

\* As furnished by the customer.

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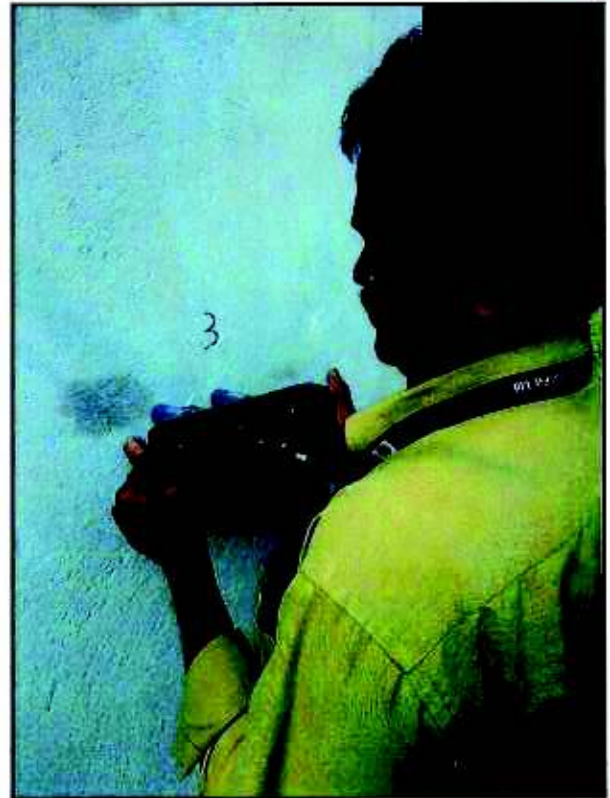
**View of testing location**



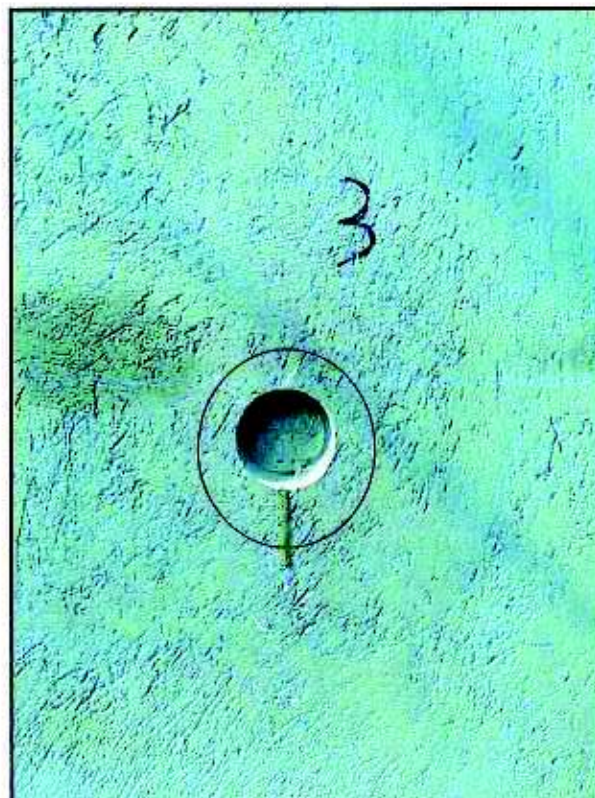
**Making of groove in progress**



**Fixing of test discs in progress**



**Pull-off test in progress**



**View of failure at test location**



**View of failure modes**



**REPORT ON:**

**PULL OFF TEST ON EXTERNAL PLASTERED  
SURFACE OF WALL OF SPARE PARK WEST  
PHASE-1, BINNYPET  
MAGADI ROAD, BANGALORE**

**REPORT FOR:**

**M/s. Shapoorji Pallonji & Co Pvt Ltd  
7<sup>th</sup> Floor, Surya Chambers , No.124, HAL Airport Road  
Bangalore**

**MONTH / YEAR:**

**AUGUST -2017**

**Bureau Veritas India Pvt. Ltd.  
# 1030, 13th Cross, Banashankari,  
2nd Stage,  
Bangalore 560070**



**Report on** : Pull-Off Test on identified regions of plastered surface of wall at Spare Park West Phase-1 project at Binnypet, Magadi Road, Bangalore

**Report for** : M/s. Rendercon Chem Pvt Ltd  
6-2-47, 1<sup>st</sup> Floor, A C Guards , Lakdikapaul  
Hyderbad-500 004

**Reference** : email dt. 26<sup>th</sup> July 2017

**Period of Test** : 27<sup>th</sup> & 28<sup>th</sup> July 2017

**Test carried out under the guidance of** : Sri. S Manoranjan  
Manager  
NDT R & R Services

**Test carried out by** : Mr. Prasanna N Hegde  
Engineer (NDT)

Mr. Ajith  
Testing Assistant

Mr.M Srinivasa Reddy  
M/s. Rendrcon Chem Pvt Ltd

Mr. Krishnamurthy G R  
Engineer -QA/QC  
M/s. SPCL  
Bangalore

Mr. Suresh Thangaraj  
M/s. SPRE

**Date of submission of report:** 4<sup>th</sup> August 2017

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## **CONTENTS**

- A. INTRODUCTION
- B. DETAILS OF TEST
- C. CONCLUDING REMARKS

## **APPENDIX**

**TABLE**

**PHOTOGRAPHS**

## **A. INTRODUCTION**

The construction of "Spare Park West phase-1 "at Binnypet , Magadi Road, Bangalore is under progress . The concerned authorities of M/s. Rendercon Chemicals Pvt Ltd desired to verify the bond strength / adhesion strength of external plaster on r c wall at Tower-3, Cluster A between ground floor to 1<sup>st</sup> floor using manufactured sand and **Rendercon super admixture** .

Hence, a reference was made to Bureau Veritas India Private Limited , Bangalore to carry out the appropriate test to ascertain the bond strength of the plaster using manufactured sand and **Rendercon Super admixture**.

In response to this, Dyna Pull Off test was carried out by us during 27<sup>th</sup> & 28<sup>th</sup> July 2017 on identified regions of wall plaster in order to assess the bond/adhesion strength of plaster. This report, in brief, summarizes the outcome of the test carried out and conclusion made there on.

## **B. DETAILS OF TEST**

### **Dyna Pull-Off tester**

In order to verify/assess the bond /adhesion strength of plaster , Pull Off test was carried out using **Dyna Pull-Off tester** from **M/s. Proceq, Switzerland**.

The identified region of plaster was separated from the surrounding area using core cutting equipment, to achieve defined circular surface. The test disc of the pull off test was fixed / glued to the plastering using quick setting adhesive and the same was pulled off after completion of setting time. The failure load was recorded for further interpretation. The test was carried out at three identified plastered locations of wall plastering manufactured sand & **Rendercon Super** . The results are furnished in **Table-1**.

**From the results of Dyna Pull-Off test, it is revealed that ;**

The bond/adhesion strength of plaster on wall using manufactured sand is in the range of **0.26 to 0.90 N/mm<sup>2</sup>** .



**C. CONCLUDING REMARKS**

However, the minimum tensile strength of mortar required as per IS 1905 , cl.5.4.2 is specified as **0.14 N/mm<sup>2</sup>** . Hence the test results are satisfactory.

*For BUREAU VERITAS INDIA PRIVATE LIMITED*

  
**MANORANJAN**  
**Manager**  
**NDT & R R Services**

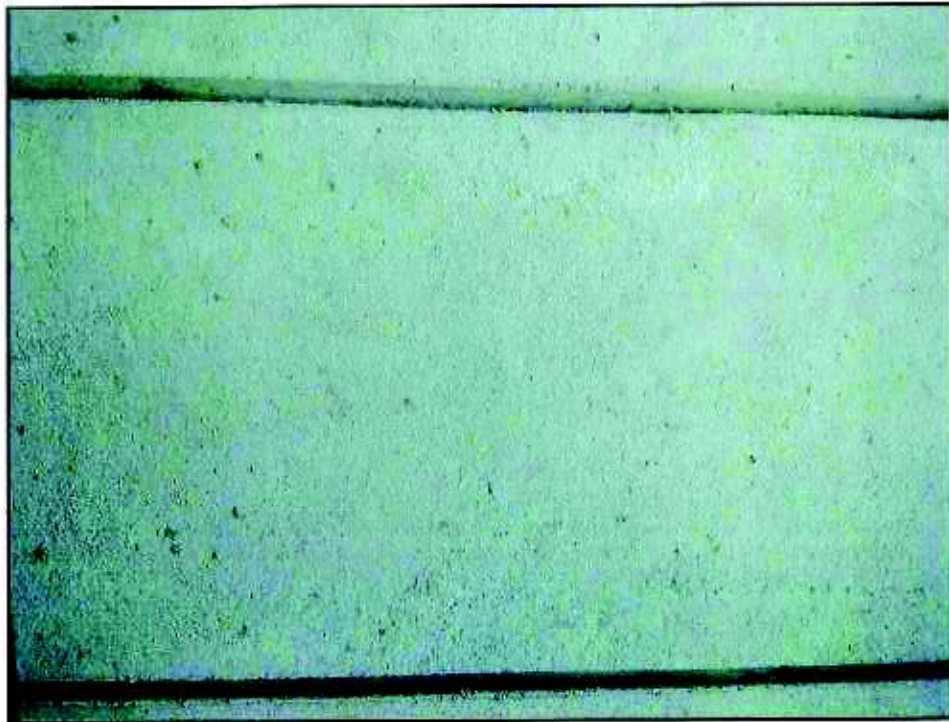
**TABLE-1**  
**RESULTS OF PULL OFF TEST**

<b>Project</b>	:	Spare Park West Phase-1 project at Binnypet, Magadi Road, Bangalore
<b>Members Tested</b>	:	Wall Plaster at Tower-3, Cluster A CZ-CX/C24 Ground to 1 <sup>st</sup> floor level.
<b>Period of Test</b>	:	27 <sup>th</sup> & 28 <sup>th</sup> July 2017.
<b>Proportion of Mortar</b>	:	1:4
<b>Age of plaster at test</b>	:	More than 28 days*
<b>Test Instrument</b>	:	Dyna Z Pull Off Tester
<b>Make</b>	:	M/s. Proceq, Switzerland
<b>Type of adhesive used for test disc</b>	:	Araldite - Klear (Superfast)
<b>Technical reference</b>	:	ASTM-D 4541 - 85

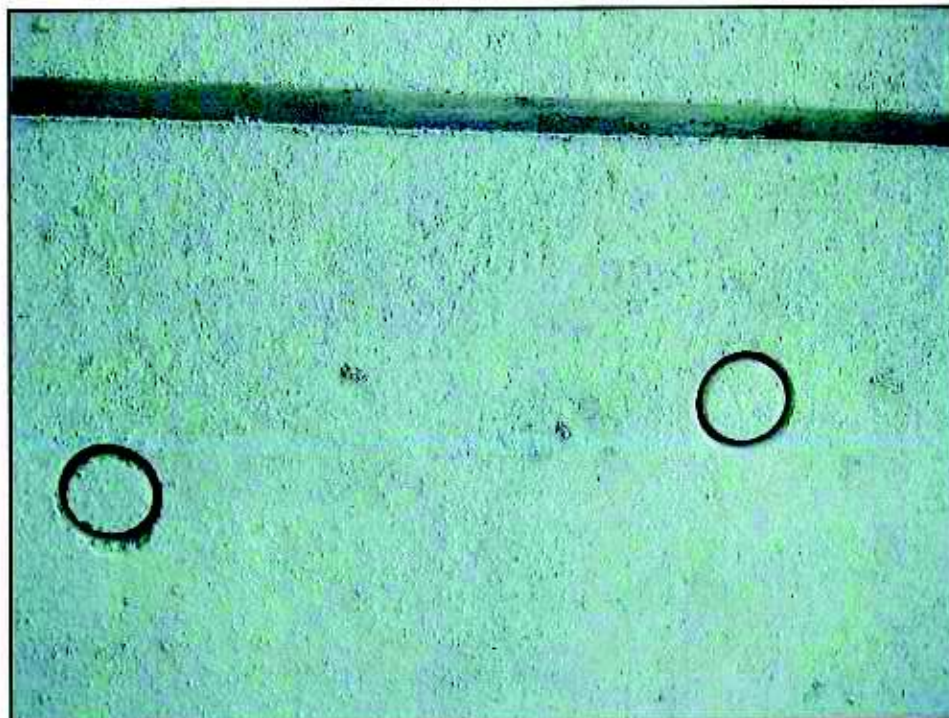
SL. No	Building/ Floor / Tested member*	Thickness of plaster	Maximum Force Applied (KN)	Adhesion/ Bond Strength (N/Sq.mm)	Remarks
<b>Plaster using manufactured sand &amp; Rendercon Super admixture 370 gm per bag of cement</b>					
1	Tower-3, Cluster A CZ-CX/C24 Ground to 1 <sup>st</sup> floor level	30mm	1.06	0.53	Failure within the plaster
2		30mm	0.52	0.26	
3.		30mm	1.77	0.90	

\*As furnished by the customer.

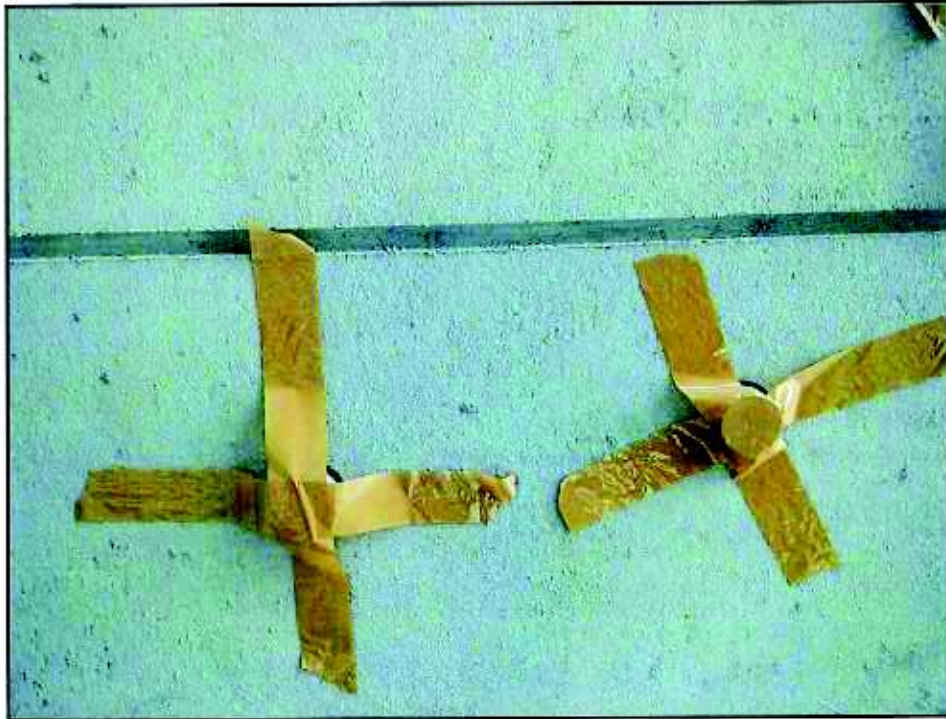
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View of external plastered wall



View of grooved wall



View of dolly fixed on the wall



View of pull-off test



**View of failure mode of plaster**



**REPORT ON:**

**PULL OFF TEST ON FLOOR TILE OF SHAPOORJI  
PALLONJI PARK WEST, BEHIND BINNEY MILL,  
BANGALORE**

**REPORT FOR:**

**M/s. Rendercon Chem Private Limited  
6-2-47, 1<sup>st</sup> Floor  
A C Guards, Lakdipaul  
Hyderabad-500 004**

**MONTH / YEAR:**

**SEPTEMBER -2017**

**Bureau Veritas India Pvt. Ltd.  
# 1030, 13th Cross, Banashankari,  
2nd Stage,  
Bangalore 560070**



# CONTENTS

- A. INTRODUCTION
- B. DETAILS OF TEST

## APPENDIX

TABLE

PHOTOGRAPHS

**Report on** : Pull off test on Floor Tile of Shapoorji Pallanoji Park West, Behind Binney Mill, Bangalore.

**Report for** : M/s. Rendercon Chem Pvt Ltd  
6-2-47, 1<sup>st</sup> Floor, A C Guards , Lakdikapaul  
Hyderabad-500 004

**Reference** : E-mail dt.28.08.2017

**Period of Test** : 2<sup>nd</sup> & 4<sup>th</sup> September 2017

**Test carried out under the guidance of** : Sri. S Manoranjan  
Manager  
NDT R & R Services

**Test carried out by** : Mr. Prasanna N Hegde  
Engineer (NDT)

Mr. Srikanth  
Testing Assistant

**Test carried out in presence of :** Mr.M Srinivasa Reddy  
M/s. Rendrcon Chem Pvt Ltd

Mr. Venkata Subba Reddy  
QA/QC Manager

**Date of submission of report** : 08.09.2017

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## **A. INTRODUCTION**

The construction of " Shapoorji Pallanji Park West at Binney Mill, Bangalore is under progress. The concerned authorities of M/s. Rendercon Chemicals Pvt Ltd desired to verify the bond strength / adhesion strength of tile adhesive using manufactured sand and **Rendercon Super Admixture**.

Hence, a reference was made to Bureau Veritas India Private Limited, Bangalore to carry out the appropriate test to ascertain the bond strength of the same.

In response to this, Dyna Pull Off test was carried out by us during 2<sup>nd</sup> & 4<sup>th</sup> September 2017 in order to assess the bond/adhesion strength of mortar using Dyna Pull Off tester. This report, in brief, summarizes the outcome of the test carried out and conclusion made there on.

## **B. DETAILS OF TEST**

### **Dyna Pull-Off tester**

In order to verify/assess the bond /adhesion strength of material, Pull Off test was carried out using Dyna Pull-Off tester from M/s. Proceq, Switzerland.

50mm x 50mm size tiles/stone were fixed at identified regions of using tile adhesive. After 14 days of self-curing period, the test disc for pull off test was fixed / glued to the tile /stone surface using quick setting adhesive and the same was pulled off after completion of setting time. The failure load was recorded. The results are furnished in Table-1.

**C. RESULTS OF TEST:**

From the results of Dyna Pull-Off test it is revealed that, the bond/adhesion strength of tile adhesive at identified locations is in the range of 0.34 to 0.59N/sq.mm.

*For BUREAU VERITAS INDIA PRIVATE LIMITED*



**PADMANABHA P**  
**ASST. Manager**

**TABLE-1**  
**RESULTS OF PULL OFF TEST**

**Project** : Shapoorji & Pallnoji Park West, Binney Mill, Bangalore

**Members Tested** : Tile

**Period of Test** : 2<sup>nd</sup> & 4<sup>th</sup> September 2017

**Proportion of Mortar** : 1:4

**Age of mortar at test** : More than 14 days\*

**Test Instrument** : Dyna Z Pull Off Tester

**Make** : M/s. Proceq, Switzerland

**Type of adhesive used for:** Araldite – Klear (Superfast)  
test disc

**Technical reference** : ASTM-D 4541 - 85

SL. No	Building/ Floor / Tested member*	Thickness of mortar	Maximum Force Applied (KN)	Adhesion/ Bond Strength (N/Sq.mm)	Remarks
<b>Mortar using manufactured sand &amp; Rendercon Super admixture 370 gm per bag of cement</b>					
1	Towere-3 Cluster-A Plat No. 605, Kitchen Room	40mm	1.49	0.59	Bond Failure
2		40mm	0.87	0.34	Bond Failure
3		40mm	0.97	0.38	Bond Failure

\*As furnished by the customer.

\*\*\*\*



**BUREAU  
VERITAS**

Test order / Report No. BVIPL: SPL: HL/347/4/2017  
Date of Receipt: 04-04-2017

Dated: 15-06-2017

**RENDERCON CHEM PRIVATE LIMITED**

6-2-47, 1<sup>st</sup> Floor, A C Guard, Lakdikapul,  
Hyderabad - 500 004

**FINAL TEST REPORT ON WATER PROOFING COMPOUND SAMPLE**

Source of sample : Sample supplied by the customer  
Customer's Reference : Lr No. Nil, Dated: 18.03.2017  
Sample Unique ID No : 228437  
Description\* : Rendercon SUPER  
Material received on : 04.04.2017  
Condition of samples : Satisfactory  
Test Method : IS: 2645 - 2003

Si. No.	Test Conducted	Result		Requirements as Per IS: 2645 - 2003	
		Control Sample	With Water Proof Compound		
1	Standard Consistency (%)	27.1	--	--	
2	Initial Setting Time (Min)	155	165	Not less than 30 Minutes or not more than 25% of the actual initial setting time	
3	Final Setting Time (Min)	250	255	Not more than 600 Minutes or not more than 25% of the actual Final setting Time	
4	Compressive Strength (N/Sq. mm)	3 Days	32.0	34.0	Not Less than 27 N/Sq. mm nor less than 90% of the 3 days compressive strength of mortar prepared with cement and sand only (i. e. 29.0 N/Sq. mm)
		7Days	42.0	44.5	Not less than 37 N/Sq. mm nor less than 90% of the 7days compressive strength of mortar prepared with cement and sand only (i. e. 38.0 N/Sq. mm)
5	Permeability Test: The average water Percolation expressed as percentage of water percolation of control sample (%)		18.5	The average percolation (measures in millilitres of water) for the specimens incorporating the waterproofing compound shall be less than 50 percent of the average percolation in the case of specimens without the water proofers	

\* As furnished by the customer

- Note:**
1. The results relate only to the items tested.
  2. Report shall not be reproduced, except in full, without the written approval of the laboratory
  3. Any correction invalidates this report

**For BUREAU VERITAS (INDIA) PRIVATE LIMITED.,**  
(Construction Services Laboratory)

Per Bureau Veritas (India) Pvt. Ltd.  
  
Authorised Signature

Bureau Veritas (India) Private Limited  
(Construction Services Laboratory)  
Shed No. F-2/B, Road No. 9  
IDA Nacharam, Hyderabad - 500 076, India  
Tel.: +91 40 64584582 Fax: +91 40 29808066  
lab.hyderabad@in.bureauveritas.com

Regd. Off. : Marwah Centre, 6th Floor  
K. Marwah Marg, Off Saki-Vihar Road  
Andheri (East), Mumbai - 400 072, India  
Tel.: +91 22 66956300 Fax: +91 22 66956309  
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Coimbatore, Delhi, Goa, Hubli, Indore  
Jaipur, Kakinada, Kandla, Kolkata, Ludhiana  
Mangalore, Nagpur, Nashik, Pune, Raipur  
Surat, Trichy & Visakhapatnam