



PRODUCT PERFORMANCE TESTING LABORATORY

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March 20, 2020

MS International, Inc.
Attn: Morgan Huang
2095 N. Batavia St
Orange , CA 92865
USA

Dear Morgan Huang,

Tile Council of North America has tested the samples you submitted. Test report TCNA-0242-20 is enclosed. If you have any questions or concerns, please contact us.

Best Regards,

TILE COUNCIL OF NORTH AMERICA, INC.

Damon McDowell
Laboratory Supervisor
Enclosures



TCNA TEST REPORT NUMBER: TCNA-0242-20 **PAGE:** 1 OF 3

TEST REQUESTED BY: MS International, Inc.

TEST METHOD: ASTM C1378-04 (2014): "Determination of Resistance to Staining"

Informal Test Method Description: This test method is intended to determine the resistance to staining of ceramic tile surfaces. The resistance to staining is determined by maintaining test solutions in contact with ceramic tile surfaces for a specified period of time. After exposure, the surface is cleaned in a defined manner, and the test specimens are inspected visually for change.

This summary is provided for the reader's convenience and is not a complete description of the method. See ASTM C1378 for all method details and information.

TEST SUBJECT MATERIAL: Identified by client as: "Catalina Collection"
Approximate Size as Received: 8" x 48"

TEST DATE: 3/16/20 - 3/18/20

TEST PROCEDURE NOTES:

- Sample prep: Tiles were cut to 2"x2" samples
- One (1) test sample per staining agent was tested
- All test samples were dried in an oven at a temperature of 110°C ± 5°C and cooled to room temperature.
- Test samples were left in contact with the staining agents for 24 hrs at room temperature.
- Test samples were then subjected to the following cleaning procedures in succession until the stain is successfully removed. Test samples were dried 110°C ± 5°C and visually evaluated after each cleaning procedure.
- Cleaning Procedures: A: running hot water 5 min, B: hand cleaning w/ weak cleaner, C: mechanical cleaning w/ strong cleaner, D: 24hr. Immersion in suitable solvent (3% HCl, 20%KOH, Acetone)

TEST RESULTS:

Staining Agent	Visual Test (Affected?)	Cleaning Procedure
Contrasting Grout	No	A
Carbon Lamp Black	No	A
Waterproof Ink (Black)	No	A
Washable Ink	No	C
Potassium Permanganate Solution, 1%	No	A
Methylene Blue Solution, 1%	No	D

COMMENTS: None



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ANSI SPECIFICATIONS*:

ANSI standard	Class	Maximum number of samples that retain a stain
ANSI A137.1/A137.2	Class A	0
ANSI A137.1/A137.2	Class B	1
ANSI A137.1/A137.2	Class C	2
ANSI A137.1/A137.2	Class D	3
ANSI A137.1/A137.2	Class E	4 or more

**For more detailed information, refer to ANSI A137.1 Specifications for Ceramic Tile or ANSI A137.2 Specifications for Glass Tile*

IMAGE OF PRODUCT TESTED:





TCNA TEST REPORT NUMBER:

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3/20/2020

Damon McDowell
Laboratory Supervisor

