TCNA
TILE COUNCIL OF NORTH AMERICA, INC.

PRODUCT PERFORMANCE TESTING LABORATORY
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June 8, 2017

Regan Scientific Instruments
Attn: Peter Ermish
901 S. Kimball Ave.
Southlake, TX 76092

Dear Mr. Ermish,

Tile Council of North America has tested the device you submitted. Test report TCNA-892-16 is enclosed. If you have any questions or concerns, please contact us.

Best Regards,

TILE COUNCIL OF NORTH AMERICA, INC.

Katelyn Simpson
Laboratory Manager
Enclosures

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TCNA TEST REPORT NUMBER: **TCNA-892-16**

TEST REQUESTED BY: **Regan Scientific Instruments**

ASTM F2508-16 "Standard Practice for Validation, Calibration, and Certification of Walkway Tribometers Using Reference Surfaces" – Walkway Tribometer Validation

Informal Test Method Description: This practice provides a procedure and suite of reference surfaces to validate a walkway tribometer by properly ranking and differentiating the surfaces.
This summary is provided for the reader's convenience and is not a complete description of the method. See ASTM F2508 for all method details and information.

TRIBOMETER TESTED: Model Name: BOT 3000E
Tribometer Serial #: VS901265800358
Calibration Due Date: 11/03/2017
Test Foot: Sensor #03298, SBR rubber, approximately 1"x1", manufactured: 12/21/2015

TEST DATE: 1/24/2017

TEST PROCEDURE NOTES:

- The reference surfaces RS A, RS B, RS C, and RS D were obtained from ASTM in February 2011. The surfaces have been maintained in a temperature and humidity controlled environment and are in acceptable condition for testing.
- The tiles were cleaned according to section 8.2.1 of ASTM F2508 prior to testing.
- The SBR sensor was resurfaced according to the sensor resurfacing procedure found in ANSI A137.1, section 9.6.1.3. Throughout testing, the sensor was resurfaced every four measurements as specified in ANSI A137.1.
- Testing was conducted in a temperature and humidity controlled laboratory maintained at 70°F - 77°F and 50% ± 5% relative humidity.
- Each reference surface was tested according to the procedure in ASTM F2508.
  - RS A was tested in the wet condition with 0.04% by volume solution of Triton X-100, and the other three reference surfaces were tested in the wet condition with de-ionized water.
  - 24 measurements were made on each surface, 6 measurements in each of 4 orthogonal directions.

TEST RESULTS:

Reference Surface Results (based on 24 measurements)				
	RS A	RS B	RS C	RS D
Mean	0.22	0.26	0.40	0.79
SD	0.03	0.02	0.02	0.01
SE	0.007	0.005	0.004	0.002
CI -	0.20	0.25	0.39	0.79
CI +	0.23	0.27	0.40	0.80

Differences Between Adjacently Ranked Surfaces (based on 24 pairs)			
	RS A - RS B	RS B - RS C	RS C - RS D
Mean Difference	-0.04	-0.14	-0.40
SD	0.025	0.034	0.021
t	7.727	20.143	91.890

Note: All descriptions of calculations can be found in ASTM F2508. SD: Standard Deviation, SE: Standard Error of the Mean, CI+/-: 95th percentile confidence intervals, t: paired t-test value

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CONCLUSIONS:

Rank Order: ASTM F2508, section 9.2.1 states that the rank order of the mean walkway tribometer results shall be RS A < RS B < RS C < RS D.

The BOT 3000E (Serial #: VS901265800358) ranked the reference surfaces in the following order, RS A (0.22) < RS B (0.26) < RS C (0.40) < RS D (0.79)

Differentiation: ASTM F2508, section 9.2.2 states that using the mean and standard deviation, paired *t*-tests shall produce significantly different results for all adjacently ranked reference surfaces, that is between RS A and RS B, RS B and RS C, and RS C and RS D. As stated in Annex A2 of ASTM F2508, the *t* critical value is 1.714 which assumes one-tailed *t* test (used when there is an expectation of a significant difference between groups), 23 degrees of freedom (number of pairs -1), and 0.05 level of significance. A calculated *t* value greater than or equal to 1.714 indicates a statistically significant difference exists between reference surfaces.

The calculated paired *t*-test results for the measurements with the BOT 3000E (Serial #: VS901265800358) were as follows:
RS A – RS B, t=7.727
RS B – RS C, t=20.143
RS C – RS D, t=91.890

Based on the results above, the BOT 3000E (Serial #: VS901265800358) met the requirements established in ASTM F2508 for walkway tribometer validation.

IMAGES:

Image 1: BOT 3000E (Serial #: VS901265800358)

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Image 2: Reference Surface A

Image 3: Reference Surface B

Image 4: Reference Surface C

Image 5: Reference Surface D

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RAW DATA:

	RSA	RSB	RSC	RSD
1	0.28	0.28	0.41	0.77
2	0.26	0.24	0.43	0.81
3	0.21	0.25	0.38	0.77
4	0.21	0.24	0.41	0.80
5	0.26	0.24	0.39	0.80
6	0.21	0.26	0.44	0.81
7	0.18	0.23	0.39	0.80
8	0.19	0.23	0.40	0.80
9	0.25	0.29	0.42	0.79
10	0.23	0.26	0.42	0.80
11	0.18	0.25	0.38	0.78
12	0.19	0.25	0.41	0.80
13	0.25	0.29	0.36	0.78
14	0.25	0.29	0.41	0.79
15	0.20	0.23	0.37	0.79
16	0.20	0.23	0.39	0.78
17	0.24	0.28	0.37	0.78
18	0.20	0.24	0.40	0.79
19	0.19	0.26	0.39	0.80
20	0.18	0.25	0.42	0.77
21	0.27	0.31	0.36	0.80
22	0.20	0.28	0.39	0.79
23	0.18	0.22	0.38	0.80
24	0.18	0.23	0.39	0.79

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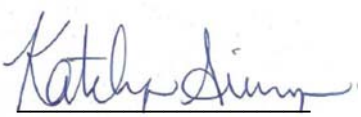

6/8/2017

Katelyn Simpson
Laboratory Manager