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Test Report

Test Report No.: **HL/MT/220108005**

Issued To: SIMONZA TILES LLP

ULR No.: TC902222000000121F

Issue Date: 09-04-2022

TEST REPORT OF TILE

Name of Agency : SIMONZA TILES LLP
Address : SURVEY NO.168/1,168/2/p1,168/2/p2,169/2, OPP. AMARNATH POWER HOUSE TAL. WANKANER, MORBI, GUJARAT, 363621, INDIA
Sample Name : Pressed Ceramic Tiles (Glazed Porcelain Tiles)
Make : SIMONZA TILES
Sample Code : Not Mentioned
Sample Received on : 30-03-2022
Analysis End On : 09-04-2022

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 9.0 mm (Rectified)
Work Size : 1200 x 600 mm
Nature of Surface : Glazed(GL)Polished
Quantity of sample : 40 Pieces
Batch No./Lot No. : 104
Date of Manufacturing : 26-02-2022
Design : DYNAMO
Indication of First Quality : Provided (Premium)
Country of Origin : India
Any Other Information : Declared Thickness 9.0 mm
Total Weight of Box : Provided (29.0 kg Approx per box)
Specification : **EN 14411: 2016 Ceramic tiles- Definition, classification, characteristics, assessment and verification of constancy of performance and marking**
Reference Standards : EN ISO: 10545 (Part - 2, 3, 4, 5, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16) with Latest Edition.



Test Report

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A. Determination of Dimensions and Surface Quality

Reference Standard : EN ISO: 10545 (Part - 2) - 2019

(a) Dimensions

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

a) Description of tiles :	Glazed Ceramic Tiles					
b) Number of Specimen:	10 Whole Tiles					
c) Nominal Size:	1200	x	600	x	9.0	mm
d) Work Size:	1200	x	600	x	9.0	mm
e) Thickness:	9.0	mm				
f) Instruments Used:	Vernier Caliper					

Average Size Lengthwise

Parameters	Number of Specimens									
	1	2	3	4	5	6	7	8	9	10
Individual Size (mm) side 1 Lengthwise	1200.08	1200.18	1200.20	1200.14	1200.18	1200.10	1200.18	1200.10	1200.04	1200.08
Individual Size (mm) side 2 Lengthwise	1200.12	1200.10	1200.06	1200.04	1200.16	1200.14	1200.16	1200.16	1200.20	1200.18
Average Size of each Specimen(mm) Both Sides Lengthwise	1200.10	1200.14	1200.13	1200.09	1200.17	1200.12	1200.17	1200.13	1200.12	1200.13
Average Size of 10 specimens (mm) Lengthwise	1200.130 mm									
Deviation of the average size of each specimen from the work size (mm) Lengthwise	0.100	0.140	0.130	0.090	0.170	0.120	0.170	0.130	0.120	0.130
Deviation of the average size for the average of 10 specimens (mm) lengthwise	0.130 mm					Required Value: ± 2.0 mm				
Deviation of the average size of each specimen from the work size (%) Lengthwise	0.008	0.012	0.011	0.008	0.014	0.010	0.014	0.011	0.010	0.011
% Deviation of the average size from the average of 10 Specimens Lengthwise	0.011 %					Required Value: ± 0.6 %				
Deviation of the average size of each specimen from the average of 10 specimen (mm) Lengthwise	-0.030	0.010	0.000	-0.040	0.040	-0.010	0.040	0.000	-0.010	0.000
Deviation of the average size of each specimen from average of 10 specimens (%) Lengthwise	-0.002	0.001	0.000	-0.003	0.003	-0.001	0.003	0.000	-0.001	0.000

Remark: Conforms

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A. Determination of Dimensions and Surface Quality

Reference Standard : EN ISO: 10545 (Part - 2) - 2019

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

a) Description of tiles :	Glazed Ceramic Tiles					
b) Number of Specimen:	10 Whole Tiles					
c) Nominal Size:	1200	x	600	x	9.0	mm
d) Work Size:	1200	x	600	x	9.0	mm
e) Thickness:	9.0	mm				
f) Instruments Used:	Vernier Caliper					

Average Size Widthwise

Parameters	Number of Specimens									
	1	2	3	4	5	6	7	8	9	10
Individual Size (mm) side 1 Widthwise	600.10	600.08	600.18	600.10	600.06	600.08	600.14	600.12	600.14	600.10
Individual Size (mm) side 2 Widthwise	600.06	600.04	600.14	600.12	600.04	600.12	600.10	600.10	600.06	600.12
	600.080	600.060	600.160	600.110	600.050	600.100	600.120	600.110	600.100	600.110

each specimen from the work size (mm) Widthwise	0.080	0.060	0.160	0.110	0.050	0.100	0.120	0.110	0.100	0.110
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Deviation of the average size for the average of 10 specimens (mm) Widthwise

0.100 mm

Required Value: ± 2.0 mm

Deviation of the average size of each specimen from the work size (%) Widthwise	0.013	0.010	0.027	0.018	0.008	0.017	0.020	0.018	0.017	0.018
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% Deviation of the average size from the average of 10 Specimens Widthwise

0.017 %

Required Value: ± 0.6 %

Deviation of the average size of each specimen from the average of 10 specimen (mm) Widthwise	-0.020	-0.040	0.060	0.010	-0.050	0.000	0.020	0.010	0.000	0.010
---	--------	--------	-------	-------	--------	-------	-------	-------	-------	-------

Deviation of the average size of each specimen from average of 10 specimens (%) Widthwise	-0.003	-0.007	0.010	0.002	-0.008	0.000	0.003	0.002	0.000	0.002
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Remark: Conforms

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A. Determination of Dimensions and Surface Quality

Reference Standard : EN ISO: 10545 (Part - 2) - 2019

(iii) Measurements of Thickness

a) Description of tiles :	Glazed Ceramic Tiles					
b) Number of Specimen:	10 Whole Tiles					
c) Nominal Size:	1200	x	600	x	9.0	mm
d) Work Size:	1200	x	600	x	9.0	mm
e) Thickness:	9.0	mm				
f) Instruments Used:	Micrometer					

Thickness Parameters	Number of Specimens									
	1	2	3	4	5	6	7	8	9	10
Thickness (mm) Position 1	9.13	9.01	8.98	8.94	8.98	9.13	9.17	8.95	8.81	8.81
Thickness (mm) Position 2	8.99	9.10	8.80	9.21	8.99	9.10	8.91	8.80	8.88	9.14
Thickness (mm) Position 3	8.96	8.82	9.22	9.00	8.86	8.88	9.10	9.09	9.23	9.26
Thickness (mm) Position 4	9.23	9.30	9.29	9.11	8.81	8.80	9.22	9.03	9.00	8.91
Average Thickness (mm)	9.078	9.058	9.073	9.065	8.910	8.978	9.100	8.968	8.980	9.030
Average Thickness of 10 specimens (mm) all positions	9.024 mm									
Deviation of the average thickness of each tile from the work size thickness(mm)	0.078	0.058	0.072	0.065	-0.090	-0.023	0.100	-0.033	-0.020	0.030
Deviation of the average thickness from the average of 10 specimens (mm)	0.024 mm									
Deviation of the average thickness of each specimen from the work size (%)	0.861	0.639	0.806	0.722	-1.000	-0.250	1.111	-0.361	-0.222	0.333
% Deviation of the average thickness from the average of 10 Specimens	0.264 %									

Required Value: ± 0.5 mm

Required Value: ± 5.0 %

Remark: Conforms

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A. Determination of Dimensions and Surface Quality

Reference Standard : EN ISO: 10545 (Part - 2) - 2019

(iv) Measurements of Straightness of Sides

Straightness of Sides

Number of Specimens

(a) Lengthwise	1	2	3	4	5	6	7	8	9	10
Straightness of sides (mm) side 1	0.34	-0.08	-0.35	-0.19	0.03	0.18	-0.29	-0.04	0.27	0.24
Straightness of sides (mm) side 2	0.37	0.26	-0.15	0.27	0.28	0.12	0.36	-0.11	0.33	0.28
Maximum deviation of Straightness of both sides (mm)	0.37 mm		Required Value: ± 1.5 mm							
Maximum deviation from straightness related to the corresponding work size (%)	-0.35 mm									
	0.031 %		Required Value: ± 0.5 %							
	-0.029 %									

(b) Widthwise	1	2	3	4	5	6	7	8	9	10
Straightness of sides (mm) side 1	-0.03	-0.32	0.10	0.40	0.12	-0.28	0.12	0.27	-0.23	-0.17
Straightness of sides (mm) side 2	-0.29	0.37	-0.12	-0.39	0.10	0.28	0.15	-0.35	0.35	0.03
Maximum deviation of Straightness of both sides (mm)	0.40 mm		Required Value: ± 1.5 mm							
Maximum deviation from straightness related to the corresponding work size (%)	-0.39 mm									
	0.067 %		Required Value: ± 0.5 %							
	-0.065 %									

Remark: Conforms

(v) Measurements of Rectangularity

Rectangularity of Sides

Number of Specimens

(a) Lengthwise	1	2	3	4	5	6	7	8	9	10
Rectangularity (mm) side 1	0.02	-0.20	-0.31	0.30	-0.07	-0.25	-0.29	0.05	-0.18	0.32
Rectangularity (mm) side 1	0.08	0.25	0.06	-0.04	0.03	0.35	0.24	-0.11	-0.07	0.03
Maximum deviation of Rectangularity of both sides (mm)	0.35 mm		Required Value: ± 2.0 mm							
Maximum deviation from Rectangularity related to the corresponding work size (%)	-0.31 mm									
	0.029 %		Required Value: ± 0.5 %							
	-0.026 %									

(b) Widthwise	1	2	3	4	5	6	7	8	9	10
Rectangularity (mm) side 1	-0.34	-0.28	0.25	0.26	-0.23	-0.03	-0.01	0.08	0.12	0.25
Rectangularity (mm) side 2	-0.02	0.22	0.21	-0.16	-0.27	-0.11	-0.08	0.23	0.01	0.16
Maximum deviation of Rectangularity of both sides (mm)	0.26 mm		Required Value: ± 2.0 mm							
Maximum deviation from Rectangularity related to the corresponding work size (%)	-0.34 mm									
	0.043 %		Required Value: ± 0.5 %							
	-0.057 %									

Remark: Conforms

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A. Determination of Dimensions and Surface Quality

Reference Standard : EN ISO: 10545 (Part - 2) - 2019

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

A. Centre Curvature:

	Number of Specimens									
Centre Curvature	1	2	3	4	5	6	7	8	9	10
Centre curvature (mm) Diagonal 1	-0.39	0.11	-0.18	-0.06	-0.18	-0.04	-0.09	0.25	-0.37	-0.29
Centre curvature (mm) Diagonal 2	-0.07	0.02	0.29	-0.30	0.12	0.31	-0.20	-0.40	0.03	-0.16
Maximum centre curvature related to the diagonal work size (mm)	0.31 mm	Required Value: ± 2.0 mm								
	-0.40 mm									
Maximum centre curvature related to the diagonal calculated from work size (%)	0.023 %	Required Value: ± 0.5 %								
	-0.030 %									

Remark: Conforms

B. Edge Curvature of Length

(a) Lengthwise	1	2	3	4	5	6	7	8	9	10
Edge curvature(mm) side 1	-0.32	-0.13	0.29	0.19	0.30	-0.18	-0.33	0.07	-0.31	-0.10
Edge curvature(mm) side 2	-0.24	0.07	-0.14	-0.34	-0.30	-0.11	0.04	0.01	0.30	0.33
Maximum edge curvature related to the corresponding work size (mm)	0.33 mm		Required Value: ± 2.0 mm							
	-0.34 mm									
Maximum edge curvature related to the corresponding work size (%)	0.028 %		Required Value: ± 0.5 %							
	-0.028 %									

C. Edge Curvature of Width

(b) Widthwise	1	2	3	4	5	6	7	8	9	10
Edge curvature(mm) side 1	0.34	0.32	-0.36	-0.18	-0.13	-0.06	0.10	-0.40	0.23	-0.34
Edge curvature(mm) side 2	-0.18	-0.05	0.12	-0.13	-0.24	-0.18	0.25	-0.36	0.10	0.27
Maximum edge curvature related to the corresponding work size (mm)	0.34 mm	Required Value: ± 2.0 mm								
	-0.40 mm									
Maximum edge curvature related to the corresponding work size (%)	0.057 %	Required Value: ± 0.5 %								
	-0.067 %									

Remark: Conforms

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A. Determination of Dimensions and Surface Quality

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

D. Warpage

(a) Lengthwise	1	2	3	4	5	6	7	8	9	10
Warpage (mm) side 1	-0.05	0.33	0.31	-0.35	-0.32	-0.14	0.27	-0.33	0.35	0.29
Warpage (mm) side 2	-0.36	-0.37	-0.13	0.20	-0.22	-0.06	0.10	0.00	0.11	-0.31
Maximum warpage related to the diagonal from work size (mm)	0.35 mm		Required Value: ± 2.0 mm							
	-0.37 mm									
Maximum warpage related to the diagonal from work size (%)	0.026 %		Required Value: ± 0.5 %							
	-0.028 %									

E. Warpage

(b) Widthwise	1	2	3	4	5	6	7	8	9	10
Warpage (mm) side 1	0.13	-0.03	-0.05	0.06	-0.34	-0.13	-0.34	-0.15	0.17	-0.37
Warpage (mm) side 2	-0.02	-0.35	0.20	0.17	-0.36	-0.18	0.02	-0.09	0.12	-0.38
Maximum warpage related to the diagonal from work size (mm)	0.20 mm		Required Value: ± 2.0 mm							
	-0.38 mm									
Maximum warpage related to the diagonal from work size (%)	0.015 %		Required Value: ± 0.5 %							
	-0.028 %									

Remark: Conforms

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A. Determination of Dimensions and Surface Quality

Reference Standard : EN ISO: 10545 (Part - 2) - 2019

(vii) Measurements of Surface Quality

- a) Description of tiles : Glazed Ceramic Tiles
b) Number of Specimen: 20 Whole Tiles
c) Nominal Size: 1200 x 600 x 9.0 mm
d) Work Size: 1200 x 600 x 9.0 mm
e) Thickness: 9.0 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 ± 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 : EN ISO: 10545 (Part - 3) - 2018

Sample Size: 200x200 x 9.0mm

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	804.36	804.66	0.0373
2	798.02	798.27	0.0313
3	811.84	812.08	0.0296
4	804.12	804.42	0.0373
5	795.88	796.13	0.0314
6	791.52	791.80	0.0354
7	809.63	809.94	0.0383
8	797.71	797.99	0.0351
9	800.84	801.08	0.0300
10	801.95	802.20	0.0312
11	792.78	793.01	0.0290
12	810.57	810.80	0.0284

Average Water Absorption of the all specimens tested in %

0.0329 %

Required Value Max. 0.5 %

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

0.0383 %

Required Value Max. 0.6 %

Remark: Conforms

(ii) Modulus of Rupture

Reference Standard : EN 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	Minimum thickness of the test specimen measured after the along the broken edge (mm) h	Modulus of Rupture of Individual Specimen (N/mm ²) $3Fl_2/2bh^2$
1	1015.5	580	300	8.74	38.55
2	1009.5	580	300	8.74	38.32
3	925.0	580	300	8.74	35.12
4	979.0	580	300	8.74	37.17
5	1014.5	580	300	8.74	38.51
6	1046.5	580	300	8.74	39.73
7	1058.5	580	300	8.74	40.19

Average Breaking Load, N

1006.93 Newton

Average Modulus of Rupture, N/mm²

38.23 N/mm²

Required Value: 35 N/mm²

Individual Minimum Modulus of Rupture, N/mm²

35.12 N/mm²

Required Value: 32 N/mm²

**Note testing has been performed on cut tiles test specimen size (600x300 mm)

Remark: Conforms

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(iii) Breaking Strength

Reference Standard : EN 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) Fl ₂ /b
1	1015.5	580	300	1963.30
2	1009.5	580	300	1951.70
3	925.0	580	300	1788.33
4	979.0	580	300	1892.73
5	1014.5	580	300	1961.37
6	1046.5	580	300	2023.23
7	1058.5	580	300	2046.43

Average Breaking Load, N 1006.93 Newton

Average Breaking Strength, N 1946.73 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 : EN ISO: 10545 (Part - 5) - 2006

Specimen Number	Dropping height of the ball (h ₁) mm	Indentation or Cracking	Coefficient of restitution of Specimen
1	1000	No Indentation or Cracking	0.786
2	1000	No Indentation or Cracking	0.798
3	1000	No Indentation or Cracking	0.790
4	1000	No Indentation or Cracking	0.798
5	1000	No Indentation or Cracking	0.786

Average Coefficient of Restitution of the all
specimens tested

0.792

Required Value : Min 0.55

Any indentation or Cracking in the Test
Specimen

No Indentation or Cracking Observed in all the test specimen tested

Remark: Conforms

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(v) Determination of Slipperiness:

Reference Standard : CEN/TS 16165

Slipperiness (PTV)	1	2	3	4	5
	46	46	47	46	46

Average Slipperiness (PTV) **46 PTV** R rating : **R 11** Angle of Inclination: **24.0**

Remake: Conforms

(vi) Determination of Resistance to surface abrasion for glazed tiles

Reference Standard : EN ISO: 10545 (Part - 7) - 2007

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	4
2	150	No	NA	
3	600	No	NA	
4	750	No	NA	
5	1500	No	NA	
6	2100	No	NA	4
7	6000	Yes	4	
8	12000	NA	NA	

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

Class 4, Passed 2100 Revolutions

Required Vale: NA

Remark: Conforms

(vii) Determination of Tactility

Reference Standard : CEN/TS 15209

Observation: No Tactile surface observed Plane Surface observed.

Remake: Conforms

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(viii) Determination of Linear Thermal Expansion

Reference Standard : EN ISO: 10545 (Part - 8) - 2016

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 2	25.31	22.4	0.006	NA	3.05×10^{-6}
b. Coefficient of linear thermal expansion, ambient to 100°C, Specimen 2	25.41	22.9	0.006	NA	3.06×10^{-6}
Average Coefficient of linear thermal expansion, ambient to 100°C			3.06×10^{-6}	NA	

(ix) Determination of Resistance to Thermal Shock

Reference Standard : EN ISO: 10545 (Part - 9) - 2016

i) Water Absorption Coefficient: 0.0329 %

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)	Cracks (Naked eye)	Crazing (Naked eye)	Dryspot (Naked eye)	Using Methylene Blue Staining (Naked eye)	Cracks (Naked eye)	Crazing (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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(x) Determination of Moisture Expansion

Reference Standard : EN 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	100.282	100.282	100.284	100.283	0.00997
2	100.302	100.302	100.305	100.304	0.01994
3	100.261	100.261	100.262	100.262	0.00997
4	100.297	100.297	100.300	100.299	0.01994
5	100.254	100.254	100.257	100.256	0.01995
Average Moisture Expansion (mm/m)					0.01596
Maximum Value of Moisture Expansion (mm/m)			0.01995	Required Value	Max. 0.6 mm/m

Remark: Conforms

(xi) Determination of Craze Resistance for glazed tiles

Reference Standard : EN ISO: 10545 (Part - 11) - 2007

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

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(xii) Determination of Reaction to fire:

Reference Standard : EN ISO: 1182: 2020

Observation:

All tiles under observation conforms to **Class A1** when tested Non-combusible Test of method prescribed.

Remake: Conforms

(xiii) Determination of Frost Resistance

Reference Standard : EN ISO: 10545 (Part - 12) - 2007

Specimen Number	Visual defect examine before the test					Visual defect examine after the test				
	Cracks	Crazing	Dryspot	Using Methylene Blue Staining	Cracks	Crazing	Dryspot	Using Methylene Blue Staining	Cracks	Crazing
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 defect after 100 cycles freeze thaw test

Remark: Conforms

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(xiv) Small Colour Differences

Reference Standard : EN ISO: 10545 (Part - 16) - 2014

****NOT APPLICABLE**

As EN ISO 10545-16 is applicable only to plain coloured ceramic tiles.

C. Chemical Property

(i) Determination of Chemical Resistance

Reference Standard : EN ISO: 10545 (Part - 13) - 2018

a. House hold chemical Resistance:

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

c. Low Concentration (L):

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

d. High Concentration (H):

Specimen Number	Characteristic/ Test	Requirements	Test Results	Remark
1	i) Hydrochloric Acid Solution 18% (v/v)	Min Class HB(V)	Class-HA(V) No visual change	Conforms
2		Min Class HB(V)	Class-HA(V) No visual change	
3		Min Class HB(V)	Class-HA(V) No visual change	
1	ii) Lactic Acid Solution 5% (v/v)	Min Class HB(V)	Class- HA(V) No visual change	Conforms
2		Min Class HB(V)	Class- HA(V) No visual change	
3		Min Class HB(V)	Class- HA(V) No visual change	

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Specimen Number	Characteristic/ Test	Requirements	Test Results	Remark
1	iii) Potassium Hydroxide	Min Class HB(V)	Class- HA(V)	Conforms
2	Solution 100gm/l	Min Class HB(V)	Class- HA(V)	
3		Min Class HB(V)	Class- HA(V)	

(ii) Determination of Resistance to stains

Reference Standard : EN ISO: 10545 (Part - 14) - 2016

a. Stain Leaving Trace:

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

b. Stain having chemical/oxidizing action:

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

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C. Chemical Property

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

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

Lead Release (mg/l & mg/dm²)

Specimen Number	Characteristic/ Test Parameter	Requirements	Test Results	Remark
1	Mass of lead Extracted per unit of Surface $\rho_A(\text{Pb})$, mg/dm ²	4.0 mg/dm ²	Not Detected	
2	Mass of lead Extracted per unit of Surface $\rho_A(\text{Pb})$, mg/dm ²	4.0 mg/dm ²	Not Detected	Conforms
3	Mass of lead Extracted per unit of Surface $\rho_A(\text{Pb})$, mg/dm ²	4.0 mg/dm ²	Not Detected	

Cadmium Release (mg/l & mg/dm²)

Specimen Number	Characteristic/ Test Parameter	Requirements	Test Results	Remark
1	Mass of cadmium extracted per unit of Surface $\rho_A(\text{Cd})$, mg/dm ²	0.3 mg/dm ²	Not Detected	
2	Mass of cadmium extracted per unit of Surface $\rho_A(\text{Cd})$, mg/dm ²	0.3 mg/dm ²	Not Detected	Conforms
3	Mass of cadmium extracted per unit of Surface $\rho_A(\text{Cd})$, mg/dm ²	0.3 mg/dm ²	Not Detected	

Conformity Statement: The Sample provided by the Party for testing as per EN 14411: 2016, Conforms the Requirements of the Specifications mentioned and other test methods used.

Opinion and Interpretation: Not Applicable

Reviewed By



Karan Singh

For, Hexiqon Laboratory




(Authorised Signatory)

Note:

- 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 CEO of Laboratory.
- This test report is ONLY FOR THE SAMPLE TESTED.

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