

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 repot of Wall, Floor, Vitrified Tiles & Sanitary Wares

Ref. No.

NCL/Glazed Vitrified Tile /SASO ISO/07/187/2018-19

Jan.07.2019 Issue Date:-

Receive date of test sample: - 03.07.2019

Issued To Issued To

M/s ROYAL EXPORTERS

1101/1102, Nakshtra Heights , 150Feet Ring Road

Opp. Raiya Telphon Exchange , Rajkot - 360005 , Gujarat, India

SAMPLE DECRIPTION & NAME:

Glazed Vitrified Tiles size 600x600mm as submitted by the party.

Sample not drawn by National Cera Lab

TEST DESIRED:

A) Dimantion and surface quality

(I) LENGTH & WIDTH

(ii) THICKNESS

(iii)STRAIGHTNESS OF SIDES (Facial sides)

(iv)RECTANGULARITY

(v) SURFACE FLATNESS

(vi) SURFACE QUALITY

B) Physical Property

(I)WATER ABSORPTION %

(ii)MODULUS OF RUPTURE (MOR) N/mm2

(iiiI)BREAKING STRENGTH

iv) CRAZING RESISTANCE

(v) THERMAL SHOCK RESISTANCE

As SASO ISO 13006:2015 Group B I a

(vi) CO EFFICIENT OF LINEAR THERMAL EXPANTION

(vii) RESISTANCE TO SURFACE ABRASION

(viii) SCRACH HARDNESS

(x) BULK DENSITY

xi) MOISTURE EXPANSION

xi) IMPACT RESISTANCE

Chemical Property

C) (i) Resistance to house chemical

(II) Resistance to swimming pool salt

(III) Resistance To Low Concentration OF Acid & Alkali

(IV) Resistance to Stain

(V)LEAD AND CADIUM RELEASE in mg/dm²

(VI)SMALL COLOUR DIFFERENCES

TEST REPORT

DIMANTION AND SURFACE QUALITY

III) DEVIATION IN LENGTH (I) & WIDTH(w) :-

3.1) (a) The deviation in percentage of the average size of each tile (2 or 4 sides) from the work size (W)		t0.60%	Test Method ISO10545 - 2 SASO ISO10545 - 2	Result + 0.03% - 0.00%
(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)	±0.50%	SASO ISO10545 - 2	+ 0.02% - 0.00%
	ss:- 8.75 mm viation in percent of the average ss of each tile from the work size	±5%	SASO ISO10545 - 2	+ 0.00% - 0.71%

3.3) STRAIGHTNESS OF SIDES :-

thickness

The maxmum deviation from straightness, in percent related to the corresponding work size

3.4) RECTANGULARITY:-

The maximum deviation from rectangularity in percent related to the corresponding work size.

±0.50% SASO ISO10545 - 2

+ 0.04% - 0.05%

±0.50% SASO ISO10545 - 2

+ 0.05%

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4 5	1783.50 N 1801.38 N	10			Require	cs > 0.7.5 mm	
3	1945.90 N	8					
2	1770.45 N	7			SASO ISO	10545 - 4	
1	1719.21 N	6					
EAKING STR	ENGTH IN N			1010			×.
			Avegerege	43.5	2 N/mm²		
5	42.45 N/mm ²	10	46.66	N/mm²			
4	44.28 N/mm ²	9					
3	44.70 N/mm ²	8	43.82	N/mm²		Individual minimu	ım 32
2	41.59 N/mm ²	7	43.65	N/mm²	Require	Minimum 35	
1	40.70 N/mm²	6	44.52	N/mm²		SASO ISO 10545 - 4	
OULUS OF RI							
	Averege	0.12 9					
5	0.112 70	10					
		-					
						Harriada Haxiili	0.00.70
							um 0.60%
							3 130 10000
						Poquiro As por SASO	150 13006
				-			
				ne test.	95%	SASO ISO10545 - 2	95%
imum 95 p	ercent of tile shall be			that			
		gonal calculat	ed				- 0.00%
(c) Wa	rpage				±0.50		+ 0.04%
		to the corresp	onding		±0.50		+ 0.05% - 0.00%
(a) Centre Curvature			±0.50	SASO ISO10545 - 2	- 0.00%		
The maximum deviation from flatness,in (percent)					+ 0.06%		
FACE FLATN	ESS :-				Require	Test Method	Result
	maximum (a) Cei	(a) Centre Curvature Centre curvature related calculated from the work (b) Edge curvature Edge curvature related work size. (c) Warpage Warpage related to diag from the work size. FACE QUALITY Ited by the visually imum 95 percent of tile shall be all impair the appearance of the any defect found in the tiles sur YSICAL PROPERTIES:- TER ABSORPTION:- % 1 0.106 % 2 0.108 % 3 0.109 % 4 0.119 % 5 0.112 % Averege PULUS OF RUPTUREE (MOR) 1 40.70 N/mm² 2 41.59 N/mm² 3 44.70 N/mm² 4 44.28 N/mm² 5 42.45 N/mm² EAKING STRENGTH IN N 1 1719.21 N 2 1770.45 N 3 1945.90 N 4 1783.50 N	maximum deviation from flatness,in (percentary Centre Curvature Centre curvature related to diagonal calculated from the work size. (b) Edge curvature Edge curvature related to the corresponds vork size. (c) Warpage Warpage related to diagonal calculate from the work size. FACE QUALITY Ited by the visually imum 95 percent of tile shall be free from visually imum 95 percent of tile shall be free from visually impair the appearance of the major area of any defect found in the tiles surface area and any defect found in the tiles surface	Maximum deviation from flatness,in (percent) (a) Centre Curvature Centre curvature related to diagonal calculated from the work size. (b) Edge curvature Edge curvature related to the corresponding work size. (c) Warpage Warpage related to diagonal calculated from the work size. FACE QUALITY See	maximum deviation from flatness,in (percent) (a) Centre Curvature Centre curvature related to diagonal calculated from the work size. (b) Edge curvature Edge curvature related to the corresponding work size. (c) Warpage Warpage related to diagonal calculated from the work size. FACE QUALITY ted by the visually imum 95 percent of tile shall be free from visible defect that ald impair the appearance of the major area of tiles. any defect found in the tiles surface area and lot pass the test. YSICAL PROPERTIES: Test Method SASO ISO 10545 - 3 1 0.106 % 6 0.126 % 2 0.108 % 7 0.118 % 3 0.109 % 8 0.108 % 4 0.119 % 9 0.122 % 5 0.112 % 10 0.126 % Averege 0.12 % DULUS OF RUPTUREE (M O R) 1 40.70 N/mm² 6 44.52 N/mm² 2 41.59 N/mm² 7 43.65 N/mm² 4 44.28 N/mm² 9 42.81 N/mm² 5 42.45 N/mm² 10 46.66 N/mm² Avegereg: 43.5 EAKING STRENGTH IN N 1 1719.21 N 6 1923.66 N 7 1881.13 N 3 1945.90 N 8 1902.88 N 4 1783.50 N 9 1872.91 N 5 1801.38 N 10 2030.96 N	Maximum deviation from flatness, in (percent) (a) Centre Curvature	maximum deviation from flatness,in (percent) (a) Centre Curvature Centre curvature related to diagonal calculated from the work size. (b) Edge curvature Edge curvature related to the corresponding work size. (c) Warpage Warpage related to diagonal calculated from the work size. FACE QUALITY ted by the visually imum 95 percent of tile shall be free from visible defect that ald impair the appearance of the major area of tiles. any defect found in the tiles surface area and lot pass the test. 95% SASO ISO10545 - 2 YSICAL PROPERTIES: Test Method TER ABSORPTION: SASO ISO 10545 - 3 1 0.106 % 6 0.126 % 8 8 9 0.128 % 8 1.008 % Individual maximum 4 0.119 % 9 0.122 % 5 0.112 % 10 0.126 % 8 Averege 0.12 % DULUS OF RUPTUREE (M O R) 1 40.70 N/mm² 6 44.52 N/mm² 2 41.59 N/mm² 7 43.65 N/mm² Require A per SASO 3 44.70 N/mm² 8 43.82 N/mm² 4 44.28 N/mm² 9 42.81 N/mm² 5 42.45 N/mm² 10 46.66 N/mm² Avegerege 43.52 N/mm²

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	TEST	REPORT			Jan.07.2019
IV	CRAZING RESISTANCE:- NO CRAZING IN TWO CYCLE ONE H 6 Nos of tiles ware subjected to Kpa of saturated steam for Two None of the tiles show any sign lot pass the test.	autoclaving at a steam phour consisting of Two	pressure of 750 ± 20 cycle.	Require	Result Confirm
V)	THERMAL SHOCK RESISTANCE.	15/145°c 10cycle	SASO ISO 10545 - 9	10 cycle,Min	Confirm
VI)	COEFFICIENT OF LINEAR THERMAL Expantion from ambient temper		SASO ISO 10545 - 8	9X10 ⁻ 6 Max	4.86x10 ⁻ 6
VII)	RESISTANCE TO SURFACE ABRASIO Visual failure was observed at 1 to abrasion stage of 150,600,75	2000 revolution when th			Class - IV
	revolution pass				
VIII)	MOISTURE EXPANSION mm/m		SASO ISO 10545 - 10	0.02 mm/m max	no expansion
IX)	SRACH HARDNESS OF SURFACE (M	MOH'S SCALE) :-	IS 13630 - 13	5 moh's scal	5 Moh's
X)	BULK DENSITY , IN (g/cc)		SASO ISO 10545 - 3	2.2 min	2.2664g/cc
XI)	IMPACT RESISTANCE Coefficient of restitution (COR))	SASO ISO 10545 - 5	0.55 Min	0.57
C	CHEMICAL PROPERTIES:		SASO ISO 10545-13	Require	Result
I).	House hold chemical resistance Ammonium chloride solution 100G/L	e: No visual changes obs for 24 hrs ; Pencil lines wiping removed		Min Class-GC	Class GA
			SASO ISO 10545-13		
II).	Swimming pool salt : Sodium hypochlorite solution , 20mg/L	No visual changes obs for 24 hrs; Pencil lines wiping removed		Min Class-GC	Class GA
Ш	Acid & Alkalies :-		SASO ISO 10545-13	To the state of th	
Á	Low Concentrations (L) Hydrochloric Acid solution 3% (V/V)	w Concentrations (L) No visual changes observed after immersion drochloric Acid solution 3% for 4 days; Pencil lines removed with wet		Min Class-GLC	Class GLA
ii)	Citric Acid Soln. 100gm/l	No visual changes obs for 24 hrs ; Pencil lines wiping removed		Min Class-GLC	Class GLA
		mping removed		(page 3 of 4)	SPOATE Y

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TEST I	REPORT			Jan.07.2019
*	SASO ISO 10	545-13	Require	Result
iii) Potassium Hydroxide Soln 30gm/l	No visual changes observed after for 4 days; Pencil lines removed wiping removed		Min Class-GLC	Class GLA
B High Concentration (H)				
i) Hydrochloric Acid solution 18%(V/V)	No visual changes observed after for 4 days; Pencil lines removed wet cloth.		Min Class GHC	Class GHA
ii) Lactic Acid Soln. 5% (v/v)	No visual changes observed after for 4 days; Pencil lines removed wet cloth.		Min Class GHC	Class GHA
iii Potassuim Hydroxide Soln. 200gm/l	visual changes observed after imm for 4 days; Pencil lines removed wet cloth.		Min Class GHC	Class GHA
	Test Method SASO ISO 10	545-14		
IV) RESISTANCE TO STAIN	Stain put on tiles up to 24 hrs		Require	Result
Red Past in Light Oil (Fe2O3)	Stain remove by hot water		Min Class - 3	Class -5
lodine in Alcohol 13g/l			Min Class - 3	Class -4
Olive Oil	Stain remove by hot water		Min Class - 3	Class -5
V) LEAD AND CADIUM RELEASE in mg/	dm² SASO ISO 10	545 - 15		
Test Solution			Limit	Result
Acietic Acid Solution 4% (v/v), (in 960ml distilled water) CADMIUM RELEASE	Digestion time- 24 hrs (20±2°) Detected by ED XRF		0.1mg/dm ²	0.00 mg/dm ²
Test Solution				Result
Acietic Acid Solution 4% (v/v), (in 960ml distilled water)	Digestion time- 24 hrs (20±2°) Detected by ED XRF		0.1mg/dm²	0.00 mg/dm ²
VI) SMALL COLOUR DIFFERENCES		SASO ISO 10545 -	Δ E < 0.75	No Difference
				200

CONCLUSION:

The sample drawn by party fron the above lot complies with SASO ISO 13006: 2015 Group BI a

Test Procedure as per ISO 10545

Authorised signaatory :- J.M. Kavar

(Dip in Ceramic Technology)

Name of signatory: J.M. Kavar

Designation of signatory ATIONAL

For

National Cera Lab

J.M. Kavar

(Dip in Ceramic Technology)

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