



## Test Report

Test Report No.: HL/MT/240822017

ULR No.: TC1171224000002180F

Issued To: ESSENCE BUILDWARE PVT. LTD.

Issue Date: 06-09-2024

### TEST REPORT OF TILE

**Name of Agency** : ESSENCE BUILDWARE PVT. LTD.  
**Address** : OFFICE NO CH-08, EDEN CERAMIC CITY, 8A NATIONAL HIGHWAY,  
MORBI, GUJARAT, 363642, INDIA  
**Sample Name** : Pressed Ceramic Tiles (Glazed Vitrified Tiles)  
**Trademark** : ESSENCE TILES  
**Sample Code** : Not Mentioned  
**Sample Received on** : 22-08-2024 **Date of Start of Testing** : 22-08-2024  
**Analysis End On** : 06-09-2024

### SAMPLE DETAILS

**Type** : Dry Pressed Ceramic Tiles water absorption ( $E_v \leq 0.5\%$ )  
**Group** : Bla ( Annexure-G)  
**Nominal Size (N)** : 1200 x 600 x 8.5 mm (Rectified)  
**Work Size** : 1200 x 600 mm  
**Nature of Surface** : Glazed(GL)  
**Quantity of sample** : 40 Pieces  
**Batch No./Lot No.** : A-08  
**Date of Manufacturing** : 01-07-2024  
**Design** : CEMENTARE PEACH  
**Indication of First Quality** : Provided (Premium)  
**Country of Origin** : India  
**Any Other Information** : Declared Thickness 8.5 mm  
**Total Weight of Box** : Provided (27.5 kg Approx per box)  
**Specification** : ISO: 13006 Third Edition 2018-09 (Ceramic tiles- Definitions, Classification, Characteristics and marking)  
**Reference Standards** : ISO: 10545 (Part - 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16) with Latest Edition.



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### A. Determination of Dimensions and Surface Quality

Reference Standard : ISO: 10545 (Part - 2) - 2018

#### (a) Dimensions

##### (i) Measurements of Average Size Lengthwise (Measurement of Length)

a) Description of tiles :	Pressed Ceramic Tiles				
b) Number of Specimen:	5 Whole Tiles				
c) Nominal Size:	1200	x	600	x	8.5 mm
d) Work Size:	1200	x	600	x	8.5 mm
e) Thickness:	8.5 mm				
f) Instruments Used:	Vernier Caliper				

#### Average Size Lengthwise

Parameters	Number of Specimens				
	1	2	3	4	5
Individual Size (mm) side 1 Lengthwise	1200.26	1200.14	1200.28	1200.16	1200.30
Individual Size (mm) side 2 Lengthwise	1200.20	1200.18	1200.22	1200.10	1200.24
Average Size of each Specimen(mm) Both Sides Lengthwise	1200.23	1200.16	1200.25	1200.13	1200.27
<b>Average Size of 5 specimens (mm) Lengthwise</b>	<b>1200.208 mm</b>				
Deviation of the average size of each specimen from the work size (mm) Lengthwise	0.230	0.160	0.250	0.130	0.270
<b>Deviation of the average size for the average of 5 specimens (mm) lengthwise</b>	<b>0.208 mm</b>			Required Value: $\pm 1.0$ mm	
Deviation of the average size of each specimen from the work size (%) Lengthwise	0.019	0.013	0.021	0.011	0.022
<b>% Deviation of the average size from the average of 5 Specimens Lengthwise</b>	<b>0.017 %</b>			Required Value: $\pm 0.3$ %	
Deviation of the average size of each specimen from the average of 5 specimen (mm) Lengthwise	0.022	-0.048	0.042	-0.078	0.062
Deviation of the average size of each specimne from average of 5 specimens (%) Lengthwise	0.002	-0.004	0.003	-0.006	0.005

**Remark: Conforms**

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**A. Determination of Dimensions and Surface Quality**

**Reference Standard : ISO: 10545 (Part - 2) - 2018**

**(ii) Measurements of Average Size Widthwise (Measurements of Width)**

- a) Description of tiles : Pressed Ceramic Tiles
- b) Number of Specimen: 5 Whole Tiles
- c) Nominal Size: 1200 x 600 x 8.5 mm
- d) Work Size: 1200 x 600 x 8.5 mm
- e) Thickness: 8.5 mm
- f) Instruments Used: Vernier Caliper

Average Size Widthwise Parameters	Number of Specimens				
	1	2	3	4	5
Individual Size (mm) side 1 Widthwise	600.06	600.20	600.10	600.08	600.16
Individual Size (mm) side 2 Widthwise	600.12	600.14	600.06	600.18	600.16
Average Size of each Specimen(mm) Both Sides Widthwise	600.090	600.170	600.080	600.130	600.160
<b>Average Size of 5 specimens (mm) Widthwise</b>	<b>600.126 mm</b>				
Deviation of the average size of each specimen from the work size (mm) Widthwise	0.090	0.170	0.080	0.130	0.160
<b>Deviation of the average size for the average of 5 specimens (mm) Widthwise</b>	<b>0.126 mm</b>			Required Value: $\pm 1.0$ mm	
Deviation of the average size of each specimen from the work size (%) Widthwise	0.015	0.028	0.013	0.022	0.027
<b>% Deviation of the average size from the average of 5 Specimens Widthwise</b>	<b>0.021 %</b>			Required Value: $\pm 0.3$ %	
Deviation of the average size of each specimen from the average of 5 specimen (mm) Widthwise	-0.036	0.044	-0.046	0.004	0.034
Deviation of the average size of each specimen from average of 5 specimens (%) Widthwise	-0.006	0.007	-0.008	0.001	0.006

**Remark: Conforms**



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### A. Determination of Dimensions and Surface Quality

Reference Standard : ISO: 10545 (Part - 2) - 2018

#### (iii) Measurements of Thickness

- a) Description of tiles : Pressed Ceramic Tiles  
 b) Number of Specimen: 5 Whole Tiles  
 c) Nominal Size: 1200 x 600 x 8.5 mm  
 d) Work Size: 1200 x 600 x 8.5 mm  
 e) Thickness: 8.5 mm  
 f) Instruments Used: Micrometer

Thickness Parameters	Number of Specimens				
	1	2	3	4	5
Thickness (mm) Position 1	8.57	8.46	8.43	8.60	8.59
Thickness (mm) Position 2	8.34	8.38	8.58	8.45	8.36
Thickness (mm) Position 3	8.47	8.44	8.39	8.52	8.49
Thickness (mm) Position 4	8.50	8.51	8.41	8.38	8.56
Average Thickness (mm)	8.470	8.448	8.453	8.488	8.500
<b>Average Thickness of 5 specimens (mm) all positions</b>	<b>8.472 mm</b>				
Deviation of the average thickness of each tile from the work size thickness(mm)	-0.030	-0.053	-0.047	-0.013	0.000
<b>Deviation of the average thickness from the average of 5 specimens (mm)</b>	<b>-0.029 mm</b>		Required Value: $\pm 0.5$ mm		
Deviation of the average thickness of each specimen from the work size (%)	-0.353	-0.618	-0.559	-0.147	0.000
<b>% Deviation of the average thickness from the average of 5 Specimens</b>	<b>-0.335 %</b>		Required Value: $\pm 5.0$ %		

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### A. Determination of Dimensions and Surface Quality

Reference Standard : ISO: 10545 (Part - 2) - 2018

#### (iv) Measurements of Straightness of Sides

Straightness of Sides	Number of Specimens					
	1	2	3	4	5	
(a) Lengthwise						
Straightness of sides ( mm) side 1	-0.19	-0.09	-0.08	-0.05	0.02	
Straightness of sides ( mm) side 2	-0.03	-0.21	0.12	0.29	-0.19	
Maximum deviation of Straightness of both sides ( mm)	0.29 mm					Required Value: ± 0.8 mm
	-0.21 mm					
Maximum deviation from straightness related to the corresponding work size (%)	0.024 %					Required Value: ± 0.3 %
	-0.018 %					
(b) Widthwise						
Straightness of sides ( mm) side 1	-0.17	-0.05	0.00	-0.06	-0.12	
Straightness of sides ( mm) side 2	0.04	-0.23	-0.12	-0.14	0.10	
Maximum deviation of Straightness of both sides ( mm)	0.10 mm					Required Value: ± 0.8 mm
	-0.23 mm					
Maximum deviation from straightness related to the corresponding work size (%)	0.017 %					Required Value: ± 0.3 %
	-0.038 %					

Remark: Conforms

#### (v) Measurements of Rectangularity

Rectangularity of Sides	Number of Specimens					
	1	2	3	4	5	
(a) Lengthwise						
Rectangularity (mm) side 1	-0.21	-0.08	0.28	-0.04	0.01	
Rectangularity (mm) side 1	-0.27	0.54	-0.20	0.45	-0.24	
Maximum deviation of Rectangularity of both sides ( mm)	0.54 mm					Required Value: ± 1.5 mm
	-0.27 mm					
Maximum deviation from Rectangularity related to the corresponding work size (%)	0.045 %					Required Value: ± 0.3 %
	-0.023 %					
(b) Widthwise						
Rectangularity ( mm) side 1	0.09	0.04	0.10	-0.31	-0.24	
Rectangularity ( mm) side 2	0.19	0.15	-0.33	-0.32	-0.02	
Maximum deviation of Rectangularity of both sides ( mm)	0.19 mm					Required Value: ± 1.5 mm
	-0.33 mm					
Maximum deviation from Rectangularity related to the corresponding work size (%)	0.032 %					Required Value: ± 0.3 %
	-0.055 %					

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**A. Determination of Dimensions and Surface Quality**      Reference Standard : ISO: 10545 (Part - 2) - 2018

### (vi) Measurements of Surface Flatness (Curvature and Warpage)

#### A. Centre Curvature:

Centre Curvature	Number of Specimens					Required Value
	1	2	3	4	5	
Centre curvature (mm) Diagonal 1	-0.87	-0.30	0.10	0.56	-0.40	± 1.8 mm
Centre curvature (mm) Diagonal 2	-0.02	0.13	0.22	0.01	0.37	
<b>Maximum centre curvature related to the diagonal work size (mm)</b>	<b>0.56 mm</b> <b>-0.87 mm</b>					± 0.4 %
<b>Maximum centre curvature related to the diagonal calculated from work size (%)</b>	<b>0.042 %</b> <b>-0.065 %</b>					

Remark: Conforms

#### B. Edge Curvature of Length

(a) Lengthwise	1	2	3	4	5	Required Value
Edge curvature(mm) side 1	-0.58	0.05	0.41	-0.08	-0.47	± 1.8 mm
Edge curvature(mm) side 2	-0.39	0.14	-0.56	-0.21	-0.53	
<b>Maximum edge curvature related to the corresponding work size (mm)</b>	<b>0.41 mm</b> <b>-0.58 mm</b>					± 0.4 %
<b>Maximum edge curvature related to the corresponding work size (%)</b>	<b>0.034 %</b> <b>-0.048 %</b>					

#### C. Edge Curvature of Width

(b) Widthwise	1	2	3	4	5	Required Value
Edge curvature(mm) side 1	0.26	-0.43	-0.07	-0.10	-0.24	± 1.8 mm
Edge curvature(mm) side 2	0.24	0.03	-0.41	-0.27	0.28	
<b>Maximum edge curvature related to the corresponding work size (mm)</b>	<b>0.28 mm</b> <b>-0.43 mm</b>					± 0.4 %
<b>Maximum edge curvature related to the corresponding work size (%)</b>	<b>0.047 %</b> <b>-0.072 %</b>					

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**A. Determination of Dimensions and Surface Quality**      **Reference Standard : ISO: 10545 (Part - 2) - 2018**

### (vi) Measurements of Surface Flatness (Curvature and Warpage)

#### D. Warpage

##### (a) Lengthwise

	1	2	3	4	5	
Warpage (mm) side 1	0.48	0.10	-0.65	-0.11	0.26	
Warpage (mm) side 2	0.42	0.12	-0.58	0.60	0.87	
<b>Maximum warpage related to the diagonal from work size (mm)</b>	<b>0.87 mm</b>					Required Value: $\pm 1.8$ mm
	<b>-0.65 mm</b>					
<b>Maximum warpage related to the diagonal from work size (%)</b>	<b>0.065 %</b>					Required Value: $\pm 0.4$ %
	<b>-0.048 %</b>					

#### E. Warpage

##### (b) Widthwise

	1	2	3	4	5	
Warpage (mm) side 1	-0.68	0.42	0.59	0.97	0.45	
Warpage (mm) side 2	0.15	0.04	-0.41	-0.11	-0.07	
<b>Maximum warpage related to the diagonal from work size (mm)</b>	<b>0.97 mm</b>					Required Value: $\pm 1.8$ mm
	<b>-0.68 mm</b>					
<b>Maximum warpage related to the diagonal from work size (%)</b>	<b>0.072 %</b>					Required Value: $\pm 0.4$ %
	<b>-0.051 %</b>					

Remark: Conforms



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### A. Determination of Dimensions and Surface Quality

Reference Standard : ISO: 10545 (Part - 2) - 2018

#### (vii) Measurements of Surface Quality

- a) Description of tiles : Pressed Ceramic Tiles  
 b) Number of Specimen: 20 Whole Tiles  
 c) Nominal Size: 1200 x 600 x 8.5 mm  
 d) Work Size: 1200 x 600 x 8.5 mm  
 e) Thickness: 8.5 mm  
 f) Instruments Used: Fluorescent Lighting of Colour, Temp., Meter Rule, Light

Number of Specimen	Cracks	Crazing	Dry Spot	Unevenness	Pin Hole	Glaze Devitrification	Specks and Spots	Under glaze fault	Decorating fault	Chip	Blister	Rough Edge	Polishing defect
1	C	C	C	C	C	C	C	C	C	C	C	C	C
2	C	C	C	C	C	C	C	C	C	C	C	C	C
3	C	C	C	C	C	C	C	C	C	C	C	C	C
4	C	C	C	C	C	C	C	C	C	C	C	C	C
5	C	C	C	C	C	C	C	C	C	C	C	C	C
6	C	C	C	C	C	C	C	C	C	C	C	C	C
7	C	C	C	C	C	C	C	C	C	C	C	C	C
8	C	C	C	C	C	C	C	C	C	C	C	C	C
9	C	C	C	C	C	C	C	C	C	C	C	C	C
10	C	C	C	C	C	C	C	C	C	C	C	C	C
11	C	C	C	C	C	C	C	C	C	C	C	C	C
12	C	C	C	C	C	C	C	C	C	C	C	C	C
13	C	C	C	C	C	C	C	C	C	C	C	C	C
14	C	C	C	C	C	C	C	C	C	C	C	C	C
15	C	C	C	C	C	C	C	C	C	C	C	C	C
16	C	C	C	C	C	C	C	C	C	C	C	C	C
17	C	C	C	C	C	C	C	C	C	C	C	C	C
18	C	C	C	C	C	C	C	C	C	C	C	C	C
19	C	C	C	C	C	C	C	C	C	C	C	C	C
20	C	C	C	C	C	C	C	C	C	C	C	C	C

Remark: - C = Conform the Requirement

**Procedure:** Tile have been Placed in the observation table under  $275 \pm 25$  lux light by 6000 K lighting source and observed for the surface defects and Intentional effects-

**Observation:** No cracks, crazing, dry spots, unevenness, pin hole, glaze devitrification, specks or spots, underglaze fault, polishing defects, polishing effects, decorating fault, chip, blister, rough edge, welt, etc. have been Observed. Also In order to judge whether there is a defect or an intentional decorative effect, the intentionality and aesthetics of the effect have been assessed, including a review of the manufacturer documentation. Cracks, chipped edges and chipped corners have not been detected. 100 % Tile is free from Visual Defects.

**Required Value:** Tiles should not have Above mentioned Defects in 95 % Tiles Observed

Remark: **Conforms**



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### B. Physical Property

#### (i) Water Absorption

Reference Standard : ISO: 10545 (Part - 3) - 2018

Sample Size: 200x200x8.5 mm

Specimen Number	Mass of the Dry Sample (gm) (M1)	Mass of the Wet Sample (gm) (M2)	Water absorption of Individual Specimen (%) (M2-M1) x 100/M1
1	768.52	768.75	0.0299
2	776.18	776.39	0.0271
3	754.06	754.32	0.0345
4	764.71	764.96	0.0327
5	788.37	788.56	0.0241
6	773.11	773.32	0.0272
7	768.42	768.68	0.0338
8	784.67	784.88	0.0268
9	779.16	779.40	0.0308
10	756.31	756.52	0.0278
11	749.65	749.90	0.0333
12	772.03	772.23	0.0259

Average Water Absorption of the all specimens tested in %

0.0295 %

Required Value Max. 0.5 %

Individual Max. Value of Water Absorption of the Specimen in %

0.0345 %

Required Value Max. 0.6 %

Remark: Conforms

#### (ii) Modulus of Rupture

Reference Standard : ISO: 10545 (Part - 4) - 2019

Specimen Number	Breaking Load (Newton) F	Span between the support rods (mm) l <sub>2</sub>	Width of the test Specimen (mm) b	Minimum thickness of the test specimen measured after the along the broken edge (mm) h	Modulus of Rupture of Individual Specimen (N/mm <sup>2</sup> ) 3F <sub>l</sub> /2bh <sup>2</sup>
1	856.0	580	300	8.06	38.21
2	843.5	580	300	8.15	36.83
3	875.0	580	300	8.17	38.02
4	851.0	580	300	8.06	37.99
5	848.0	580	300	8.10	37.48
6	816.0	580	300	8.03	36.70
7	829.5	580	300	8.12	36.48

Average Breaking Load, N

845.57 Newton

Average Modulus of Rupture, N/mm<sup>2</sup>

37.39 N/mm<sup>2</sup>

Required Value: 35 N/mm<sup>2</sup>

Individual Minimum Modulus of Rupture, N/mm<sup>2</sup>

36.48 N/mm<sup>2</sup>

Required Value: 32 N/mm<sup>2</sup>

\* Note: Testing has been performed on cut tiles, test specimen size(600x300 mm)

Remark: Conforms

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### (iii) Breaking Strength

Reference Standard : ISO: 10545 (Part - 4) - 2019

Specimen Number	Breaking Load (Newton) F	Span between the support rods (mm) $l_2$	Width of the test Specimen (mm) b	Breaking Strength of Individual Specimen (N) $F_l/b$
1	856.0	580	300	1654.93
2	843.5	580	300	1630.77
3	875.0	580	300	1691.67
4	851.0	580	300	1645.27
5	848.0	580	300	1639.47
6	816.0	580	300	1577.60
7	829.5	580	300	1603.70

Average Breaking Load, N

845.57 Newton

Average Breaking Strength, N

1634.77 Newton

Required Value: Min 1300 Newton

\* Note: Testing has been performed on cut tiles, test specimen size(600x300 mm)

Remark: Conforms

### (iv) Determination of Impact Resistance by measurement of coefficient of restitution

Reference Standard : ISO: 10545 (Part - 5) - 1996

Specimen Number	Dropping height of the ball (h1) mm	Indentation or Cracking	Coefficient of restitution of Specimen
1	1000	No Indentation or Cracking	0.776
2	1000	No Indentation or Cracking	0.784
3	1000	No Indentation or Cracking	0.794
4	1000	No Indentation or Cracking	0.778
5	1000	No Indentation or Cracking	0.780

Average Coefficient of Restitution of the all specimens tested

0.782

Required Value : Min 0.55 Conforms

Any indentation or Cracking in the Test Specimen

No Indentation or Cracking Observed in all the test specimen tested

### (v) Determination of Resistance to surface abrasion for glazed tiles

Reference Standard : ISO: 10545 (Part - 7) - 1996

Specimen Number	Abrasion stage at Revolutions	Failure Occur	Class of stain resistance for tiles of Abrasion	Average Class of stain resistance for tiles of Abrasion
1	100	No	NA	3
2	150	No	NA	
3	600	No	NA	
4	750	Yes	3	
5	1500	NA	NA	
6	2100	NA	NA	
7	6000	NA	NA	
8	12000	NA	NA	

Resistance to surface abrasion of glazed tiles intended for use on floors

Class 3, Failure occurred at 750 Revolutions

Required Vale: NA

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**(vi) Determination of Linear Thermal Expansion**

Reference Standard : ISO: 10545 (Part - 8) - 2014

Coefficient of Linear Thermal Expansion

Test Parameters	Length of Test Specimen at Ambient Temperature	Ambient Temperature	Length Increase at 100°C in mm	Required	Results
a. Coefficient of linear thermal expansion, ambient to 100°C, Specimen 1	25.28	26.5	0.004	NA	2.15 x 10 <sup>-6</sup>
b. Coefficient of linear thermal expansion, ambient to 100°C, Specimen 2	25.37	27.1	0.004	NA	2.16 x 10 <sup>-6</sup>
<b>Average Coefficient of linear thermal expansion, ambient to 100°C</b>				NA	2.16 x 10 <sup>-6</sup>

Remark: Conforms

**(vii) Determination of Resistance to Thermal Shock**

Reference Standard : ISO: 10545 (Part - 9) - 2013

i) Water Absorption Coefficient: 0.0295%

Specimen Number	Visual defect examine before the test					Visual defect examine after the test				
	Cracks (Naked eye)	Crazing (Naked eye)	Dryspot (Naked eye)	Using Methylene Blue Staining (Naked eye)	Using Methylene Blue Staining (Naked eye)	Cracks (Naked eye)	Crazing (Naked eye)	Dryspot (Naked eye)	Using Methylene Blue Staining (Naked eye)	Using Methylene Blue Staining (Naked eye)
1	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
2	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
3	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
4	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
5	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.

Remarks and Observation: No visual defects like Crack, Crazing, Dry Spots in all the five test specimen.

Remark: Conforms



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**(viii) Determination of Moisture Expansion**

Reference Standard : ISO: 10545 (Part - 10) - 2021

Specimen Number	Length of Specimen after re-firing (mm)		Length of Specimen after treatment in boiling water (mm)		Moisture Expansion of each test Specimen (mm/m)
	Initial Length (mm)	Length after 3 h from the initial measurement	Length After 1 h removal from the boiling	Length after 3 h from the first measurement	
1	100.362	100.362	100.364	100.363	0.00996
2	100.184	100.184	100.186	100.185	0.00998
3	100.326	100.326	100.328	100.327	0.00997
4	100.271	100.271	100.273	100.272	0.00997
5	100.298	100.298	100.300	100.300	0.01994
<b>Average Moisture Expansion (mm/m)</b>					0.01197
<b>Maximum Value of Moisture Expansion (mm/m)</b>			0.01994	<b>Required Value</b>	<b>Max. 0.6 mm/m</b>

Remark: Conforms

**(ix) Determination of Craze Resistance for glazed tiles**

Reference Standard : ISO: 10545 (Part - 11) - 1994

Specimen Number	Examine the test Specimen for Craze	Test Condition for the Specimen
1	No Craze	Kept in Autoclave at Pressure 500±20 kPa, Steam Temperature 159±1°C
2	No Craze	
3	No Craze	
4	No Craze	
5	No Craze	

Remark: No test specimen shows any sign of Craze after performing the test.

Remark: Conforms

**(x) Determination of Frost Resistance**

Reference Standard : ISO: 10545 (Part - 12) - 1995

Specimen Number	Visual defect examine before the test				Visual defect examine after the test					
	Cracks	Craze	Dryspot	Using Methylene Blue Staining	Cracks	Craze	Dryspot	Using Methylene Blue Staining		
1	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
2	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
3	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
4	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
5	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
6	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
7	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
8	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
9	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.
10	Satisfac.	Satisfac.	Satisfac.	Satisfac.	Satisfac.	No Def.	No Def.	No Def.	No Def.	No Def.

Remark: All the test specimen having no visual defects after 100 cycles freeze of thaw test

Remark: Conforms



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### (xi) Determination of Small Colour Differences

Reference Standard : ISO: 10545 (Part - 16) - 2010

Observation No.	1	2	3	4	5
Observation Value $\Delta E$	0.2	0.4	0.3	0.5	0.2
Average Value of colour Difference $\Delta E$	0.32			Req. Value < 0.75	

Remark: Conforms

### C. Chemical Property

#### (i) Determination of Chemical Resistance

Reference Standard : ISO: 10545 (Part - 13) - 2016

#### a. House hold chemical Resistance:

Specimen Number	Characteristic/ Test	Requirements	Test Results	Remark
1	Ammonium Chloride solution 100 gm/L	Min. class B(V)	<b>Class-A(V)</b> No visual change	Conforms
2		Min. class B(V)	<b>Class-A(V)</b> No visual change	
3		Min. class B(V)	<b>Class-A(V)</b> No visual change	

#### b. Swimming Pool Salt:

Specimen Number	Characteristic/ Test	Requirements	Test Results	Remark
1	Sodium Hypochlorite Solution 20mg/l	Min. class B(V)	<b>Class-A(V)</b> No visual change	Conforms
2		Min. class B(V)	<b>Class-A(V)</b> No visual change	
3		Min. class B(V)	<b>Class-A(V)</b> No visual change	

#### c. Low Concentration (L):

Specimen Number	Characteristic/ Test	Requirements	Test Results	Remark
1	i) Hydrochloric Acid solution 3% (v/v)	As per Manufacturer	<b>Class-LA(V)</b> No visual change	Conforms
2		As per Manufacturer	<b>Class-LA(V)</b> No visual change	
3		As per Manufacturer	<b>Class-LA(V)</b> No visual change	
1	ii) Citric acid Solution 100 gm/l	As per Manufacturer	<b>Class- LA(V)</b> No visual change	Conforms
2		As per Manufacturer	<b>Class- LA(V)</b> No visual change	
3		As per Manufacturer	<b>Class- LA(V)</b> No visual change	
1	iii) Potassium Hydroxide Solution 30gm/l	As per Manufacturer	<b>Class- LA(V)</b> No visual change	Conforms
2		As per Manufacturer	<b>Class- LA(V)</b> No visual change	
3		As per Manufacturer	<b>Class- LA(V)</b> No visual change	

#### d. High Concentration (H):

Specimen Number	Characteristic/ Test	Requirements	Test Results	Remark
1	i) Hydrochloric Acid Solution 18% (v/v)	As per Manufacturer	<b>Class-HA(V)</b> No visual change	Conforms
2		As per Manufacturer	<b>Class-HA(V)</b> No visual change	
3		As per Manufacturer	<b>Class-HA(V)</b> No visual change	
1	ii) Lactic Acid Solution 5% (v/v)	As per Manufacturer	<b>Class- HA(V)</b> No visual change	Conforms
2		As per Manufacturer	<b>Class- HA(V)</b> No visual change	
3		As per Manufacturer	<b>Class- HA(V)</b> No visual change	

\*Note : "(V)" stands for normal classification

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Specimen Number	Characteristic/ Test	Requirements	Test Results	Remark
1	iii) Potassium Hydroxide Solution 100gm/l	As per Manufacturer	Class- HA(V) No visual change	Conforms
2			Class- HA(V) No visual change	
3			Class- HA(V) No visual change	

\*Note : "(V)" stands for normal classification

### (ii) Determination of Resistance to stains

Reference Standard : ISO: 10545 (Part - 14) - 2015

#### a. Stain Leaving Trace:

Specimen Number	Characteristic/ Test	Requirements	Test Results	Remark
1	Green Staining Agent in light oil (Cr2O3 in light oil), for all tiles except green colored tiles	Min Class 3	Class 5	Conforms
2		Min Class 3	Class 5	
3		Min Class 3	Class 5	
4		Min Class 3	Class 5	
5		Min Class 3	Class 5	

#### b. Stain having chemical/oxidizing action:

Specimen Number	Characteristic/ Test	Requirements	Test Results	Remark
1	Iodine, 13gm/l solution in alcohol	Min Class 3	Class 5	Conforms
2		Min Class 3	Class 5	
3		Min Class 3	Class 5	
4		Min Class 3	Class 5	
5		Min Class 3	Class 5	

#### c. Stain Forming a film:

Specimen Number	Characteristic/ Test	Requirements	Test Results	Remark
1	Olive oil	Min Class 3	Class 5	Conforms
2		Min Class 3	Class 5	
3		Min Class 3	Class 5	
4		Min Class 3	Class 5	
5		Min Class 3	Class 5	



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#### C. Chemical Property

##### (iii) Determination of Lead and Cadmium given off by tiles

Reference Standard : ISO: 10545 (Part - 15) - 2021

##### Lead Release (mg/l & mg/dm<sup>2</sup>)

Specimen Number	Characteristic/ Test Parameter	Requirements	Test Results	Remark
1	Mass of lead Extracted per unitof Surface ρ <sub>A</sub> (Pb), mg/dm <sup>2</sup>	0.8 mg/dm <sup>2</sup>	Not Detected (Detection Limit 0.005)	
2	Mass of lead Extracted per unitof Surface ρ <sub>A</sub> (Pb), mg/dm <sup>2</sup>	0.8 mg/dm <sup>2</sup>	Not Detected (Detection Limit 0.005)	Conforms
3	Mass of lead Extracted per unitof Surface ρ <sub>A</sub> (Pb), mg/dm <sup>2</sup>	0.8 mg/dm <sup>2</sup>	Not Detected (Detection Limit 0.005)	

##### Cadmium Release (mg/l & mg/dm<sup>2</sup>)

Specimen Number	Characteristic/ Test Parameter	Requirements	Test Results	Remark
1	Mass of cadmium extracted per unitof Surface ρ <sub>A</sub> (Cd), mg/dm <sup>2</sup>	0.07 mg/dm <sup>2</sup>	Not Detected (Detection Limit 0.005)	
2	Mass of cadmium extracted per unitof Surface ρ <sub>A</sub> (Cd), mg/dm <sup>2</sup>	0.07 mg/dm <sup>2</sup>	Not Detected (Detection Limit 0.005)	Conforms
3	Mass of cadmium extracted per unitof Surface ρ <sub>A</sub> (Cd), mg/dm <sup>2</sup>	0.07 mg/dm <sup>2</sup>	Not Detected (Detection Limit 0.005)	

**Conformity Statement: The Sample provided by the Party for testing as per ISO 13006: 2018, Conforms the Requirements of the Specifications mentioned and other test methods used.**

Opinion and Interpretation: Not Applicable

Reviewed By

For, Hexiqon Laboratory Pvt. Ltd.



Karan Singh




(Authorised Signatory)

Note:

1. This report, in full or in part, shall not be published, advertised, used for any legal action, unless prior permission has been secured from the Director of Laboratory.
2. This test report is ONLY FOR THE SAMPLE TESTED.

.....End of Report.....