

## LEVANTE BROWN - NORDICO BIANCO - AUSTRAL NERO

TTLBGP:120240-B / TNBGP:120240.B / TANGP:120240.N

**Format:** 120 x 240

CLASIFICACION DEL PRODUCTO ACABADO (UNE-EN-14411)

**Group:** Bla

**Anexo:** G

### TEST DESIRED:

#### AL DIMANTION AND SURTACE QUALITY

- (I) LENGTH & WIDTH
- (II) THICKNESS
- (III) STRAIGHTNESS OF SIDES ( Facial sides )
- (IV) RECTANGULARITY
- (V) SURFACE FLATNESS
- (VI) SURFACE QUALITY

#### BL PHYSICAL PROPERTY

- (i) WATER ABSORPTION %
- (ii) MODULUS OF RUPTURE ( MOR ) N/mm<sup>2</sup>
- (iii) BREAKING STRENGTH
- (iv) CRAZING RESISTANCE
- (v) THERMAL SHOCK RESISTANCE

### AS ISO 13006:2012

- (vi) COEFFICIENT OF LINEAR THERMAL EXPANSION
- (vii) RESISTANCE TO SURFACE ABRASION
- (viii) SCRATCH HARDNESS
- (x) BULK DENSITY
- (xi) MOISTURE EXPANSION
- (xi) IMPACT RESISTANCE

#### CHEMICAL PROPERTY

- C )** (i) Resistance to household chemical
- (II) Resistance to swimming pool salt
- (III) Resistance To Low Concentration OF Acid & Alkali
- (IV) Resistance to Stain
- (V) LEAD AND CADMIUM RELEASE in mg/dm<sup>2</sup>
- (VI) SMALL COLOUR DIFFERENCES

### TEST REPORT

#### DIMANTION AND SURFACE QUALITY

	REQUIRE	TEST METHOD	RESULT
The deviation in percentage of the average size of each tile ( 2 or 4 sides ) from the work size(W)	±0.60%	ISO10545-2	+ 0.02% - 0.00%
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%	ISO10545-2	+ 0.01% - 0.00%
<b>THICKNESS:</b> 9.00mm The deviation in percent of the average thickness of each tile from the work size thickness	±5%	ISO10545-2	+ 0.00% - 1.33%
<b>STRATGHTNESS OF SIDES:</b> The maximum deviation from straightness, in percent related to the corresponding work size	±0.50%	ISO10545-2	+ 0.03% - 0.04%
<b>RECTANGULARITY:</b> The maximum deviation from rectangularity in percent related to the corresponding work size.	±0.50%	ISO10545-2	+ 0.04% - 0.03%
<b>CENTRE CURVATURE:</b> Centre curvature related to diagonal calculated from the work size.	±0.50%	ISO10545-2	+ 0.03% - 0.00%
<b>EDGE CURVATURE:</b> Edge curvature related to the corresponding work size.	±0.50%		+ 0.04% - 0.00%
<b>WARPAGE:</b> Warpage related to diagonal calculated from the work size.	±0.50%		+ 0.03% - 0.00%
<b>(II) SURFACE QUALITY:</b> 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	97%

**PHYSICAL PROPERTIES:**

**TEST METHOD:** iso 10545-3

**I) WATER ABSORPTION:**

1.- 0.107%	6.- 0.102%
2.- 0.103%	7.- 0.104%
3.- 0.112%	8.- 0.103%
4.- 0.110%	9.- n.d.
5.- 0.106%	10.- n.d.

**REQUIRE**

As per ISO 13006  
 <e 0.50%  
 Individual maximum 0.60%

**AVERAGE:** 0.11%

**II) MODULUS OF RUPTUREE (M O R):**

1.- 39.88 N/mm <sup>2</sup>	6.- 40.98 N/mm <sup>2</sup>
2.- 40.82 N/mm <sup>2</sup>	7.- 40.78 N/mm <sup>2</sup>
3.- 41.12 N/mm <sup>2</sup>	8.- 40.86 N/mm <sup>2</sup>
4.- 40.66 N/mm <sup>2</sup>	9.- n.d.
5.- 40.32 N/mm <sup>2</sup>	10.- n.d.

**REQUIRE**

ISO 10545-4  
 Minimum 35  
 Individual maximum 32

**AVERAGE:** 40.38 N/mm<sup>2</sup>

**TEST METHOD:** iso 10545-4

**I) WATER ABSORPTION:**

1.- 1975.50 N	6.- 2076.54 N
2.- 2012.26 N	7.- 2036.58 N
3.- 2124.32 N	8.- 2046.78 N
4.- 2046.48 N	9.- n.d.
5.- 2088.64 N	10.- n.d.

**REQUIRE**

Thickness > e 7.5 mm  
 Not lass than 1300

**IV) 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 glazed surface and the lot pass the test.

	<b>REQUIRE</b>	<b>RESULT</b>
ISO 10545-11		Confirm

**V) THERMAL SHOCK RESISTANCE.**

ISO 10545-9	10 cycle, Min	Confirm
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**VI) COEFFICIENT OF LINEAR THERMAL EXPANTION:**

Expantion from ambient temperature 100° c (K-1)

ISO 10545-8	9x10 <sup>-6</sup> Max	4.86x10 <sup>-6</sup>
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**VII) 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, ctc up to 6000 rpm, 2100 revolution pass.

ISO 10545-7	.	Class-IV
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		<b>REQUIRE</b>	<b>RESULT</b>
<b>VIII) MOISTURE EXPANSION mm/m:</b>	ISO 10545-10	0.02 mm/m max	no expansion
<b>IX) SCRACH HARDNESS OF SURFACE (MOH'S SCALE):</b>	IS 13630-13	5 moh's scal	5 Moh's
<b>X) BULK DENSITY, IN (g/cc)</b>	ISO 10545-3	2.2 min	2.2664g/cc
<b>XI) IMPACT RESISTANCE</b>			
Coefficient of restitution (COR)	ISO 10545-5	0.55 Min	0.57
<b>C. CHEMICAL PROPERTIES:</b>			
I) House hold chemical resistance: No visual changes observed after immersion Ammonium chloride solution 100 G/L	ISO 10545-13	Min Class-GC	Class GA
for 24hrs; Pencil lines removed with wet wiping removed.			
II) Swimming pool salt: No visual changes observed after immersion Sodium hypochlorite solution 20mg/L	SO 10545-13	Min Class-GC	Class GA
for 24hrs; Pencil lines removed with wet wiping removed.			
III) Acid & Alkalies:			
<b>A</b> Low Concentrations (L)			
<b>i</b> ) Hydrochloric Acid solution 3% (V/V)	SO 10545-13	Min Class-GLC	Class GLA
No visual changes observed after immersion for 4 days; Pencil lines removed with wet wiping removed.			
<b>ii</b> ) Citric Acid Soln 100 gm/l		Min Class-GLC	Class GLA
No visual changes observed after immersion for 24hrs; Pencil lines removed with wet wiping removed.			
<b>iii</b> ) Potassium Hydroxide Soln 300gm/l:		Min Class-GLC	Class GLA
No visual changes observed after immersion for 4 days; Pencil lines removed with wet wiping removed			
<b>B</b> High Concentration (H)			
<b>i</b> ) Hydrochloric Acid solution 18% (V/V)		Min Class-GHC	Class GHA
No visual changes observed after immersion for 4 days; Pencil lines removed with soft wet cloth			
<b>ii</b> ) Lactic Acid Soln. 5% (v/v)		Min Class-GHC	Class GHA
No visual changes observed after immersion for 4 days; Pencil lines removed with soft wet cloth			
<b>iii</b> ) Potassium Hydroxide Soln. 200gm/l:		Min Class-GHC	Class GHA
Visual changes observed after immersion for 4 days; Pencil lines removed with soft wet cloth			
<b>IV) RESISTANCE TO STAIN</b>			
Red Past in Light Oil (Fe2O3)	SO 10545-14		
Stain put on tiles up to 24hrs			
Iodine in Alcohol 13g/l Olive Oil.		Min Class-3	Class-5
Stain remove by hot water			
Stain remove by weak cleaning agent		Min Class-3	Class-4
Stain remove by hot water		Min Class-3	Class-5

		<b>REQUIRE</b>	<b>RESULT</b>
<b>V) LEAD AND CADMIUM RELEASE in mg/dm<sup>2</sup></b>			
LEAD RELEASES		ISO 10545-15	
<b>TEST SOLUTION</b>			
Acetic Acid Solution 4% (viv), (in 960ml distilled water)	Digestion time- 24hrs (20±2°) Detected by ED XRF	0.1 mg/dm <sup>2</sup>	0.00 mg/dm <sup>2</sup>
<b>CADMIUM RELEASE</b>			
<b>TEST SOLUTION</b>			
Acetic Acid Solution 4% (viv), (in 960ml distilled water)	Digestion time- 24hrs (20±2°) Detected by ED XRF	0.1 mg/dm <sup>2</sup>	0.00 mg/dm <sup>2</sup>
<b>VI) SMALL COLOUR DIFFERENCES</b>		SO 10545-16	ΔE<0.75
			No difference

## CONCLUSION

The sample drawn by party from the above lot complies with ISO 13006: 2012 Group Bla  
Test Procedure as per ISO 10545