SOTTER ENGINEERING CORPORATION
Floor Slip Resistance Consultants

26705 Loma Verde, Mission Viejo, CA 92691
Telephone: 949-933-6971
Email: info@SafetyDirectAmerica.com
www.SafetyDirectAmerica.com

Licensed in the State of California
Board of Professional Engineers
And Land Surveyors

Certified by the City of Los Angeles
as an official slip resistance testing
laboratory for flooring

CERTIFIED

AFSA FS101-25 Pendulum Slip Resistance Test Method

Client: **XXXXXXXXXXXXXX** Report date: 6/4/2026
Flooring: **XXXXXXXXXXXXXXX**
Page 1 of 4 Test no.: 2606-0321 Date tested: 6/3/2026
How and when sample obtained: Supplied by client 6/2/26 Sample size: 12”x12”
Location of test: Sotter Engineering Test Laboratory in Mission Viejo, CA

Figure 1 shows the sample. Red, green, blue, and white color references are included, with a U.S. penny (1/16 inch thick) for scale. The back of the sample is included to aid in positive identification.

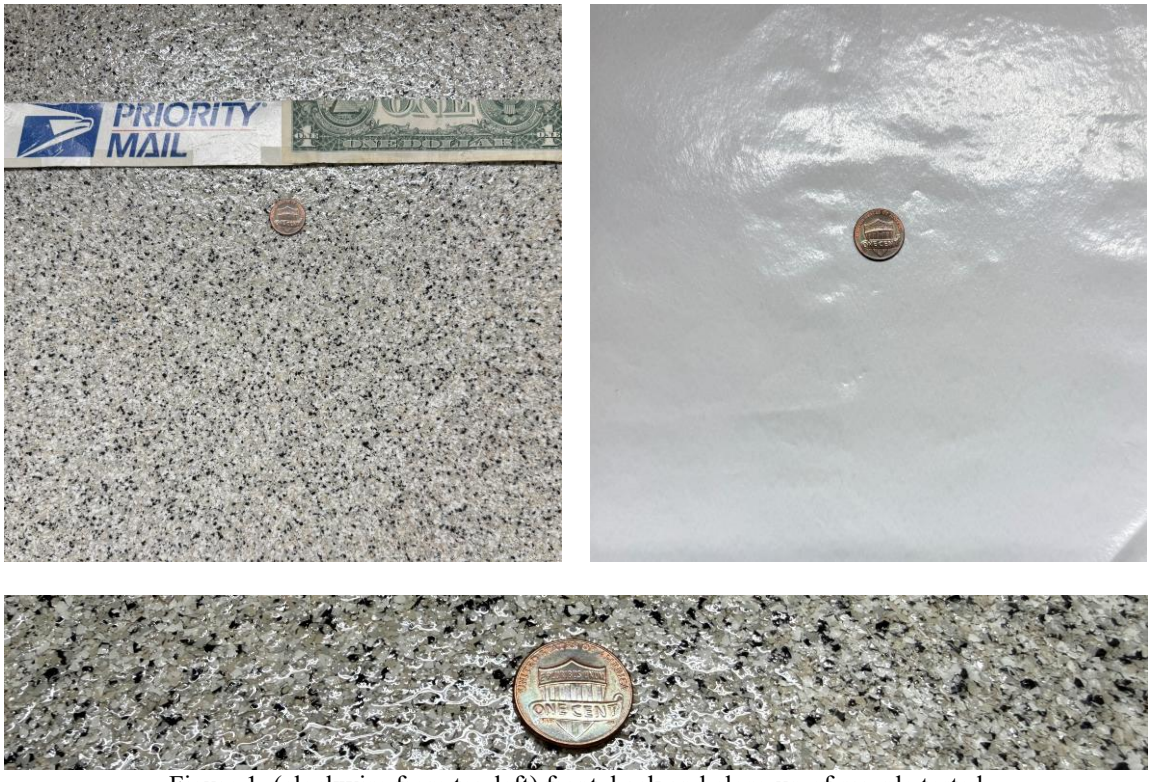

Figure 1: (clockwise from top left) front, back and close-up of sample tested

Flooring: **XXXXXXXX**

American Floor Safety Alliance (AFSA) FS101-25 Pendulum Slip Resistance Test Standard
https://afsahub.com/wp-content/uploads/2026/03/AFSA-FS101-2026.pdf

The pendulum is the national standard test device for pedestrian slip resistance in at least 50 nations on five continents and has been endorsed by Ceramic Tile Institute of America since 2001. It has been in continuous use since 1970 for assessing slip resistance of pedestrian surfaces and is the most widely accepted slip resistance test device worldwide. The American Floor Safety Alliance was created in 2025 to help building owners, architects, specifiers, courts, and municipal officials make informed decisions about the slip potential of flooring utilizing the 50 years of international research and science in over 50 nations on five continents.

The trailing edge of a three-inch-wide spring-loaded rubber slider, which is attached to the end of a 20-inch pendulum arm, contacts the tested surface when the pendulum arm is released from a horizontal position. The slider contact path length is pre-set to five inches (or 124-127 mm). The pendulum arm pushes a pointer that stops and stays at the high point of the pendulum arm's swing.

For testing flooring where pedestrians are likely to be wearing shoes, the typical rubber used is Four S rubber (Standard Shoe Sole Simulating), which has an International Rubber Hardness Degree (IRHD) of 96. For predominantly barefoot areas, and for road testing, the slider used is usually the TRL (Transport & Road Laboratory) soft rubber, which has an IRHD of 55. TRL rubber readings can be affected by temperature outside the range of 64-73 degrees Fahrenheit. Results for the TRL rubber below will have been adjusted for temperature using the adjustments table provided in AFSA FS101-25. President John C. Sotter conducted the testing and drafted this report.

Pendulum Test Value (PTV), as received, with Four S (96) hard rubber slider:
Dry: 56 Wet: 31
Corresponding DCOF value = Wet: 0.31; Individual wet PTV values: 31, 31, 31, 30, 30

T= 67.2 degrees F; Relative humidity = 63%; Pendulum recalibration due September 28, 2026
Results apply only to sample(s) tested.

High Pendulum Test Values indicate potentially good traction. The AFSA FS101-25 test method gives recommendations on how to interpret the results based on similar pendulum test methods from other nations who do give safety criteria and guidance based on their 50 years of research using the pendulum tester.

AFSA FS101-25 recommends a range of situation-specific minimum Pendulum Test Values as shown in the attached table below on the final page, with some help from Australia and New Zealand's HB198:2014. The United Kingdom Slip Resistance Group (UKSRG), with help from the United Kingdom's Health and Safety Executive (HSE), helped the AFSA make a more general recommendation and say that a **minimum pendulum test value of 36 for level floors is considered "low slip potential".** According to the AFSA and the UKSRG, values of 25-35 are classed as "moderate slip potential", and values of 0-24 have "high slip potential".

For flooring that has a slope, a mathematical calculation is made to adjust the safety criterion based on the degree of slope. For instance, a floor with a slope of 2° would need a minimum PTV

of 39 to fall into the “low slip potential” category, a 4° slope would need a PTV of 42, and a 6° slope would need a PTV of 45.

Slip resistance can be affected by factors such as, but not limited to, floor coatings, floor sealers, abrasives, detergents, contamination, chemical treatments, installation procedures, polishing, destructive cleaning practices, and wear.

Respectfully submitted,
SOTTER ENGINEERING CORPORATION

George Sotter

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

Building or walkway type	Line no.	Location or function of area	Minimum wet PTV	
			Hard rubber slider	Soft rubber slider
External sidewalks and ramps	1	External ramps with slopes steeper than 1 in 14 (4.1 degrees)	55	45
	2	External ramps, slopes less than 1 in 14	45	40
	3	Level surfaces: external parking lots, external walkways, pedestrian crossings (including painted crosswalks and speedbumps), balconies, driveways, courtyards, decks	45	40
	4	Parking lots, covered	36	36
Hospitals and assisted-living facilities	5	Bathrooms and bathtubs/showers in hospitals and assisted-living facilities	36	36
	6	Wards and corridors in hospital and aged care facilities	25	20
Hotels, office buildings, public buildings, schools, kitchens; entries and access areas	7	Dry area (such as an office)	12	12
	8	Hotel bathrooms, tubs and showers	36	36
	9	Kitchens	45	40
	10	Restroom facilities in offices, bars and shopping centers	36	36
	11	Serving areas – bars, kitchens, buffet lines	36	36
	12	Freezers in kitchens	45	40
Loading docks	13	Indoor loading docks	55	45
Sports/concert stadiums	14	All areas besides stairs	36	36
Supermarkets and shopping centers	15	Dry areas in shopping centers (canned goods aisles, for instance)	12	12
	16	Fast food outlets, buffets, food courts and fast food dining areas in shopping centers	36	36
	17	Fresh fruit and vegetable areas in supermarkets	36	36
	18	Shop entry areas with external entrances	36	36
Swimming pools and sports facilities	19	Locker rooms	36	36
	20	Showers	36	36
	21	Swimming pool decks	45	40
	22	Swimming pool ramps and stairs leading to water	55	45
Stairs	23	Dry stairs and landings	36	36
	24	Wet stairs and landings	45	40

Table 1. Recommended minimum PTV from the AFSA FS101-25 pendulum slip resistance test standard. The minimum values in this table are both more permissive (values below 36) and more conservative (values above 36) than the AFSA and UKSRG general recommendations discussed previously. The AFSA consider the standard summarized on this page to be the world's most sophisticated. However, the choice between the two is left to the reader.