

## TEST REPORT

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**PROJECT CODE** : G0128  
**PROJECT TITLE** : CONSTRUCTION MATERIAL TESTING

**TEST SUBJECTS** : 1) ADHESION TO SUBSTRATE  
2) TABER ABRASION  
3) SKID RESISTANCE BY BRITISH PENDULUM METHOD  
4) IMPACT RESISTANCE  
5) CHEMICAL RESISTANCE  
6) STAIN RESISTANCE

**TEST STANDARDS** : 1) ASTM D4541: 2002 (METHOD A, TYPE I TESTER)  
2) ASTM D4060: 2010  
3) SS 485: 2011  
4) ASTM D2794: 1993 (2010)  
5) ASTM D1308: 2002 (2013)  
6) ISO 10545-14: 1995 (ADOPTED)

**JOB REF.** : ADM/15/1331  
**DESCRIPTION OF SAMPLE** : DANTE FLOOR  
**DATE RECEIVED** : 11-Feb-2015  
**DATE OF REPORT** : 25-Mar-2015  
**TOTAL PAGES** : 8 (INCLUDING COVER PAGE)  
**REMARKS** : TEST ITEM NO. 4 & 5 IS NOT UNDER ADMATERIALS SAC-SINGLAS SCHEDULE



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## TESTING OF FLOOR COATING

**Application Procedure** : As specified by client, the application procedure was as follows :

1. The surface of the substrate to be applied were wire brushed and cleaned.
2. 1 coat of Sealer W was applied on the substrate with a wool roller. The sealer coat was allowed to cure for 2 hours before application of the under coat of Dante Floor.
3. The under coat was applied on the sealer coat by wool roller at approximately 0.3 kg/m<sup>2</sup>. The under coat was allowed to cure till it does not stick to fingers when touched, which is took around 2 hours.
4. The finish coat of Dante Floor was applied evenly with a mastic roller. Pressed down and smoothed out the surface with smoochy tools (provided by client) for patterning immediately after applying the finish coat.
5. The specimens were then left to cure for 7 days until the test date.

**Test Results** : A summary of the test results is given in Table 1.

Table 1: Summary of Test Results

No.	TESTS		RESULTS
1.	Adhesion to Substrate	Concrete	1.98 N/mm <sup>2</sup>
		Tile (white primer)	2.39 N/mm <sup>2</sup>
		Tile (transparent primer)	2.06 N/mm <sup>2</sup>
2.	Taber Abrasion		0.87 g
3.	Skid Resistance		53 BPN
4.	Impact Resistance		0.300 kg-m
5.	Effect of Household Chemicals	10% Sodium chloride	No discoloration, change in gloss, blistering, softening, swelling and loss of adhesion
		10% Hydrochloric acid	
		10% Sulphuric acid	
6.	Stain Resistance		Class 5

**TEST RESULTS:**

**1. ADHESION TO SUBSTRATE (ASTM D4541: 2002 (METHOD A, TYPE I TESTER))**

**1a. Substrate: Concrete**

Sample Reference	DANTE FLOOR						
Date of Test	24-Feb-15						
Test Condition	25 °C/ 56 % RH						
Test Method	Method A, Type I Tester						
Test Area	50 x 50 mm square						
Curing Condition	7 days air cure						
Test Specimen Ref.	1	2	3	4	5	6	Average
Adhesion Strength, N/mm <sup>2</sup>	2.17	2.04	1.81	1.88	1.7	2.25	1.98
Mode of Failure	50% A, 50% B	50% A, 50% B	50% A, 50% B	50% A, 50% B	50% A, 50% B	50% A, 50% B	

Remarks: 1) A denotes Substrate, B denotes Dante Floor  
 2) Refer to Figure 2 for failure mode

**1b. Substrate: Tile (White Primer)**

Sample Reference	DANTE FLOOR						
Date of Test	24-Feb-15						
Test Condition	25 °C/ 56 % RH						
Test Method	Method A, Type I Tester						
Test Area	50 x 50 mm square						
Curing Condition	7 days air cure						
Test Specimen Ref.	1	2	3	4	5	6	Average
Adhesion Strength, N/mm <sup>2</sup>	2.34	2.33	2.54	2.36	2.34	2.44	2.39
Mode of Failure	Y 100%	B 10%, Y 90%	Crack	B 5%, Y 95%	Crack	Crack	

Remarks: 1) A denotes Substrate, B denotes Coating, Y denotes Adhesive  
 2) Refer to Figure 2 for failure mode

**1c. Substrate: Tile (Transparent Primer)**

<b>Sample Reference</b>	<b>DANTE FLOOR</b>						
<b>Date of Test</b>	24-Feb-15						
<b>Test Condition</b>	25 °C/ 56 % RH						
<b>Test Method</b>	Method A, Type I Tester						
<b>Test Area</b>	50 x 50 mm square						
<b>Curing Condition</b>	7 days air cure						
<b>Test Specimen Reference</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>Average</b>
<b>Adhesion Strength, N/mm<sup>2</sup></b>	2.37	2.18	1.91	2.16	1.91	1.83	<b>2.06</b>
<b>Mode of Failure</b>	B 20%, Y 80%	crack	B 10%, Y 90%	B 5%, Y 95%	B 10%, Y 90%	Y 100%	

**Remarks:** 1) A denotes Substrate, B denotes Coating, Y denotes Adhesive  
 2) Refer to Figure 2 for failure mode

**2. TABER ABRASION (ASTM D4060: 2010)**

<b>Sample Reference</b>	<b>DANTE FLOOR</b>		
Type of Wheel	H-22		
Number of cycles	1000		
Test Condition	23 °C, 50% RH		
<b>Specimen Reference</b>	<b>Test 1</b>	<b>Test 2</b>	<b>Average</b>
Weigh Loss, g	0.999	0.739	0.87

**Remarks:** Abrasion loss for plain concrete was 1.5 g



### 3. SLIP RESISTANCE TEST (WET PENDULUM TEST) (SS485: 2011)

Specimen Ref: DANTE FLOOR							
Specimen ID	1st Swing	2nd Swing	3rd Swing	4th Swing	5th Swing	Mean Value (BPN)	Classification
Specimen 1	55	54	54	53	53	53	-
Specimen 2	54	54	53	53	53	53	
Specimen 3	55	55	53	52	52	52	
Specimen 4	54	54	54	53	53	53	
Specimen 5	54	53	53	53	53	53	
<b>Mean British Pendulum Number</b>						53	<b>W</b>

#### CLASSIFICATION OF PEDESTRAIN SURFACE MATERIALS ACCORDING TO WET PENDULUM TEST:

Classification	Wet Pendulum* Mean BPN	Contribution of the floor surface to the risk of slipping when wet
V	> 54	Very Low
W	45 to 54	Low
X	35 to 44	Moderate
Y	25 to 34	High
Z	< 25	Very High

\* Four S rubber values

#### Remarks:

Location of Test: Laboratory	Type of Test (Fixed/ Unfixed): Unfixed
Temperature at Test: 21.8 °C	Extent & Type of Cleaning: -
Humidity at Test: 77.8%	Type of Rubber Used: Four S

Mean BPN Value = Mean of 3rd, 4th and 5th swing

### 4. IMPACT RESISTANCE (ASTM D2794: 1993 (2010))

Sample Reference	DANTE FLOOR
Date of Test	25-Feb-15
Test Condition	24.0 °C; 56 % RH
Type of Test Method	Instrusion
Diameter of Punch, mm	ø 12.7
Thickness of Coating, mm	0.460
Substrate Coating, mm	0.656
Type of Metal	Aluminium
Impact Failure End Point (kg-m)	0.300

## 5. CHEMICAL RESISTANCE (ASTM D1308: 2002 (2013))

Sample Reference	DANTE FLOOR
Date of Test	24-Feb-15
Method	Immersion
Test Condition	40 °C for 8 hours
Chemical	Observation
10 % Sodium chloride	No discoloration, change in gloss, blistering, softening, swelling and loss of adhesion
10% Hydrochloric acid	
10% Sulphuric acid	

## 6. STAIN RESISTANCE (ISO 10545-14: 1995 (ADOPTED))

Sample Reference	DANTE FLOOR
Date of Stain	19-Mar-15
Date of Test	20-Mar-15
Type of Stain	Classification
Coffee	Class 5
Tea	
Orange Juice	
Oil	
Coke	

Remarks: Refer to Figure 4

Classification:

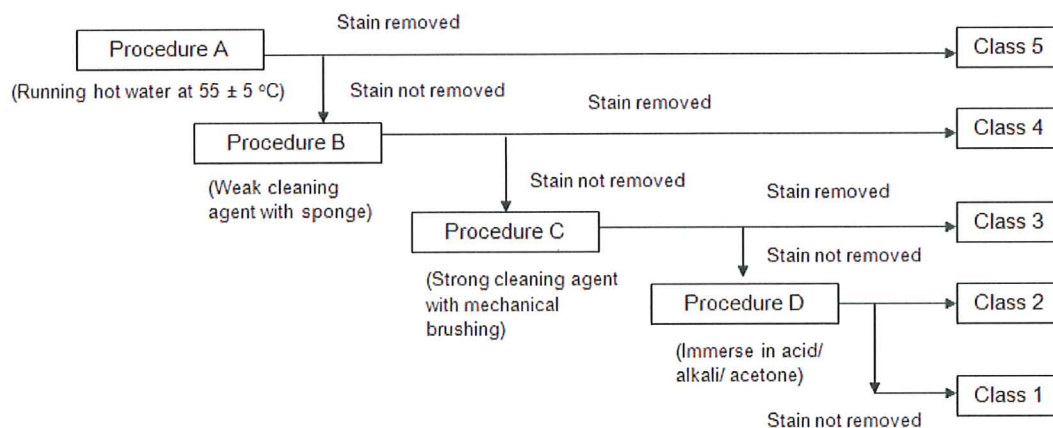






Figure 1: DANTE FLOOR (sample as received)

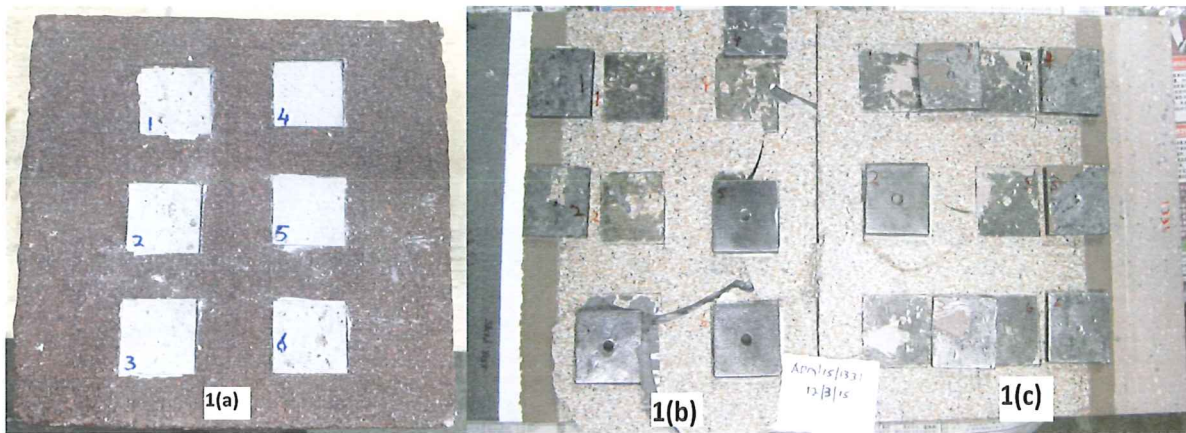


Figure 2. Adhesion to substrate (Failure mode)



Figure 3. Chemical Resistance (Left: before immersion, Right: after immersion)



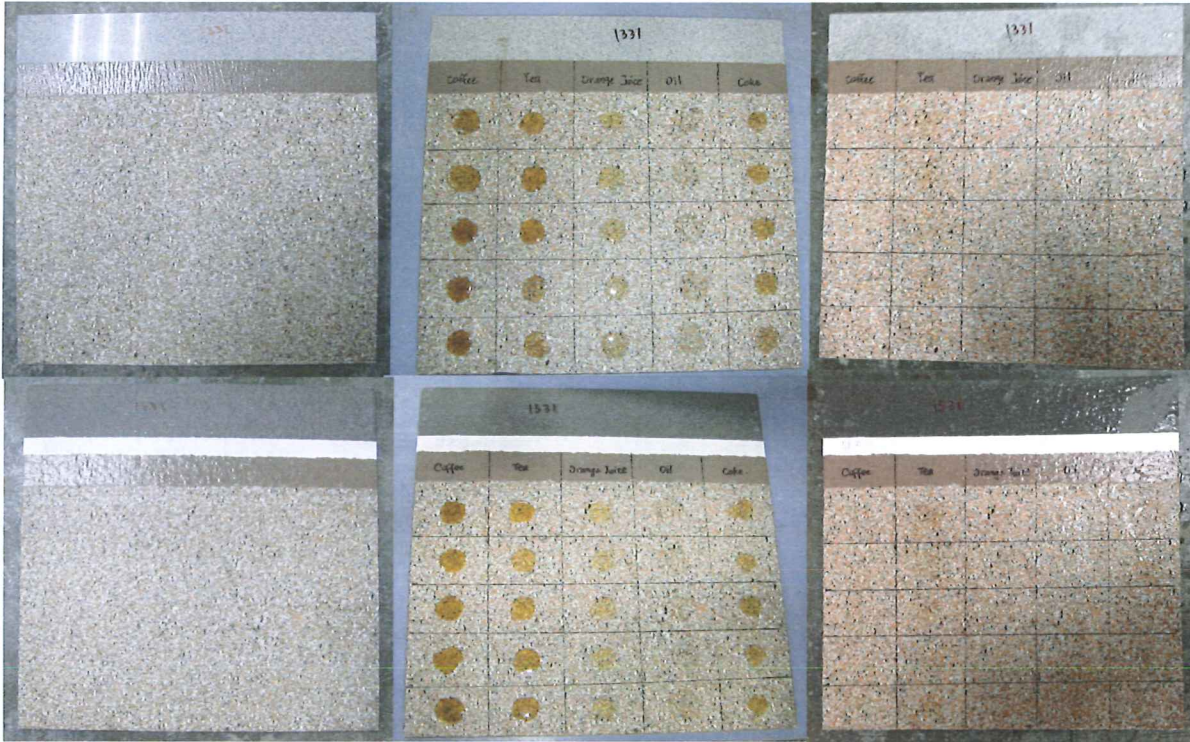


Figure 4. Stain Resistance Test

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