



Certificate No. : TC-6265

# NATIONAL CERA LAB

## CERAMIC LABORATORY

Shop No. 16, 17, Ground Floor, Dariyalal Plaza,  
Nr. Argil Ceramic, 8-A, N/H, Morbi - 363 642 (Guj.) INDIA.

Ph. : 02822 244049, Mo. : 98252 62649, 96622 97005, 98257 99418  
E-mail : nationalceralab@rediffmail.com

**As per all Countries Export report of Wall, Floor, Vitrified Tiles & Sanitary Wares**

Ref. No.

Date :

NCL/ Glazed Vitrified Tile / ISO/08/404/2019-20  
URL - TC6265190000000643P

Issue Date:- Aug.21.2019

Receive date of test sample 17.08.2019

Issued To

M/s FINE STONE GRANITO PVT .LTD.

At - Gala Chowkdi, 8A N.H. , Gala

Morbi , Dist - Morbi ; Gujarat ; India

SAMPLE DESCRIPTION & NAME: Ceramic Glazed Vitrified Tile - size 600x600 mm ( Rectified ) as submitted by the party. Sample not drawn by National Cera Lab

TEST DESIRED:

As Per ISO 13006 : 2018 Group B I a ( Annex G )

A) *Dimention and surface quality*

- (I) LENGTH & WIDTH
- (ii) THICKNESS
- (iii) STRAIGHTNESS OF SIDES ( Facial sides )
- (iv) RECTANGULARITY
- (v) SURFACE FLATNESS
- (vi) SURFACE QUALITY

- (vi) THERMAL SHOCK RESISTANCE
- vii) CRAZING RESISTANCE
- viii) MOISTURE EXPANSION
- (x) SMALL COLOUR DIFFERENCES
- xi) IMPACT RESISTANCE
- xii) BULK DENSITY
- xiii) SCRACH HARDNESS

B) *Physical Property*

- (i) WATER ABSORPTION %
- (ii) BREAKING STRENGTH
- (iii) MODULUS OF RUPTURE ( MOR ) N/mm<sup>2</sup>
- (iv) RESISTANCE TO SURFACE ABRASION
- (v) CO EFFICIENT OF LINEAR THERMAL EXPANTION

C) *Chemical Property*

- (I) Resistance to Stain
- (II) Resistance To Acid & Alkali
- (III) Resistance to house chemical
- (IV) Resistance to swimming pool salt
- (V) LEAD AND CADMIUM RELEASE in mg/dm<sup>2</sup>

TEST REPORT

## A) DIMANTION AND SURFACE QUALITY

## III) DEVIATION IN LENGTH (l) &amp; WIDTH(w) :-

	Require	Test Method	Result
I) (a) The deviation in percentage of the average size of each tile ( 2 or 4 sides ) from the work size ( W )	± 1 mm	ISO10545 - 2	+ 0.12 mm - 0.00 mm
(b) The deviation in percentage of the average size of each tile ( 2 or 4 sides ) from the average size of the 10 test specimen ( 20 or 40 sides )	± 1 mm	ISO10545 - 2	+ 0.10 mm - 0.00 mm

II) THICKNESS :- 8.75 mm The deviation in percent of the average thickness of each tile from the work thickness	± 0.5 mm	ISO10545 - 2	+ 0.08 mm - 0.00 mm
--	----------	--------------	------------------------

III) STRAIGHTNESS OF SIDES :- The maximum deviation from straightness, in percent related to corresponding work size.	±0.8 mm	ISO10545 - 2	+ 0.10 mm - 0.12 mm
--	---------	--------------	------------------------

IV) RECTANGULARITY :- The maximum deviation from rectangularity in percent related to corresponding work size.	±0.8 mm	ISO10545 - 2	+ 0.12 mm - 0.14 mm
---	---------	--------------	------------------------

(Page 1 - 4)



# NATIONAL CERA LAB

## CERAMIC LABORATORY

Shop No. 16, 17, Ground Floor, Dariyalal Plaza,  
Nr. Argil Ceramic, 8-A, N/H, Morbi - 363 642 (Guj.) INDIA.

Ph. : 02822 244049, Mo. : 98252 62649, 96622 97005, 98257 99418  
E-mail : nationalceralab@rediffmail.com

### As per all Countries Export report of Wall, Floor, Vitrified Tiles & Sanitary Wares

Ref. No.

Date :

#### TEST REPORT

Aug. 21, 2019  
Result

**V) SURFACE FLATNESS :-**

The maximum deviation from flatness, in (percent)

**( a ) Centre Curvature**

Centre curvature related to diagonal calculated from the work size.

**Require Test Method**

± 1.8 mm ISO10545 - 2

+ 0.10 mm  
- 0.00 mm

**(b) Edge curvature**

Edge curvature related to the corresponding work size.

± 2 mm

+ 0.12 mm  
- 0.00 mm

**( c ) Warpage**

Warpage related to diagonal calculated from the work size.

± 1.8 mm

+ 0.10 mm  
- 0.00 mm

**VI) SURFACE QUALITY**

Tested by the visually

Minimum 95 percent of tile shall be free from visible defect that would impair the appearance of the major area of tiles.

No any defect found in the tiles surface area and lot pass the test.

95%

ISO10545 - 2

99%

**PHYSICAL PROPERTIES :-**

**I) WATER ABSORPTION:-**

	%
1	0.092 %
2	0.099 %
3	0.088 %
4	0.076 %
5	0.078 %

Average 0.087 %

**Test Method**

ISO 10545 - 3

Require As per ISO 13006

EV ≤ 0.50%

Individual maximum 0.60%

**II) BREAKING STRENGTH IN N**

1	1512.22 N	6	1636.82 N
2	1566.78 N	7	1642.56 N
3	1606.48 N	8	1598.84 N
4	1588.74 N	9	n.d. N
5	1622.52 N	10	n.d. N

Average 1596.87 N

**Test Method**

ISO 10545 - 4

**Require**

Thickness ≥ 7.5 mm  
Not less than 1300

**III) MODULUS OF RUPTUREE ( M O R )**

1	44.12 N/mm <sup>2</sup>	6	44.68 N/mm <sup>2</sup>
2	43.98 N/mm <sup>2</sup>	7	44.76 N/mm <sup>2</sup>
3	44.08 N/mm <sup>2</sup>	8	43.92 N/mm <sup>2</sup>
4	43.82 N/mm <sup>2</sup>	9	n.d. N/mm <sup>2</sup>
5	43.66 N/mm <sup>2</sup>	10	n.d. N/mm <sup>2</sup>

Average 44.13 N/mm<sup>2</sup>

**Test Method**

ISO 10545 - 4

**Require**

Minimum 35  
Individual minimum 32



# NATIONAL CERA LAB

## CERAMIC LABORATORY

Shop No. 16, 17, Ground Floor, Dariyalal Plaza,  
Nr. Argil Ceramic, 8-A, N/H, Morbi - 363 642 (Guj.) INDIA.

Ph. : 02822 244049, Mo. : 98252 62649, 96622 97005, 98257 99418  
E-mail : nationalceralab@rediffmail.com

### As per all Countries Export report of Wall, Floor, Vitrified Tiles & Sanitary Wares

Ref. No.

Date :

Aug. 21- 2019

#### TEST REPORT

	Test Method	Require	Result
IV) RESISTANCE TO SURFACE ABRASION :- Visual failure was observed at 6000 revolution when the tiles ware subjected to abrasion stage of 150,600,750,1500 , 2100, up to 6000 revolution, 2100 revolution pass.	ISO 10545-7	2100 revolution pass	Class - IV
V) COEFFICIENT OF LINEAR THERMAL EXPANTION:- Expantion from ambient temperature to 100°C ( K - 1)	ISO 10545 - 8	9X10 <sup>-6</sup> Max	4.84x10 <sup>-6</sup>
VI) THERMAL SHOCK RESISTANCE.      15/145°C 10cycle	ISO 10545 - 9	10 cycle,Min	Confirm
VII CRAZING RESISTANCE :- NO CRAZING IN TWO CYCLE ONE HOUR DURATION At a steam pressure of 750±20Kpa 6 Nos of tiles ware subjected to autoclaving at a steam pressure of 750 ± 20 Kpa of saturated steam for Two hour consisting of Two cycle. None of the tiles show any sign of the crazing on the glaze surface and the lot pass the test.	ISO 10545-11	No Crazing	Confirm
VIII) MOISTURE EXPANSION mm/m	ISO 10545 - 10	0.02 mm/m max	no expansion
IX) SMALL COLOUR DIFFERENCES	ISO 10545 - 16	ΔE < 0.75	No Difference
X) IMPACT RESISTANCE Coefficient of restitution ( COR )	ISO 10545 - 5	0.55 Min	0.57
XI) SRACH HARDNESS OF SURFACE ( MOH'S SCALE) :-	IS 13630 - 13	5 moh's scal	5 Moh's
XII) BULK DENSITY , IN ( g/cc )	ISO 10545 - 3	2.2 min	2.2684g/cc
<b>C CHEMICAL PROPERTIES:</b>			
I) RESISTANCE TO STAIN Red Past in Light Oil ( Fe2O3 ) Iodine in Alcohol 13g/l Olive Oil	Stain put on tiles up to 24 hrs Stain remove by hot water Stain remove by weak cleaning agent Stain remove by hot water	ISO 10545-14	Require Min Class - 3 Min Class - 3 Min Class - 3 Result Class - 5 Class - 4 Class - 5
II) Acid & Alkalies :- A Low Concentrations ( L ) i) Hydrochloric Acid solution 3% ( V/V ) ii) Citric Acid Soln. 100gm/l	No visual changes observed after immersion for 4 days ; Pencil lines removed with wet wiping removed No visual changes observed after immersion for 24 hrs ; Pencil lines removed with wet wiping removed	ISO 10545-13	Min Class-GLC Min Class-GLC Class GLA Class GLA
iii) Potassium Hydroxide Soln 30gm/l	No visual changes observed after immersion for 4 days ; Pencil lines removed with wet wiping removed		Min Class-GLC Class GLA

(page 3 of 4)



# NATIONAL CERA LAB

## CERAMIC LABORATORY

Shop No. 16, 17, Ground Floor, Dariyalal Plaza,  
Nr. Argil Ceramic, 8-A, N/H, Morbi - 363 642 (Guj.) INDIA.

Ph. : 02822 244049, Mo. : 98252 62649, 96622 97005, 98257 99418  
E-mail : nationalceralab@rediffmail.com

### As per all Countries Export report of Wall, Floor, Vitrified Tiles & Sanitary Wares

Ref. No.

Date :

#### TEST REPORT

Aug. 21- 2019

	Test Method	ISO 10545-13	Require	Result
<b>B High Concentration ( H )</b>				
i) Hydrochloric Acid solution 18%( V/V )	No visual changes observed after immersion for 4 days ; Pencil lines removed with soft wet cloth.		Min Class GHC	Class GHA
ii) Lactic Acid Soln. 5% ( v/v )	No visual changes observed after immersion for 4 days ; Pencil lines removed with soft wet cloth.		Min Class GHC	Class GHA
iii) Potassuim Hydroxide Soln. 200gm/l	visual changes observed after immersion for 4 days ; Pencil lines removed with soft wet cloth.		Min Class GHC	Class GHA
<b>III). House hold chemical resistance</b>				
Ammonium chloride solution 100G/L	No visual changes observed after immersion for 24 hrs ; Pencil lines removed with wet wiping removed		Min Class-GC	Class GA
	<b>Test Method</b>	ISO 10545-13		
<b>IV). Swimming pool salt :</b>				
Sodium hypochlorite solution , 20mg/L	No visual changes observed after immersion for 24 hrs ; Pencil lines removed with wet wiping removed		Min Class-GC	Class GA
<b>V) LEAD AND CADMIUM RELEASE in mg/dm<sup>2</sup></b>		ISO 10545 - 15		
<b>LEAD RELEASES</b>			<b>Limit</b>	<b>Result</b>
Test Solution				
Acetic Acid Solution 4% ( v/v ), ( in 960ml distilled water )	Digestion time- 24 hrs ( 20±2° ) Detected by ED XRF		0.1mg/dm <sup>2</sup>	0.00 mg/dm <sup>2</sup>
<b>CADMIUM RELEASE</b>				<b>Result</b>
Test Solution				
Acetic Acid Solution 4% ( v/v ), ( in 960ml distilled water )	Digestion time- 24 hrs ( 20±2° ) Detected by ED XRF		0.1mg/dm <sup>2</sup>	0.00 mg/dm <sup>2</sup>

**CONCLUSION:**

The sample drawn by party from the above lot complies with ISO 13006:2018 Group B1 a  
Test Procedure as per ISO 10545

Authorised signatory :- J.M. Kavar

( Dip in Ceramic Technology )

Name of signatory : J.M. Kavar

Designation of signatory : **NATIONAL CERA LAB**

**PROPRIETOR**

For  
**National Cera Lab**

J.M. Kavar  
( Dip in Ceramic Technology )



(page 4 of 4)