



# SMITH-EMERY LABORATORIES

An Independent Commercial Testing Laboratory

781 E. Washington Boulevard, Los Angeles, California 90021 ♦ (213) 745-5333 ♦ Fax (213) 741-8621

Project No.: 45717-1  
Lab. No.: T-23-020

June 16, 2023

CLIENT: **NORDIKA**  
ATTN: DECIO MAGNANI  
2400 W. COMPARIS RD. #7  
POMPANO BEACH, FL 33069

Subject: **NORDIKA GLASS MOSAICS 6MM THICK**  
Specification: ASTM C 373  
Source: Submitted to Smith Emery Laboratories by Client on April 26, 2023.

### Report of Test

#### Water Absorption Test (ASTM C 373)

Samples were dried to a constant weight in an oven at 150 °C, then cooled and weighed. Then were immersed in distilled water (boiling vigorously for 5 hours before cooling gradually to a total elapsed time of 29 hours). Samples were removed from water, wiped dry and immediately reweighed.

<i>Sample No.</i>	<i>Dry Wt. (grams)</i>	<i>Wet Wt. (grams)</i>	<i>Percent Water Absorption</i>	<i>Average</i>
1.	65.68	65.70	0.03%	
2.	66.34	66.36	0.03%	
3.	65.86	65.88	0.03%	<b><u>0.03%</u></b>
4.	65.82	65.84	0.03%	
5.	65.69	65.71	0.03%	

**Requirements :** ANSI A 137.1 (General) - When tested as described in ASTM C 373, the tile in the sample shall be impervious for porcelain paver tile and shall be impervious, vitreous or semi-vitreous for natural clay paver tile.

- Impervious Tile (0.5% or less Wtr. Abs.)
- Vitreous Tile (0.5%-3.0% Wtr. Abs.)
- Semi-Vitreous Tile (3.0%-7.0% Wtr. Abs.)
- Unglazed Quarry Tile (Max. 5.0% Wtr. Abs.)

Remarks : Sample tested complies with PORCELAIN TILE (Impervious) requirement.

Respectfully Submitted,

**SMITH - EMERY LABORATORIES**

G. Janeth Quintero, P.E.  
Registered Civil Engineer No.: C 73066  
Registration Expires : 12-31-24  
nmd  
CC: SMITH EMERY LABORATORIES



- Materials Tested Comply With Specifications.
- Materials Tested Did Not Comply With Specifications.
- No Established Criteria For Acceptable Limits.



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CLIENT: **NORDIKA**  
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Subject: **Bond Strength of Ceramic Tile to Portland Cement Paste**  
Test Method: ASTM C482  
Source : Submitted to Smith Emery Laboratories by Client on April 26, 2023.

### Report of Tests

#### **A. BOND SHEAR TEST** (ASTM C482-Modified)

Test samples were prepared by Client; cutting 4-inch by 4-inch section of the paver; then was adhered to the prepared and cleaned tile with a high strength grout, bonded area is 16 square-inch. Shear load was applied to the assembly using a calibrated (120 KIPS Tinius Olsen) Universal Testing Machine, until failure occurs. Results are as follows:

Test No.	Side 1	Side 2	Area sq.in.	Max Load lbs.	Bond Shear Strength, PSI	Mode of Failure
1.	4.108	4.112	16.89	5,157	305.3	50% Bond Coat to Tile, 50% Bond Coat to Bed
2.	4.119	4.121	16.97	5,351	315.3	90% Bond Coat to Tile, 10% Bond Coat to Bed
3.	4.12	4.11	16.93	4,892	289.0	90% Bond Coat to Tile, 10% Bond Coat to Bed
4.	4.103	4.092	16.79	5,158	307.2	90% Bond Coat to Tile, 10% Bond Coat to Bed
5.	4.101	4.121	16.90	6,299	372.7	85% Bond Coat to Tile, 15% Bond Coat to Bed

Average, PSI: **317.9**

\* PSI Strength were calculated to the nearest 10 pounds

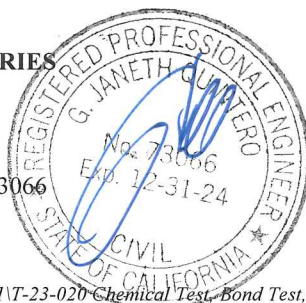
*Note : Test Sample was placed in a test jig; where the veneer stone was covered with a test plate; where the 5 shear load will be applied.\*Based on the results of the tests, reference typical industry standard strength for "BONDED" materials which are cementitious in nature, requires only 50 PSI for bond shear (ASTM C482).*

Respectfully Submitted;

SMITH - EMERY LABORATORIES

G. Janeth Quintero  
Registered Civil Engineer No.: C 73066  
Registration Expires : 12-31-24

nmd



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- Materials Tested Did Not Comply With Specifications.
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- For Information Only.

CC: SMITH EMERY LABORATORIES  
E: PHYLAB\2023\45717 NORDIKA Job 1\T-23-020 Chemical Test, Bond Test, Water Absorption and Freeze and Thaw



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POMPANO BEACH, FL 33069

Subject: **NORDIKA GLASS MOSAICS 6MM THICK**  
Specification : ASTM C-650 (Qualitative Observation Only)  
Source : Submitted to Smith Emery Laboratories by Client on April 26, 2023.

### Report of Tests

### CHEMICAL RESISTANCE OF CERAMIC TILE (ASTM C 650 Qualitative Only)

Exposure time : 24 hours

Room temperature : 75.5 °F

<u>Tile Number</u>	<u>Hydrochloric Acid 10% HCL</u>	<u>Potassium Hydroxide 10% KOH</u>
1.	Not Affected	Not Affected
2.	Not Affected	Not Affected
3.	Not Affected	Not Affected
4.	Not Affected	Not Affected
5.	Not Affected	Not Affected
6	Not Affected	Not Affected

Remarks : Sample Tested Shows No Physical Damage After Test.

Respectfully Submitted,

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G. Janeth Quintero, P.E.  
Registered Civil Engineer No. 73066  
Registration Expires: 12-31-24  
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POMPANO BEACH, FL 33069

Subject: **NORDIKA GLASS MOSAICS 6MM THICK**  
Specification : ASTM C 1026 Freeze-Thaw  
Source: Submitted to Smith Emery Laboratories by Client on April 26, 2023.

### Report of Test

#### Measuring The Resistance of Ceramic Tile to Freeze - Thaw Cycling (ASTM C 1026 - 10)

The dry weight of each specimen was recorded, then placed in a pan of potable water and soak for 24 hours, after which was reweighed. Tiles were then returned to water and boiled for 5 hours, making sure, tiles are covered with water at all times. After the 5 hours boil, the specimens were allowed to soak and cool down naturally for another 24 hours, then weighed. The weight measurements were taken as the 5 hours boil weights.

#### A. Absorption

<i>Tile No.</i>	<i>Dry Wt. (grams)</i>	<i>24-hr Soak Wt. (gr.)</i>	<i>5-hr Boil Wt. (gr.)</i>	<i>Percent Water Absorption</i>
1.	82.75	82.77	82.77	0.02%
2.	81.19	81.21	81.21	0.02%
3.	81.53	81.55	81.55	0.02%
4.	82.07	82.08	82.08	0.01%
5.	81.59	81.61	81.61	0.02%
6.	81.84	81.86	81.86	0.02%
7.	81.01	81.03	81.04	0.04%
8.	81.91	81.93	81.93	0.02%
9.	81.68	81.70	81.70	0.02%
10.	82.35	82.36	82.37	0.02%

#### B. Freeze - Thaw Cycling

<i>Cycle No.</i>	<i>OBSERVATIONS</i>									
	<i>Tile 1</i>	<i>Tile 2</i>	<i>Tile 3</i>	<i>Tile 4</i>	<i>Tile 5</i>	<i>Tile 6</i>	<i>Tile 7</i>	<i>Tile 8</i>	<i>Tile 9</i>	<i>Tile 10</i>
1.	U	U	U	U	U	U	U	U	U	U
2.	U	U	U	U	U	U	U	U	U	U
3.	U	U	U	U	U	U	U	U	U	U
4.	U	U	U	U	U	U	U	U	U	U
5.	U	U	U	U	U	U	U	U	U	U
<i>Wet Wt.</i>	82.77	81.21	81.55	82.08	81.61	81.86	81.04	81.93	81.70	82.37
<i>% Abs.</i>	0.02%	0.02%	0.02%	0.01%	0.02%	0.02%	0.04%	0.02%	0.02%	0.02%



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Subject: **NORDIKA GLASS MOSAICS 6MM THICK**

**B. Freeze - Thaw Cycling cont'd.**

Cycle No.	OBSERVATIONS									
	Tile 1	Tile 2	Tile 3	Tile 4	Tile 5	Tile 6	Tile 7	Tile 8	Tile 9	Tile 10
6.	U	U	U	U	U	U	U	U	U	U
7.	U	U	U	U	U	U	U	U	U	U
8.	U	U	U	U	U	U	U	U	U	U
9.	U	U	U	U	U	U	U	U	U	U
10.	U	U	U	U	U	U	U	U	U	U
<b>Wet Wt.</b>	82.77	81.21	81.55	82.08	81.61	81.86	81.03	81.92	81.7	82.36
<b>% Abs.</b>	0.02%	0.02%	0.02%	0.01%	0.02%	0.02%	0.02%	0.01%	0.02%	0.01%

Cycle No.	OBSERVATIONS									
	Tile 1	Tile 2	Tile 3	Tile 4	Tile 5	Tile 6	Tile 7	Tile 8	Tile 9	Tile 10
11.	U	U	U	U	U	U	U	U	U	U
12.	U	U	U	U	U	U	U	U	U	U
13.	U	U	U	U	U	U	U	U	U	U
14.	U	U	U	U	U	U	U	U	U	U
15.	U	U	U	U	U	U	U	U	U	U
<b>Wet Wt.</b>	82.77	81.21	81.55	82.08	81.61	81.61	81.03	81.92	81.7	82.36
<b>% Abs.</b>	0.02%	0.02%	0.02%	0.01%	0.02%	-0.28%	0.02%	0.01%	0.02%	0.01%

**Legend :** (U) Unaffected - No crazing, chipping spalling, body checks or cracks.  
 (A) Affected - (a) Crazing, (b) Chipping, (c) Spalling, (d) Body Checks, (e) Cracks.

**Remarks:** Tested samples shows no evidence of deterioration after 15 cycles of freezing and thawing.



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**C. Freeze - Thaw Cycling cont'd.**

Cycle No.	OBSERVATIONS									
	Tile 1	Tile 2	Tile 3	Tile 4	Tile 5	Tile 6	Tile 7	Tile 8	Tile 9	Tile 10
16.	U	U	U	U	U	U	U	U	U	U
17.	U	U	U	U	U	U	U	U	U	U
18.	U	U	U	U	U	U	U	U	U	U
19.	U	U	U	U	U	U	U	U	U	U
20.	U	U	U	U	U	U	U	U	U	U
<b>Wet Wt.</b>	82.77	81.2	81.55	82.08	81.61	81.85	81.04	81.92	81.7	82.36
<b>% Abs.</b>	0.02%	0.01%	0.02%	0.01%	0.02%	0.01%	0.04%	0.01%	0.02%	0.01%

Cycle No.	OBSERVATIONS									
	Tile 1	Tile 2	Tile 3	Tile 4	Tile 5	Tile 6	Tile 7	Tile 8	Tile 9	Tile 10
21.	U	U	U	U	U	U	U	U	U	U
22.	U	U	U	U	U	U	U	U	U	U
23.	U	U	U	U	U	U	U	U	U	U
24.	U	U	U	U	U	U	U	U	U	U
25.	U	U	U	U	U	U	U	U	U	U
<b>Wet Wt.</b>	82.77	81.2	81.55	82.08	81.61	81.84	81.04	81.92	81.7	82.36
<b>% Abs.</b>	0.02%	0.01%	0.02%	0.01%	0.02%	0.00%	0.04%	0.01%	0.02%	0.01%

**Legend :** (U) Unaffected - No crazing, chipping spalling, body checks or cracks.  
 (A) Affected - (a) Crazing, (b) Chipping, (c) Spalling, (d) Body Checks, (e) Cracks.

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**D. Freeze - Thaw Cycling cont'd.**

Cycle No.	OBSERVATIONS									
	Tile 1	Tile 2	Tile 3	Tile 4	Tile 5	Tile 6	Tile 7	Tile 8	Tile 9	Tile 10
26.	U	U	U	U	U	U	U	U	U	U
27.	U	U	U	U	U	U	U	U	U	U
28.	U	U	U	U	U	U	U	U	U	U
29.	U	U	U	U	U	U	U	U	U	U
30.	U	U	U	U	U	U	U	U	U	U
<b>Wet Wt.</b>	82.78	81.21	81.55	82.08	81.61	81.84	81.04	81.92	81.7	82.36
<b>% Abs.</b>	0.04%	0.02%	0.02%	0.01%	0.02%	0.00%	0.04%	0.01%	0.02%	0.01%

Cycle No.	OBSERVATIONS									
	Tile 1	Tile 2	Tile 3	Tile 4	Tile 5	Tile 6	Tile 7	Tile 8	Tile 9	Tile 10
31.	U	U	U	U	U	U	U	U	U	U
32.	U	U	U	U	U	U	U	U	U	U
33.	U	U	U	U	U	U	U	U	U	U
34.	U	U	U	U	U	U	U	U	U	U
35.	U	U	U	U	U	U	U	U	U	U
<b>Wet Wt.</b>	82.78	81.21	81.55	82.08	81.61	81.84	81.04	81.92	81.7	82.36
<b>% Abs.</b>	0.04%	0.02%	0.02%	0.01%	0.02%	0.00%	0.04%	0.01%	0.02%	0.01%

**Legend :** (U) Unaffected - No crazing, chipping spalling, body checks or cracks.  
(A) Affected - (a) Crazing, (b) Chipping, (c) Spalling, (d) Body Checks, (e) Cracks.

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Subject: **NORDIKA GLASS MOSAICS 6MM THICK**

**E. Freeze - Thaw Cycling cont'd.**

Cycle No.	OBSERVATIONS									
	Tile 1	Tile 2	Tile 3	Tile 4	Tile 5	Tile 6	Tile 7	Tile 8	Tile 9	Tile 10
36.	U	U	U	U	U	U	U	U	U	U
37.	U	U	U	U	U	U	U	U	U	U
38.	U	U	U	U	U	U	U	U	U	U
39.	U	U	U	U	U	U	U	U	U	U
40.	U	U	U	U	U	U	U	U	U	U
<b>Wet Wt.</b>	82.78	81.21	81.55	82.08	81.61	81.84	81.04	81.92	81.7	82.36
<b>% Abs.</b>	0.04%	0.02%	0.02%	0.01%	0.02%	0.00%	0.04%	0.01%	0.02%	0.01%

Cycle No.	OBSERVATIONS									
	Tile 1	Tile 2	Tile 3	Tile 4	Tile 5	Tile 6	Tile 7	Tile 8	Tile 9	Tile 10
41.	U	U	U	U	U	U	U	U	U	U
42.	U	U	U	U	U	U	U	U	U	U
43.	U	U	U	U	U	U	U	U	U	U
44.	U	U	U	U	U	U	U	U	U	U
45.	U	U	U	U	U	U	U	U	U	U
<b>Wet Wt.</b>	82.78	81.21	81.55	82.08	81.61	81.84	81.04	81.92	81.7	82.36
<b>% Abs.</b>	0.04%	0.02%	0.02%	0.01%	0.02%	0.00%	0.04%	0.01%	0.02%	0.01%

**Legend :** (U) Unaffected - No crazing, chipping spalling, body checks or cracks.  
 (A) Affected - (a) Crazing, (b) Chipping, (c) Spalling, (d) Body Checks, (e) Cracks.

**Remarks:** Tested samples shows no evidence of deterioration after 15 cycles of freezing and thawing.





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### E. Freeze - Thaw Cycling cont'd.

Cycle No.	OBSERVATIONS									
	Tile 1	Tile 2	Tile 3	Tile 4	Tile 5	Tile 6	Tile 7	Tile 8	Tile 9	Tile 10
46.	U	U	U	U	U	U	U	U	U	U
47.	U	U	U	U	U	U	U	U	U	U
48.	U	U	U	U	U	U	U	U	U	U
49.	U	U	U	U	U	U	U	U	U	U
50.	U	U	U	U	U	U	U	U	U	U
<b>Wet Wt.</b>	82.78	81.21	81.54	82.07	81.6	81.84	81.04	81.92	81.7	82.36
<b>% Abs.</b>	0.04%	0.02%	0.01%	0.00%	0.01%	0.00%	0.04%	0.01%	0.02%	0.01%

**Legend :** (U) Unaffected - No crazing, chipping spalling, body checks or cracks.  
(A) Affected - (a) Crazing, (b) Chipping, (c) Spalling, (d) Body Checks, (e) Cracks.

**Remarks:** Tested samples shows no evidence of deterioration after 15 cycles of freezing and thawing.

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