Certificate of FloorSlip Pendulum Resistance Testing

	FloorSlip Reference:	**AW 2308003**			
For CLIENT:	**Company Name/Address:**	**Saige Longlife Decking Ltd**			
	Contact:	**Name:**	**H Moore**	**Tel:**	**07947 953363**
	Contact E-Mail:	**harriet@saigedecking.com**			
	Test Address:	***Samples***			

ABOUT – Floor Slip Resistance Pendulum Testing and (where applicable) Surface Roughness Testing was conducted in accordance with the UK Health and Safety Executive (HSE) recommendations for floor testing on Wet, Dry, and where relevant, Contaminated floors. FloorSlip follow the testing legislation determined by the UK HSE for on-site and off-site testing, as follows: -

1. BS-EN-16165 Annex C Method of Pendulum Operation (Superseding, in 2022, BS 7976:2002+A1:2013-2).
2. United Kingdom Slip Resistance Group' (UKSRG) guidelines for testing floors (at latest issue)
The UKSRG Guidelines are available at: - https://www.ukslipresistance.org.uk/product/uk-guidelines

Note 1 – Values arrived at off site on uninstalled materials may, for a variety of reasons, change when the material is installed or used in service. It is always recommended to also conduct on-site testing at first fit.
Note 2 – Floor Testing should ideally be conducted annually, though floors in high traffic areas my require a shorter period between testing.

TEST VALUES EXPECTED – See Next Page

EQUIPMENT USED:	**Pendulum / Ser No:**	KSS Pendulum / Ser no: ST 13
	Pendulum Calibration Date:	17th November 2022
	Surface Roughness Tester #:	
PENDULUM SLIDER DETAILS:	**Sliders Used (55, 96 or both):**	**55**
	Batch No(s):	**55#32**

Name of Tester:
Andrew Wylie
T: 07506 55 99 52
E: andrew@floorslip.co.uk

Date of Tests: 23/08/23

Was a Standard Used other than that stated above? (If YES – state which and its title)
No

For further information. Contact the tester or send a general email to info@floorslip.co.uk

HSE Expectations for Floor Safety

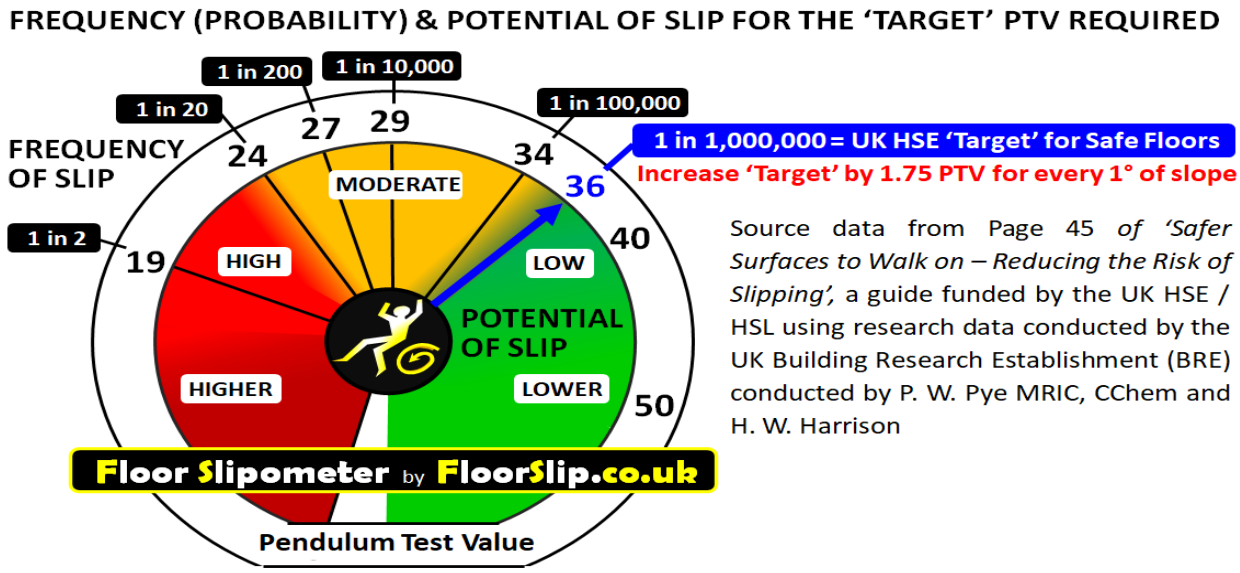
The UK HSE (Health and Safety Executive) recommends that a floor should be safe for pedestrians (Guests, Visitors or Staff). The benchmark to determine this criterion is twofold: -

STAGE 1 – That floor safety has been fully considered and the risks of slip mitigated for in accordance with ALARP principals (Described below).

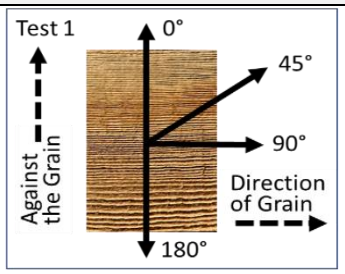
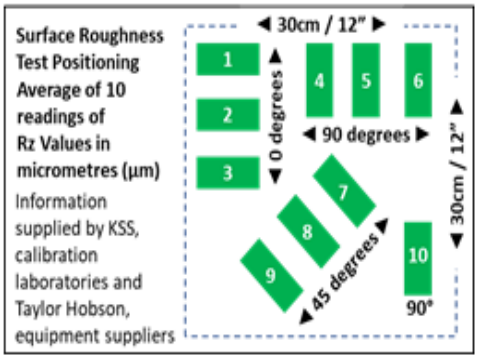
STAGE 2 – That, ideally a floor surface can meet minimum values performed by scientific tests using floor testing equipment and should it fail to do so, that STAGE 1 can be effectively met.

The HSE recommends to aim at a LOW SLIP POTENTIAL and a SLIP PROBABILITY of 1 in 1,000,000 to be regarded as a 'Safe Floor Surface'. They have determined that a value of 36 PTV or greater on a horizontal floor surface (no slope) when WET or CONTAMINATED will achieve the aims. Below the value of 36 PTV, the probability of slip rapidly increases due to the exponential scale (e.g., a reading of 35 PTV (0° slope) is a slip probability of 1 in 100,000 showing a 90% fall in just 1 PTV) and a reading of 19PTV or less results in a 1 in 2 Frequency (probability) of Slip.
Anything less than the recommended values may be argued by applying **ALARP which stands for 'As Low as Reasonably Practicable'.** Slips, trips and falls generally occur for similar reasons all of which should be considered to keep persons safe. ALARP means that all reasonable effort has been applied to ensure a floor is safe and 'holistic' factors have been considered and applied such as: - monitoring / testing of floor surfaces; training in safety and risk; fast effective reaction to spills; effective cleaning; effective matting; suitable lighting; non-slip coatings; preventing environmental ingress and contaminants etc. and **the cost involved in reducing the risk further would be grossly disproportionate to the benefit gained**. A policy that considers these factors from a holistic ALARP viewpoint could be considered as reasonably robust in providing a relatively safe floor environment, even if the floor itself is unable to provide the 'recommended' 36PTV when wet on a horizontal floor surface.

The 'Slipometer' below demonstrates the Slip Potential and Frequency (Probability) of Slip for the results arrived at. The 'Target' values at your location will be shown in the results section.



Notes relating to the Test Results on the following pages

Note #	Description
Note 1	**4 DIRECTIONS OF SWING ON NATURAL WOOD –** The norm is to perform swings in 3 directions only on most surfaces. (0°, 45°, 90°) except isotropic surfaces, which give uniform test values in any direction and testing in just one direction is sufficient once isotropic status has been established. However, on natural wood, FloorSlip conduct a fourth test direction with Test 1 (0°) at 90° to the direction of the grain and against the grain, which is likely to be the roughest the wood will get and give the highest test PTV value. 
Note 2	8 Pendulum Swings are performed in each direction, 3 SETTLING swings followed by 5 TEST swings, the results equal the MEDIAN (Middle value) of the 5 TEST swings only
Note 3	**TARGET VALUES –** The UK HSE has determined for a floor to be categorised as 'Low Probability of Slip', that it must achieve a 'TARGET' Pendulum Test Value (PTV) of: - **Baseline + Slope Adjustment** **Baseline** – The UK HSE has determined 36PTV (where 0 PTV is the worst) on a horizontal floor (0°) when WET/CONTAMINATED will deliver a floor with a 'Low Potential of Slip', **Slope** – The baseline value (36PTV) must be adjusted UPWARDS for slopes using calc of 100 x Tangent of angle for each degree of slope, equating to a near approximation of **1.75 PTV for every 1 degree (°) of slope and rounded up to the next nearest whole number.**
Note 4	**55 SLIDER ADJUSTMENT FOR TEMPERATURE (NA to Slider 96)** Rubber Slider #55/57 is temperature sensitive and the PTV value arrived at during the test must be adjusted with respect to the slider temperature recorded at the test. The formula that applies is 'C1' in BS-EN-16165 Sect C.5.3 and shows the 'Median PTV Result divided by (1 – (0.0059 x (temperature recorded – 20)) = The **Adjusted Value – See the table Appendix C**
Note 5A	**RZ / SURFACE ROUGHNESS TEST** – performed with a Self Calibrating Taylor Hobson Surtronic Duo Test Equipment. The Rz micrometre (µm) values are arrived at over an average (mean) of 10 readings in different directions to determine the HSE Categorisation of Slip Potential. Each test spot is an area of 75mm x 75mm (3" x 3") at the same spots where the pendulum test(s) conducted (if conducted). Only dry testing is performed as wet testing can damage the equipment. The table below indicates the required values… 

Note 5B	'Slip Potential' (HSE Classification)	Rz Value
	Water Wet – LOW	Min Rz of [µm] 20 or more
	Water Wet – MODERATE	Rz of [µm] 10 to 20
	Water Wet – HIGH	Rz of [µm] Less than 10
	Milk Rz of 45 µm; Stock Rz of 60 µm; Olive Oil Rz of 70 µm; Margarine Rz of >70 [µm]	

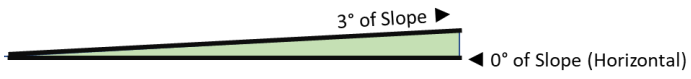
Table Of Results – Pendulum Tests & Surface Roughness Tests

PENDULUM TESTS	Test #1	Test #2	Test #3	
Test Locus ▶	Sample	Sample	Sample	
Floor Type ▶	Contemporary Decking. Grooved side	Contemporary Decking. Smooth side	Traditional Decking	
Slope = Degrees ▶	0°	0°	0°	
Temp = Deg C ▶	20° C	20° C	20° C	
Slider Used (55 or 96) ▶	55	55	55	
5 Test Swings carried out at 0°, 45°, 90° (and 180° on wood) (Notes 1 and 2) ▶	Lowest MEDIAN PTV Value* ▼	Lowest MEDIAN PTV Value* ▼	Lowest MEDIAN PTV Value* ▼	Lowest MEDIAN PTV Value* ▼
Dry As Found ▶	70	88	95	
Dry, Clean, Wiped ▶	70	88	95	
Wet ▶	***54***	***42***	***46***	
Contaminated ▶	NA	NA	NA	
Baseline PTV [Note 3] **[A]**	36PTV	36PTV	36PTV	
Adjust for Slope (1.75 per 1°) [Note 3] **[B]**				
TARGET PTV REQ'D [A + B]	NA	NA	NA	
Lowest PTV Result (From 55 or 96 Slider) **[C]** ▶				
Adjust PTV for 55 Slider temp [Note 4] **[D]** ▶				
LOWEST 55 or 96 PTV RESULT [C + D]	NA	NA	NA	
Contaminant [Note 5B] ▶				
Floor Surface Roughness – Required Rz Value ▶				
LOWEST RZ ACHIEVED ▶	NA	NA	NA	

Comments on the above table

*PTV=Pendulum Test Value and MEDIAN is the MIDDLE Value of 5 TEST Swings (It is not the average value)

Example of Adjustment for Slope to determine the TARGET VALUE



Example – a 3° slope would require 3° x 1.75PTV (= 5.25) added to the 36 PTV and the result rounded UP to the next integer **So 36* + 5.25 = 41.25 rounded to = 42PTV TARGET Value**

*The UK HSE has determined 36PTV is the minimum required on a horizontal floor for a 'Low Potential of Slip' and a Slip Probability of 1 in 1 million

In respect to the Pendulum Slip Potential and Probability

Use the table on the next page in conjunction with this table

Test	Target PTV expected	Lowest PTV Result attained	Slip Potential Result	Slip Probability Result The HSE recommends a LOW Slip Potential and a Slip Probability of 1 in 1,000,000
1	36	54	LOW	1 in 1,000,000
2	36	42	LOW	1 in 1,000,000
3	36	46	LOW	1 in 1,000,000
4				
5				
6				
7				
8				
9				
10				

In respect to the Surface Roughness Tests (Rz)

Use Note 5B to determine the Rz expected for the likely contaminants; default is 20 for water.

Test	Contaminant Expected (See Note 5B)	Rz expected for Low Slip Potential (See Note 5B)	Lowest Results attained	Slip Potential Result
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Conflict in respect to the 'Slip Potential' outcome sometimes occurs between the Pendulum Test and Surface Roughness Test. Where conflict occurs, the Pendulum Test takes precedence.

APPENDIX A – Equipment Verification and Certification

In accordance with the requirements of the UKSRG guidelines at latest issue, prior to conducting Pendulum Testing, a 'Verification Activity' is conducted on the test equipment to ensure the equipment and its respective sliders are within defined tolerances. If it is found that the tolerances cannot be achieved then the test is cancelled and the equipment returned to a laboratory in the UK specialising in conducting calibration in accordance with BS 7976-3 (to be superseded by BS-EN-16165 in 2022).

FloorSlip always conduct the 'Verification' tests: -

- Prior to leaving for a site
- Post re-assembly of Equipment after transportation (or) immediately before a batch of testing
- Sometimes post conducting tests but before equipment disassembly. This only occurs if the equipment has been jarred or knocked during testing; or if a client requests it; or if there is doubt by a FloorSlip operator as to the readings arrived at during testing; or if on site test (at loci) cannot be satisfactorily conducted (for example in poor conditions or a busy test area or the inability to find a suitable surface to test upon).

The tests are conducted on a horizontal surface using 3 different mediums and the results recorded; the tests and expected results are as follows: -

OFF SITE – Test Results – #96 and #55 Slider

SLIDER 96	Cal Swing 1	Cal Swing 2	Cal Swing 3	Test Swing 1	Test Swing 2	Test Swing 3	Test Swing 4	Test Swing 5	Median (middle) of 5 Test Swings	Expected Range PTV
Pink Lapping Film										◄ 50 to 75
Float Glass										◄ 0 to 15
Pavigres Tile										◄ 25 to 40
SLIDER 55	Cal Swing 1	Cal Swing 2	Cal Swing 3	Test Swing 1	Test Swing 2	Test Swing 3	Test Swing 4	Test Swing 5	Median (middle) of 5 Test Swings	Expected Range PTV
Pink Lapping Film	61	60	60	62	63	63	63	62	63	◄ 50 to 75
Float Glass	9	9	9	11	12	11	9	9	10	◄ 0 to 15
Pavigres Tile	31	31	31	32	32	32	32	33	32	◄ 25 to 40

ON SITE – Test Results – #96 and #55 Slider

SLIDER 96	Cal Swing 1	Cal Swing 2	Cal Swing 3	Test Swing 1	Test Swing 2	Test Swing 3	Test Swing 4	Test Swing 5	Median (middle) of 5 Test Swings	Expected Range PTV
Pink Lapping Film										◄ 50 to 75
Float Glass										◄ 0 to 15
Pavigres Tile										◄ 25 to 40
SLIDER 55	Cal Swing 1	Cal Swing 2	Cal Swing 3	Test Swing 1	Test Swing 2	Test Swing 3	Test Swing 4	Test Swing 5	Median (middle) of 5 Test Swings	Expected Range PTV
Pink Lapping Film										◄ 50 to 75
Float Glass										◄ 0 to 15
Pavigres Tile										◄ 25 to 40