REPORT

Technical Report: (7612)356-0020

January 02, 2013

Bureau Veritas Consumer Products Services Mexico S.A. de C.V.
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TEST REPORT

NOVACERAMIC S.A. DE C.V.
BLVD. EMILIO SANCHEZ PIEDRAS
APIZACO, TLAXCALA.

LAB LOCATION: MEXICO
LAB NUMBER: (7612)356-0020

ATTN: ING. HECTOR MIGUEL PALAFOX F.
CC: /

DATE IN: DECEMBER 21, 2012
MOD. LOG IN: /
DATE OUT: JANUARY 02, 2013
REVISED DATE: /
WORKING DAYS: 7 DAYS

OVERALL RATING	
PASS	
FAIL	
DATA	X

TESTING FOR
WATER ABSORPTION
ASTM C 373-88
THERMAL SHOCK RESISTANCE
ASTM C 484-99
BREAKING STRENGTH
ASTM C 648-04
RESISTANCE TO FREEZE / THAW CYCLING
ASTM C 1026- 87
RESISTANCE TO WEAR
H-4045.2 / ASTM C501

Sample Description:	LOSETA EXTRUIDA RUSTICA									
Manufacturer:	NOVACERAMIC				**P.O. No.:**	/				
Buyer:	/				**Style:**	1				
Country of Origin:	MEXICO				**Country of Destination:**	MEXICO				
Color:	/				**SKU Number:**	/				
Re-test:	**Yes:**		**No:**	X	**Charge Vendor:**	**Yes:**	X	**No:**		
Previous Report No.:	/									

EXECUTIVE SUMMARY:

The SAMPLE is rated as DATA under the ASTM C 373-88 - Water Absorption, ASTM C 484-99 -Thermal Shock Resistance, ASTM C 648-04 - Breaking Strength, ASTM C 1026- 87 - Resistance to Freeze / Thaw Cycling, and H-4045.2 / ASTM C501 - Resistance to Wear Test Requirements.

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TESTING FOR
ASTM C 373-88 - WATER ABSORPTION
ASTM C 484-99 -THERMAL SHOCK RESISTANCE
ASTM C 648-04 - BREAKING STRENGTH
ASTM C 1026- 87 - RESISTANCE TO FREEZE / THAW CYCLING
H-4045.2 / ASTM C501 RESISTANCE TO WEAR

Evaluation	Citation/Method	No. Samples	Criteria	Results	Rating
Water Absorption (not applicable to natural stone)	ASTM C 373-88 (R1999) (mod.)	3	Three (3) tiles are selected and inspected carefully for any visible defects, cracks, etc… The tiles are placed in an oven at 150 ℃ (302 ℉) for 4 hours and then are allowed to cool in desiccators. The dry mass (D) of the tile is then determined. The tiles are then placed in a vessel of distilled water (Without mutual contact) and boiled for 3 hours. The tiles are then allowed to soak for an additional 12 hours. The tiles are then Lightly blotted with a Moistened, lint- Free linen or cotton cloth to remove such water as will drip from the cloth. The saturated mass (M) is then quickly determined. The water absorption (A) is then calculated according to the following formula: A=[(M - D) / D)] X 100	SAMPLE 1= 17.29 % SAMPLE 2= 17.25 % SAMPLE 3= 16.95 % SAMPLE 4= 17.07 % SAMPLE 5= 16.29 % AVERAGE: 16.97 %	DATA

Evaluation	Citation/Method	No. Samples	Criteria	Results	Rating
Thermal Shock Resistance	ASTM C 484-99 (R2003) (mod.)	4	Four (4) tiles are selected and inspected carefully for any visible defects, cracks, etc… For tiles with a water absorption (A) less than or equal to 10%, the tiles are immersed (Without mutual contact) in a constant 15 +/- 5℃ (59 +/- 9℉) wate r bath for 5 minutes. For tiles with a water absorption (A) greater then 10%, the tiles are placed glazed surface down (Without mutual contact) on a covered (Aluminum sheeting) 15 +/- 5°C (59 +/- 9℉) water bath of constant temperature. The tiles are immediately transferred to an oven maintained at 145 +/-5℃ (293 +/- 9℉) and are heated for 20 minutes. The t iles are then immediately transferred back to the low temperature condition. This cycle is repeated 5 Times. The tiles are then inspected for visible defects.	No visual Change	DATA

Evaluation	Citation/Method	No. Samples	Criteria	Results	Rating
Breaking Strength	ASTM C 648-04 (mod.)	4	Four (4) tiles are selected randomly and any loose particles are gently brushed from the back of the specimens. The tiles are placed in an oven at 93℃ (200℉) and heated for 1 hour. The tile is cooled to room temperature while in the closed oven. The tile must be tested within 3 hours, according to the following procedure: The testing platform consists of a steel platform with 3/8" diameter steel rods extending 1" from the upper surface. The rods are configured in an equilateral triangle configuration along a 3 15/32inch diameter circle. The tile is placed on the rods for testing. The Force is applied to the center of the tile by means of a ½ inch diameter stainless steel ball bearing, which is counter sunk in a 3 inch long steel rod. The force is applied at a rate of 2 inches per minute until the tile breaks. The procedure is repeated for a total of 4 tiles and an average breaking force value is generated. **Note:** This procedure is for tile with facial area greater than 62 in^2 only. For other tile, reference ASTM C648 – 98 for correct configuration.	SAMPLE 1= 395.3 lbf SAMPLE 2= 375.8 lbf SAMPLE 3= 363.4 lbf SAMPLE 5= 446.0 lbf AVERAGE: 395.1 lbf	DATA

Evaluation	Citation/Method	No. Samples	Criteria	Results	Rating
Resistance to Freeze / Thaw Cycling	ASTM C 1026- 87 (R2002) (nod.)	5	Drill hole at center of one test tile (For thermocouple lead). Submerge 5 test tiles in water with drilled tile at center for 40 min. Wipe stack lightly with damp cloth, then place in freezer capable of -20℉. Monitor inside freezer temp. (Fr eezer atmosphere) with one thermocouple. Run lead from drilled tile hole in stack (Center of load) to other thermocouple. Record both temps. Hourly until temp. Inside tile stack reaches 0℉ Remove the stack when the center of load has reached 0℉ and promptly thaw in a water bath at 50 - 60℉. Keep a ll tiles submerged for a minimum of 30 min. (Slowly add tiles to maintain water temp.) Remove tiles from water to inspect surfaces for damage, and then re-immerse. Repeat the freezing, thawing, and observation procedure for a total of 3 cycles. Appraise surfaces and record results noting total number of damaged tile (Crazing, chipping, spalling, body checks, or cracks).	No Tiles Damaged	DATA
Resistance to Wear	H-4045.2 / ASTM C501 (R2002)	4	• Shall withstand 1000 cycles of rotary abrasion by H-22 coarse Calibrade wheels with 9.8 N load. • Calculate the average abrasive wear index of the four specimens and also the abrasive wear index for each of the four specimens and record for future comparison. • Use the formula $\mathbf{I_w = 88 / (W_o - W_f)}$, where: $\mathbf{I_w}$ is the abrasive wear index, $\mathbf{W_o}$ is the original weight of the specimen and holder, and $\mathbf{W_f}$ is the final weight of the specimen and holder. **NOTE:** This test may be applied to flat tiles only.	SAMPLE 1 Iw = 8.88 SAMPLE 2 Iw = 7.33 SAMPLE 3 Iw = 14.66 SAMPLE 4 Iw = 22.00 AVERAGE Iw = 13.21	DATA