

Pendulum Slip Test Report

Test conducted by: Piotr Pietroszek

Test conducted in-house

At: **171 Botanic Avenue, Drumcondra Dublin 9**

For: Greg Cohen, Slip Doctors

Test date: 30 & 31/03/2020

Test report date: 31/03/2020

Test carried out according to standard: **EN BS 7976:2**

Purchase Order: N/A

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Substrates tested:

Ceramic tile coated with anti-slip spray



DRY: 62 PTV; WET: 55 PTV- slider #96 shod
DRY: 96 PTV; WET: 53 PTV –slider #55 bare foot

Surface temperature: 21°C; Surface level: 0°

Sufficient water was applied to the tested surfaces to simulate a spill according to the manufacturer of the testing equipment and the UK Slip Resistance Group Guidelines issue 5 / 2016 for wet testing.

Surfaces tested with slider **#96 4S** for shod foot pedestrian traffic and slider **#55 TRL** for bare foot traffic.

A slip potential classification for pedestrians walking in straight line on a level surface can then be applied, using the following table from the UKSRG Guidelines and the HSA:

Pendulum Test Values interpretation:

24 PTV and below = HIGH SLIP RISK

25 PTV-35 PTV = MODERATE SLIP RISK

36 PTV and above = LOW SLIP RISK

Probabilities of slip per PTV value:

20 PTV = 1 in 2 probability of a slip;

24 PTV = 1 in 20 probability of a slip;

27 PTV = 1 in 200 probability of a slip;

36 PTV = 1 in 1 000 000 probability of a slip;

Full Pendulum Slip test results:

Sample 1: Ceramic tile coated with anti-slip spray:

Test for shod traffic using slide #96



Condition	Direction of test	Pendulum Test Values					Mean PTV	Slip Risk Classification
		Slider #96 4S for shod pedestrians						
DRY	principal	63	62	62	62	62	62	Low
	90° to principal	62	62	61	62	62	62	Low
	45° to principal	62	62	63	62	62	62	Low
WET	principal	56	56	55	55	55	55	Low
	90° to principal	56	56	56	56	55	56	Low
	45° to principal	55	55	55	55	56	55	Low

Sample 1: Ceramic tile coated with anti-slip spray:

Test for bare foot traffic using slide #55



Condition	Direction of test	Pendulum Test Values					Mean PTV	Slip Risk Classification
		Slider #55 TRL for bare foot pedestrians						
DRY	principal	95	98	100	96	96	96	Low
	90° to principal	95	95	96	98	95	95	Low
	45° to principal	95	95	96	99	96	96	Low
WET	principal	52	53	53	53	53	53	Low
	90° to principal	53	53	52	53	53	53	Low
	45° to principal	53	53	53	54	53	53	Low

Theory:

Theory Research carried out by the Health & Safety Laboratory, in conjunction with the UK Slip Resistance Group (UKSRG) has shown that it is possible to assess the characteristics of floor surface materials needed for satisfactory slip resistance.

The Health and Safety Laboratory has developed a reliable and robust test method that forms the basis of **Grip Doctors Limited** report procedure.

The Pendulum Dynamic Coefficient Of Friction test forms the basis of the measurement of a floor. A calibrated "foot" swings from a horizontal point of release, strikes the flooring surface for a known distance then reads the "pendulum test value" on it's over swing.

The rubber slider that contacts the floor is constructed of "4S" #96 rubber (standard simulated shoe sole) and is designed to replicate the most common slipping motion experienced by shod pedestrians or TRRL rubber #55 for bare feet pedestrians. Pendulum testing is one of the few methods that model the formation of a hydrodynamic squeeze film between the floor and shoe sole, a major factor in a wet slip.

Method:

EN BS 13036; BS 7976-2:2002 - Pendulum Testers, Method of Operation

PTV Slip Potential

Test carried out using slider #96 4S- for shod pedestrian surfaces.

Coefficient of dynamic friction measurement is carried out in accordance with EN BS 7976 and the UK Slip Resistance Group Guidelines issue 5/2016.

A prepared standard rubber slider attached to a weighted 'shoe' is allowed to swing from a horizontal point of release. The slider is mounted on a spring loaded bracket and makes contact with the floor for a known distance. The height to which the shoe travels after contacting the floor gives a reading of the Pendulum Test Value (PTV, formally known as SRV Slip Resistance Value).

The dynamic coefficient of friction of a test surface has a direct and measurable effect on the PTV reading obtained.

Test surfaces are subject to eight measurements of the PTV with the first three being discounted from calculations of the mean. Tests are carried out in the principal direction, at 45° to the principal direction and at 90° to the principal direction where allowed by space. Each direction is tested under both wet and dry conditions, totalling 48 measurements.

A mean value is generated for wet and dry tests based on the performance in different directions.

Testing equipment:

Munro TRL Portable Skid Tester

Serial No: 1640

Calibrated by: Knightcott Surface Solution Ltd. 22/10/2019 cert: CN 751

Calibration due: 21/10/2020

4S Rubber Sliders (Slider #96)

Batch No: Slider 96 #89

Calibrated by: Knightcott Surface Solutions

Calibration date: 28/05/2019

Disposal date: 27/05/2020

TRL Rubber Slider (Slider #55)

Calibrated by: Knightcott Surface Solution Ltd.

Calibration date: 28/05/19

Disposal date: 27/05/20

Batch No: #14

Calibration checks are carried out regularly by way of check testing on pavigres tiles previously tested by a UKAS accredited laboratory. Further to this, check testing is conducted using lapping film and float glass of a known value.

Sliders are prepared in line with guidance by the UKSRG. Check testing is conducted both on lapping film previously tested by a UKAS accredited laboratory and float glass and pavigres tile. This procedure is conducted prior to a site visit and is in addition to the site check testing.

Daily Check Test Values						Mean	Expected	Accepted
Lapping film	64	64	64	63	63	64	59-64	YES
Float glass	7	7	6	6	6	6	5-9	YES
Pavigres Tile	35	34	34	34	34	34	34-36	YES

Yours Faithfully

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