

**TorTest<sup>SM</sup> Floor Friction Testing Service**  
**SOTTER ENGINEERING CORPORATION**  
Consultants

26705 Loma Verde, Mission Viejo, CA 92691  
Telephone: 949-582-0889 FAX: 949-916-2193

*Licensed by the State of California  
Board of Professional Engineers  
And Land Surveyors*

*Approved by the City of Los Angeles  
for testing slip resistance of flooring*

**Dynamic Slip Resistance using  
ASTM E303-93 (2013) Pendulum Test Method**

Client: **Tile Tech Inc.** Report date: 3/21/17  
Flooring: **IPE Wood Tile - Smooth**  
Page 1 of 1 Sample no.: 1703-2122 Date tested: 3/21/17  
How and when sample obtained: Supplied by client 3/20/17  
Location of test: Sotter Engineering Test Laboratory in Mission Viejo, CA  
Type, age, condition, and texture of surface: wood, new, clean, smooth  
Post-test free swing: 0 Age of TRL slider: 1 month Surface Temperature: 69°F

**American Society for Testing and Materials Method E303-93 (2013), "Standard Test Method for Measuring Surface Frictional Properties Using the British Pendulum Tester"** (astm.org) The trailing edge of a three-inch-wide spring-loaded slider, which is attached to the end of a 20-inch pendulum, contacts the tested surface when the pendulum is released from a horizontal position. The slider contact path length is pre-set to five inches. The pendulum pushes a pointer that stops and stays at the high point of the pendulum's swing. For road-related testing, the slider is usually TRL (Transport & Road Laboratory) soft rubber.

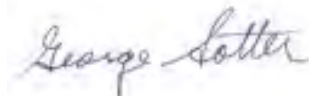
Higher Pendulum Test Values (PTV) indicate increased friction. For reference only, with TRL rubber the PTV of wet #60 grade silicon carbide abrasive cloth at normal room temperature is approximately 57. For clear wet float glass it is 8.

**Average Wet PTV with TRL (soft) rubber: 60**

Individual PTV values: 63, 61, 59, 57

High Pendulum Test Values indicate potentially good traction. **The Ceramic Tile Institute of America recommends a minimum pendulum test value of 36 for level floors.** Slip resistance can be affected by factors such as floor coatings, abrasives, detergents, contamination, chemical treatments, and wear. Values of 25-35 are classed as "moderate slip potential". Values of 0-24 have "high slip potential".

Respectfully submitted,  
SOTTER ENGINEERING CORPORATION



J. George Sotter, P.E., Ph.D.  
President



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### Flooring Test Results

Client: **Tile Tech Inc.**

Report date: March 21, 2017

Flooring: **Wood Tile - smooth**

Page 1 of 2

Sample no.: 1703-2123

Pieces tested: 3

Date tested: 3/21/17

Size: 12"x12"

How and when sample obtained: Supplied by client 3/20/17

American Society for Testing and Materials method **ASTM C 1028-07**. This test does not evaluate hydroplaning potential and is not recommended for assessing pedestrian safety. This test method was officially withdrawn by the ASTM in 2014. For more information please see [www.C1028.info](http://www.C1028.info)

#### Static coefficient of friction:

#### CLEANED WITH RENOVATOR

Dry

Wet

**0.78**

**0.75**

A traditional safety standard was 0.60 or greater for level floors and 0.80 or greater for ramps using this test method. The test standard itself made no recommendations for safety. Results apply only to the samples tested.

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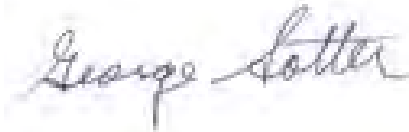
Flooring: **Wood Tile - smooth**

Individual test values (for information only; required by ASTM and City of Los Angeles):

CLEANED WITH RENOVATOR

	<u>Dry</u>	<u>Wet</u>
1	0.78	0.73
2	0.77	0.76
3	0.80	0.77
4	0.81	0.77
5	0.78	0.75
6	0.75	0.71
7	0.77	0.74
8	0.76	0.75
9	0.78	0.78
10	0.79	0.74
11	0.80	0.74
12	0.78	0.75
<b>Average</b>	<b>0.78</b>	<b>0.75</b>

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