

# Dr Schutz UK

## BS 7976-2 Slip Test Report

Addressee: Dr Schutz UK

Report carried out on behalf of: Dr Schutz UK  
Unit 24 Anglo Business Park  
Smeaton Close  
Aylesbury  
Bucks  
HP19 8UP

Tests conducted at: Grip Potential Ltd  
Ringstead Business Centre  
1-3 Spencer Street  
Ringstead  
Northants  
NN14 4BX

Test date(s): 05/03/17  
Report date: 07/03/17

Report Reference: 1899DRSC050317B  
Purchase Order: -

Data Verification Sum: 4322.4

Reported results in no way imply that the flooring under test is approved or endorsed by Grip Potential Ltd. Grip Potential Ltd do not give or assume warranty or condition, express or implied, statutory or otherwise, as to condition, quality, performance, merchantability or fitness for the purpose of the test subject and all such warranties and conditions are hereby excluded save to the extent that such exclusion is absolutely prohibited by law. Grip Potential Ltd shall not be liable for any subsequent loss or damage incurred by the client as a result of information contained within this report. Results given herein refer only to areas tested by Grip Potential Ltd. This report shall not be reproduced, except in full, without the written consent of Grip Potential Ltd.

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## **Summary**

Test Reference	PTV		Slip Risk		Rz
	Dry	Wet	Dry	Wet	
Dr Schutz Anti-Slip Additive L (R10) (Vinyl / Slider #96/4S)	64	55	Low	Low	16.3

Results have been classified in accordance with the latest UKSRG Guidelines (Issue 5, 2016) and current UK Health & Safety Executive guidance.

## Additional Comments

### Specimen Condition

The test surface was supplied in good condition for testing being applied to a smooth vinyl sheet. There was no noted damage to the supplied surface. The surface was adhered to a hard smooth ceramic tile substrate and could then be braced in position for testing. The surface was flat and even and there was no noted deformation of the surface during testing. The supplied surface was not noted to present contamination and so was not cleaned prior to testing.

### Specimen Performance

The tested surface presented a smooth macro-profile with a very rough micro-profile. The micro-profile is sufficiently rough to disperse a lubricating film and secure sole/floor contact, with associated high wet grip levels. The surface presents a comfortably low risk of slip in both dry and water wet conditions. This surface is suitable, in terms of slip resistance, for both dry environments and environments where water contamination cannot be readily controlled.

An original untreated specimen of the vinyl was not available for test, however it was reported that this achieved PTV's of 68 and 21 in dry and wet conditions respectively. This is commensurate with the performance which could be expected on this and similar surfaces. If the reported untreated numbers are accurate the applied treatment clearly shows a significant improvement in wet grip levels with an associated significant reduction in wet slip risk.

## BS 7976-2 Test Certificate

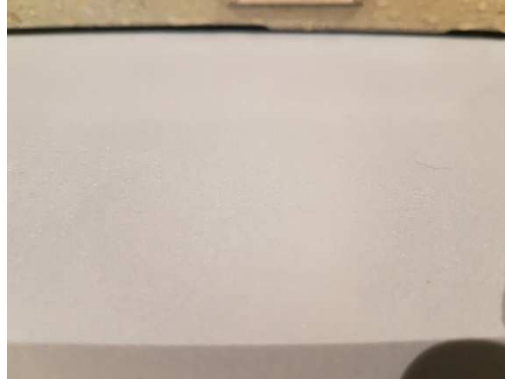
## Dr Schutz Anti-Slip Additive L (R10)

Test conducted 05/03/17 by Ben Powers, at Grip Potential Ltd, to UKSRG Guidelines

Image 1. Pendulum tester in-situ



Image 2. Test surface



## Pendulum Test Results

Slider #96/4S

Direction	Condition	Pendulum Test Value					Median Values	Slip Risk Classification
Principal	Dry	68	68	67	66	66	67	Low
45°		64	64	64	63	63	64	
90°		64	64	64	64	64	64	
Principal	Wet	54	55	55	55	55	55	Low
45°		56	56	55	55	55	55	
90°		54	54	54	54	54	54	

Results generated using a BS 7976 Munro Portable Skid Tester, serial number 0852. The device was calibrated by BSI on 22/12/16, UKAS certificate number 5124. The above results have been classified in accordance with the latest UK Slip Resistance Group Guidelines (Issue 5, 2016) and current UK Health & Safety Executive guidance.

## Rz Surface Roughness Results

Direction	Principal				45°			90°			Mean Rz Value (µm)
Rz Value (µm)	20.3	17.5	15.3	15.0	14.7	13.3	16.1	17.8	13.7	19.1	16.3

Results generated using a Surtronic Duo Rz Surface Roughness Meter, serial number 11442. The device was calibrated by Taylor Hobson Ltd on 04/04/16, UKAS certificate number 60511.

## Declaration

The above assessment was carried out by Grip Potential adhering to the UKSRG and HSE guidelines on pedestrian slip risk assessment. The results given are accurate representations of data acquired on site. The results have been interpreted to give slip risk classifications based on parameters recommended by the UKSRG and HSE.

Signed:



Ben Powers, BSc (Hons) TechIOSH MAE  
Director / Slip risk consultant  
Grip Potential Ltd  
07/03/17

## Calibration Records

Records applicable on 05/03/17

### BS 7976 Pendulum

**bsi.** **Certificate of Test**

For a TRRL Type Portable Skid-Resistance Tester in accordance with BS 812-114: 1989 & BS 7976-3: 2002+A1:2013

**Client:** Grip Potential Ltd  
1-3 Spencer Street  
Ringstead  
NN14 4BX

**Job No:** 287/8665375 **Date Received:** 13 December 2016

**Serial No:** 0852 **Date of Test:** 22 December 2016

**Certificate No:** 5124

**Authority to test:** Quotation No 000805072

**Ambient Conditions:** (20 ± 3)°C (50 ± 20)% RH

This Certificate details the results obtained during the test of the above instrument. All measurements were conducted after allowing the instrument to stabilize in the laboratory.

Uncertainties stated are those relating to the measuring equipment used and to the equipment under test. They apply only under the ambient conditions specified above. The uncertainties do not allow for repeatability or reproducibility of the equipment under test and secular change is not taken into account.

The reported expanded uncertainties are based on the standard uncertainties multiplied by a coverage factor  $k=2$ , providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

**Periodicity**  
The instrument should be returned at least once a year for re-evaluation Ref: BS 812-114: 1989 and BS 7976-3: 2002+A1:2013

**Notes**  
The test procedure used to verify this PSRT was PP678 which is based upon BS 812-114: 1989 Clause 5.2 and BS 7976-3: 2002+A1:2013. UKAS accreditation applies to BS 812-114: 1989 Clause 5.2 and BS 7976-3: 2002+A1:2013

**Authorized by:** *M Mayo* **Date:** 11 January 2017  
M Mayo  
Testing Team Manager  
BSI, Maylands Avenue, Hemel Hempstead, Herts HP2 4SQ Telephone: +44 (0)845 080 9000

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**bsi.** **Certificate of Test**

For a TRRL Type Portable Skid-Resistance Tester in accordance with BS 812-114: 1989 & BS 7976-3: 2002+A1:2013

**Job No:** 287/8665375 **Cert No:** 5124 **Date tested:** 22 December 2016

Results	Symbol	Specified	Actual	Uncertainty
Sliding Distance	(D)	Nominal	126 mm	± 0.6 mm
Length of Pointer	(p)	Not specified	302 mm	± 0.65 mm
Mass of Pointer		85 g max	80.1 g	± 0.6 g
Angle of Slider		(26 ± 3)°	23.6°	± 1°
<b>BS 812-114:1989</b>				
Mass of Swinging Arm	(W <sup>1</sup> )	(1.500 ± 0.03) kg	1.512 kg	± 0.0006 kg
Force of Swinging Arm	(W)	Calculated	14.83 N	± 0.009 N
C of G from Centre of Oscillation	(X)	(410 ± 5) mm	410 mm	± 0.9 mm
'F' Scale - Vertical Distance	(Z)	10mm Nominal	N/T	± 0.6 mm
Slider Force	(P)	(22.20 ± 0.5) N	22.49 N	± 0.004 N
Change in Slider Force	(N)	0.2 N/mm max	0.10 N/mm	± 0.004 N/mm
<b>BS 7976-3:2002+A1:2013</b>				
Spring Tension Force	(F)	Calculated	22.41 N	± 0.009 N
Actual Spring Tension Force		Not specified	22.50 N	± 0.009 N
Change in Spring Tension Force		± 0.5 N	0.09 N	± 0.009 N
Mass of Slider and base		(35 ± 5) g	36.0 g	± 0.6 g
Sliding edge to axis of suspension		(514 ± 6) mm	511 mm	± 0.9 mm
N/T denotes not tested				

**Tested by:** *C. D. Teale*  
C Teale  
Test Engineer  
BSI, Maylands Avenue, Hemel Hempstead, Herts HP2 4SQ Telephone: +44 (0)845 080 9000

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## Pavigres Verification Surface

**bsi.** **Certificate of Test**

For a TRRL Type Portable Skid-Resistance Tester in accordance with BS 812-114: 1989 & BS 7976-3: 2002+A1:2013

**Job No:** 287/8665375 **Cert No:** 5124 **Date tested:** 22 December 2016

**Testing Results** **BSI PS Master (Main Scale)** **Clients (Main Scale)**

Serial No's 9931 0852

**Pre-calibration validation results**

**BS 7976-3: 2002+A1:2013**

Zero 0

Glass Surface 7

Pink Lapping Paper 62

**Final calibration results**

**BS 7976-3: 2002+A1:2013** **BS 7976-3: 2002+A1:2013**

Glass Surface 8 8

Pink Lapping Paper 64 63

**BS 812-114: 1989 (TRL Slider)** **BS 812-114: 1989 (TRL Slider)**

Glass Surface 9 10

Pink Lapping Paper 57 57

Surface 2S 12 13

Surface 3S 56 54

Surface 4S 61 61

Surface 5S 34 36

Surface 7R 50 48

Surface 8R 57 57

Surface 9R 70 67

Surface 10R 68 67

Surface 11R 73 75

Mean Value 49.73 49.55

Largest Difference: 3 (≤ 3) Mean Value Difference: 0.18 (≤ 1.5)

S - Smooth, R - Rough

**Tested by:** *C. D. Teale*  
C Teale  
Test Engineer  
BSI, Maylands Avenue, Hemel Hempstead, Herts HP2 4SQ Telephone: +44 (0)845 080 9000

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**CERTIFICATE OF CONFORMITY**

**MUNRO**  
INSTRUMENTS  
MONITORING THE WORLD AROUND US SINCE 1864

Munro Instruments Ltd, Gilbert House, 406 Roding Lane South, Woodford Green, Essex IG8 8EY  
Telephone: 020 8551 7000 Fax: 020 8551 4505 Email: info@munroinstruments.co.uk

**To:** GRIP POTENTIAL LTD  
RINGSTEAD BUSINESS CENTRE  
1-3 SPENCER STREET  
RINGSTEAD  
NORTHANTS NN14 4BX

**Purchase Order No.:** BEN POWERS 4342  
**Works Order No.:** 15986  
**Certificate No.:** 15986

Identification Serial Numbers	Description and Part No.	Quantity	References	Batch No. and Test Report No.
15986	<b>PAVIGRES VERIFICATION SURFACE</b> TESTED AND CERTIFIED FOR USE AS A VERIFICATION SURFACE FOR 45 (96) MOUNTED RUBBER SLIDER WE CONFIRM THAT THE PENDULUM TEST VALUE (PTV) RANGE BELOW HAS BEEN OBTAINED USING THIS PAVIGRES TILE UNDER WET CONDITIONS USING A 45 (96) MOUNTED RUBBER SLIDER CERTIFIED PTV 32 - 36	1		4342

**REMARKS**

1. THE VERIFICATION SAMPLE HAS BEEN TESTED IN ACCORDANCE WITH THE GUIDELINES FOR UK SLIP RESISTANCE GROUP
2. THE VERIFICATION TILE IS GOOD FOR 90 VERIFICATION TEST SWINGS OF THE PENDULUM OR TWELVE MONTHS FROM FIRST CUSTOM USE, FOLLOWING WHICH THE CUSTOMER MAY WISH TO CONSIDER REPLACEMENT
3. EACH TEST SWING OF THE PENDULUM MUST BE PERFORMED IN THE DIRECTION INDICATED BY THE ARROW

Certified that the whole of the supplies detailed herein have been inspected, tested and unless otherwise stated above, conform in all respects with the requirements of the contract or order. The quality control arrangements adopted in respect of these supplies have been agreed with the conditions of our Quality Management System.

**Signed:** *C. D. Teale*  
For and on behalf of MUNRO INSTRUMENTS LTD

**Date:** 08.03.2016 (RECOMMENDED REPLACEMENT (FEB 2017))

PINK - WITH GOODS BLUE - WITH INVOICE WHITE - FILE COPY



## Calibration Records (Continued)


Records applicable on 05/03/17

### Rz Surface Roughness Standard


**CERTIFICATE OF CALIBRATION**

Issued By: **Taylor Hobson Calibration Laboratory**

Issue Date: 06-April-2016 Certificate No: 60511  
Date of Calibration: 06-April-2016



0026



Taylor Hobson Limited  
2 New Star Road  
Leicester, LE1 9JG  
England

Tel: +44 116 2763771  
Fax: +44 116 2143258  
E-Mail: calibrat@uk.tai.com  
Internet: http://www.taylor-hobson.com

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APPROVED  
SIGNATORY  
  
J.D. Leeman

<p>Description: Roughness Standard New</p> <p>Code Number: 1122937-01 UC</p> <p>Serial Number: 11442</p> <p>Manufactured by: Taylor Hobson Ltd</p> <p>Calibrated For: Spectrum Metrology Ltd 8 Irelton Avenue, Leicester LE4 9CU, United Kingdom</p>	<p>Acting as Agent for: Grip Potential Ltd</p> <p>Customer Order Number: 8841</p> <p>Taylor Hobson Order Number: SC305817</p>
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Previous Certificate Number:	Not Applicable
Records Reference:	Network
Calibration Temperature:	20°C ±1°C
Date Received into Laboratory:	31-March-2016

**AMETEK**  
ULTRA PRECISION TECHNOLOGIES

Certified: *Keen*

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and for units of measurement realised at the National Physical Laboratory or other recognised national standards laboratories. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

**CERTIFICATE OF CALIBRATION**

UKAS ACCREDITED CALIBRATION LABORATORY 0026

06 April 2016

Certificate No: 60511

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**Measurement Conditions.**  
This standard has been calibrated using computerised traceable measuring techniques on a Taylor Hobson Form Talysurf PGI instrument. All measurements were taken using a 90° conical diamond tip stylus with a nominally 2µm spherical radius. A traversing speed of 0.5mm per second, an X-axis sampling rate of 0.25µm, Z-axis resolution of 0.2µm and software stylus tip/arcuate correction have been applied throughout the measurements.

**Analysis Conditions Gaussian.**  
The surface finish portion of the standard was calibrated in accordance with ISO 4287:2000 and ISO 4288:1996 utilising a 0.8mm Gaussian filter cut-off with a bandwidth ratio of 300:1. The mean Ra and Rz values were calculated from twenty measurements taken 0.8mm apart within the calibration rectangle. The results obtained, rounded to the nearest 0.01µm, are shown in Table 1.

**Uncertainty Statement.**  
The expanded uncertainty of calibration for amplitude parameters is ±0.2% of the mean value. When added to the standard deviation of the measurements, this gives an expanded uncertainty of calibration as stated in Tables 1 & 2.

Included in the tabulated results is a calculated imperial equivalent.

Mean Ra Value	Standard Deviation	Expanded Uncertainty
5.88 µm	0.015 µm	±0.136 µm
231 µm	0.6 µm	±5.4 µm

Mean Rz Value	Standard Deviation	Expanded Uncertainty
22.20 µm	0.054 µm	±0.502 µm
874 µm	2.1 µm	±19.7 µm

**Analysis Condition 2CR.**  
The measured surface finish data was re-analysed using a 0.8mm 2CR filter cut-off with a bandwidth ratio of 100:1. The mean Ra and Rz results, rounded to the nearest 0.01µm, is shown in Table 2. This value should be used when

Mean Ra Value	Standard Deviation	Expanded Uncertainty
5.84 µm	0.016 µm	±0.136 µm
230 µm	0.6 µm	±5.4 µm

Mean Rz Value	Standard Deviation	Expanded Uncertainty
21.62 µm	0.048 µm	±0.484 µm
851 µm	1.9 µm	±19.1 µm

Upon receipt into the laboratory the standard was marked:

Ra 5.81 µm  
229 µm  
Rz 21.50 µm  
847 µm

Certified: *Keen*

The reported uncertainty is based on a standard uncertainty multiplied by a coverage factor k=2, providing a level of confidence of approximately 95%. The uncertainty evaluation has been carried out in accordance with UKAS requirements.

### Pendulum Slider #96/4S

Date: 09 March 2016  
Our Ref: 4342  
Your Ref: Ben Powers

Grip Potential Ltd  
Ringstead Business Centre  
1-3 Spencer Street  
Ringstead  
Northants  
NN14 4BX

**MUNRO**  
INSTRUMENTS

**Certificate of Conformity for Four S Rubber**

Description and Part Number	Qty	Specification
881032/2 - Mounted Four S Rubber (96) Slider - Large - for Main Tester, Batch No. 978	10	Hardness : BS ISO 48:2010 Lüpké Resilience : BS ISO 4662:2009

Temperature :	5°C	23°C	40°C
Resilience % (limits)	19-23	22-26	26-30
Resilience % (mean results)	22	26	29

Hardness was determined at a temperature of 23 ± 2°C. Five readings were taken on the test pieces and a value of 95 was obtained. This falls within the specified limit of 96±2.

Resilience was determined at the specified temperature in accordance with BS ISO 4662:2009. The Lüpké resilience was within the specified limits.

The Four S rubber supplied, Batch Number 978, conforms to the test specifications laid down by the UK Slip Resistance Group.

**Recommended date of disposal:** 09.03.2017

Certified that the whole of the supplies detailed above have been inspected, tested and unless otherwise stated, conform in all respects with the requirements of the contract or order.

Signed: *[Signature]* Date of issue: 09.03.2016

Munro Instruments Ltd, G10th House, 406 Ring Road Lane South, Woodford Green, Essex, IG8 8EY UK  
P: +44 (0) 20 8551 7000 / F: +44 (0) 20 8551 4565 / E: info@munroinstruments.co.uk / www.munroinstruments.co.uk  
Company Registration Number: 06963500 VAT Number: GB 977 7939 30

### Pendulum Slider #55/TRL

Date: 09 March 2016  
Our Ref: 4342  
Your Ref: Ben Powers

Grip Potential Ltd  
Ringstead Business Centre  
1-3 Spencer Street  
Ringstead  
Northants  
NN14 4BX

**MUNRO**  
INSTRUMENTS

**Certificate of Conformity for TRL (55) Rubber**

Description and Part Number	Qty	Specification
881032/1 - Mounted TRL Rubber (55) Slider - Large - for Main Tester, Batch No. 977	4	Hardness : BS ISO 48:2010 Lüpké Resilience : BS ISO 4662:2009

Temperature :	0°C	10°C	20°C	30°C	40°C
Hardness IRHD	55	54	55	55	56
Resilience % (limits)	43-49	58-65	66-73	71-77	74-79
Resilience % (mean results)	47	61	67	74	75

The hardness, at all the specified temperatures, was within the specified limit of 55 ± 5 IRHD.

The Lüpké resilience was within the specified limits.

The TRL rubber supplied, Batch Number 977, conforms to the test specifications laid down by the UK Slip Resistance Group.

**Recommended date of disposal:** 09.03.2017

Certified that the whole of the supplies detailed above have been inspected, tested and unless otherwise stated, conform in all respects with the requirements of the contract or order.

Signed: *[Signature]* Date of issue: 09.03.2016

Munro Instruments Ltd, G10th House, 406 Ring Road Lane South, Woodford Green, Essex, IG8 8EY UK  
P: +44 (0) 20 8551 7000 / F: +44 (0) 20 8551 4565 / E: info@munroinstruments.co.uk / www.munroinstruments.co.uk  
Company Registration Number: 06963500 VAT Number: GB 977 7939 30

## Verification Records

Records applicable on 05/03/17

### Pendulum Verification

Surface	Slider	Condition	Pendulum Test Value					Median	Expected	Acceptable?
Pink Lapping Film	#96/4S	Wet	59	59	59	59	59	59	$59 \leq x \leq 64$	✓
Float Glass			6	6	6	6	6	6	$5 \leq y \leq 10$	✓
Pavigres Tile			36	36	36	36	36	36	$32 \leq z \leq 36$	✓

### Roughness Meter Verification

Surface		Value	Expected	Acceptable?
Roughness standard		21.5	$x = 21.5$	✓

### Inclinometer Verification

Surface		Value	Expected	Acceptable?
Levelled pendulum base		0.0	$x = 0.0$	✓



## Quality Policy Statement

I am committed to the provision of any and all resources required to ensure good professional practice and quality of testing/calibration by Grip Potential Ltd. Any instances where staff believe quality of service could be improved they are encouraged to report directly to the Quality Assurance Manager. I am committed to the continual improvement and effectiveness of Grip Potentials management system and compliance to EN ISO/IEC 17025:2005. It is important both to me and the company future that customer requirements are met, or where possible exceeded, in addition to statutory and regulatory requirements. – Ben Powers, Director

Grip Potential Ltd shall adhere to the following standard of service;

- Any works affecting the independent impartial nature of the company shall be avoided wherever possible and any conflict of interests reported to the customer before works are conducted.
- Customer and potential customer enquires shall be answered in a professional manner, with the benefit of the expertise of relevant staff and as soon as is reasonably practical.
- Where test/calibration requirements have been indicated by the customer as urgent, and appropriate paperwork has been received, every practical effort will be made to issue the test/calibration report/certificate as soon as is possible. Results will be communicated as soon as is reasonably practical.
- Where possible, without encroaching on arrangements made with other customers or affecting the accuracy/validity of tests/calibrations, flexible visits will be conducted where further testing may be commissioned by the customer, or a suitably authorised representative of the customer, as required.
- All customers shall be given the opportunity to provide feedback on the service provided.

The management system exists to provide all necessary resources to ensure good professional practice and quality of testing/calibration.

Tests/calibrations shall always be conducted in accordance with the appropriate Standards, unless contrary to customer's requirements, in which case any deviation from Standards will be documented in the Sales Agreement prior to works and any subsequent test/calibration reports/certificates.

All technical staff have access to the Quality Policy Statement and are required to familiarise themselves with the document and implement the policies and procedures as applicable to their own work.

The Quality Assurance Manager is responsible for ensuring compliance with EN ISO/IEC 17025:2005.

Senior management are responsible for ensuring the integrity of the management system is not affected by changes made to the management system.

Issues may be brought to the Quality Assurance Manager's attention via the relevant section in the feedback form, or directly via email to [QAManager@grip-potential.com](mailto:QAManager@grip-potential.com).

## Personnel Competency

### Test Operator(s)

#### Operator 1

Ben Powers

#### Relevant Competencies

BS 7976-2  
BS EN 13036-4  
BS 1134  
Product slip test certification  
Slip risk assessment  
Slip accident investigation  
Report writing

#### Requiring Supervision

None

#### Relevant Qualifications

C&G Factors in Accident Causation  
NEBOSH National General Certificate  
BSc (Hons) Computational Physics

#### Relevant Experience

>7 years as Slip Risk Consultant  
(Grip Potential Ltd)  
18 months as Floorcoverings Technician  
(SATRA Technology Centre)

#### Memberships

UK Slip Resistance Group  
Academy of Experts  
IOSH

#### Additional Notes

Previously conducted BS 7976 Pendulum testing (unsupervised) for a UKAS accredited laboratory. More than 5000 tests conducted across more than 500 sites for Grip Potential Ltd. Experience of assessing a wide range of flooring materials in a wide range of environments. Testing conducted regularly for slip injury legal cases. Practising member of the Academy of Experts. Oral evidence given in court. Full and active member of the UKSRG and takes part in regular round robin testing alongside other reputable laboratories. Speaker at the 2016 UKSRG International STF's Conference. Technical member of IOSH.

#### Operator 2

n/a

#### Relevant Competencies

#### Relevant Qualifications

#### Additional Notes

#### Relevant Experience

#### Requiring Supervision

#### Memberships

### Report Author

#### Name

Ben Powers

#### Relevant Competencies

BS 7976-2  
BS EN 13036-4  
BS 1134  
Product slip test certification  
Slip risk assessment  
Slip accident investigation  
Report writing

#### Requiring Supervision

None

#### Relevant Qualifications

C&G Factors in Accident Causation  
NEBOSH National General Certificate  
BSc (Hons) Computational Physics

#### Relevant Experience

>7 years as Slip Risk Consultant  
(Grip Potential Ltd)  
18 months as Floorcoverings Technician  
(SATRA Technology Centre)

#### Memberships

UK Slip Resistance Group  
Academy of Experts  
IOSH

#### Additional Notes

Previously conducted BS 7976 Pendulum testing (unsupervised) for a UKAS accredited laboratory. More than 5000 tests conducted across more than 500 sites for Grip Potential Ltd. Experience of assessing a wide range of flooring materials in a wide range of environments. Testing conducted regularly for slip injury legal cases. Practising member of the Academy of Experts. Oral evidence given in court. Full and active member of the UKSRG and takes part in regular round robin testing alongside other reputable laboratories. Speaker at the 2016 UKSRG International STF's Conference. Technical member of IOSH.

## Additional Information

### Slip Risk Assessment Theory and Methodology

Grip Potential's method for assessing slip risk is based on current guidance issued by the HSE, HSL and UKSRG. The assessment has two parts, 'slip testing' of the floor surface to determine frictional properties, and assessment of the wider environment to determine the level of risk the floor's frictional properties pose in end use.

Slip testing is conducted using the BS 7976 'Pendulum'. This is described as a "reliable and robust" test method by the HSE and is the HSE's "preferred method of testing because it is portable and works in the conditions that slip accidents happen". The HSE classify Pendulum Test Values (PTV's) as a high, moderate or low risk of slip, based on research into the rate of slipping on surfaces of a given PTV. A low risk of slip classification (36+PTV) should be sought in the conditions of end use. Testing is typically conducted in 'as found' dry conditions, and water contaminated conditions, as per BS 7976. Additional contaminants relevant to the end use environment, or various cleaned surfaces, can also be tested. A test will incorporate either a #96/4S slider, representative of a shod pedestrian, or a #55/TRL slider, representative of a barefoot pedestrian. Tests may be conducted in 3 directions (a full test) as per BS 7976, giving information about the directionality, or where the directionality of a surface is known, or more commonly where it is of less interest, tests in a single direction (indicative) tests may be conducted. The surface condition, slider used and test type will always be recorded in the results sheet and final report.

In addition to Pendulum slip testing the HSE and UKSRG recommend surface roughness measurement in order to provide additional information about a floor surface. In some cases (often stairs) it is not possible to test the surface of interest with the Pendulum and instead an adjacent surface must be tested and Rz measurement used to demonstrate similar surface characteristics on the surface of interest and tested surface. The HSE classify Rz values as indicating a low, moderate or high risk of slip in a similar way to the Pendulum values. In the opinion of Grip Potential Ltd, on the basis of our extensive experience conducting Pendulum and Rz measurement side by side, we do not believe that the Rz measurement is useful or indeed meaningful in determining slip resistance characteristics. We continue to conduct Rz measurement only because it is recommended by the HSE and UKSRG.

Whilst it is impossible to accurately classify slip risk without having an accurate measurement of the frictional properties of the floor surface, it is similarly impossible to accurately classify slip risk without considering the end use conditions. We base our risk assessment on the HSE's Slips Potential Model in order to consider all salient factors in the risk of a slip. Of utmost interest is the likelihood, type and source of any potential contamination as this is likely to have the greatest impact on the slip resistance experienced by those using the surface. Some information about the test site, for instance cleaning regime or the extent of water ingress in adverse weather, may not be obvious to the assessor and so we must rely on information from the site representative in forming an opinion of slip risk, or revert to conditional risk assessments.

Some circumstances can increase the requirement for underfoot friction, such that the HSE classification for slip risk does not apply. For surfaces with increased frictional demand, pedestrians suddenly turning, changing direction, pushing/pulling/carrying heavy loads, we would recommend a PTV of 40+ is sought instead of the 36PTV 'low risk' minimum. On sloped surfaces the angle of the slope determines the increased frictional demand, and we adjust the

## Additional Information (Continued)

### The Law

*Please note that we are slip risk consultants not legal advisors. As such the following should not be considered professional legal advice. If you are seeking professional legal advice we would recommend you contact a solicitor.*

There is no express requirement for a particular value from a particular slip test method to be achieved in UK law. It is however a clear requirement that floor surfaces must not present a risk to health or safety. The BS 7976 Pendulum is the preferred test method of the UK Regulator (the HSE) and values of 36 or greater are classified as presenting a 'low risk of slip'. In every legal case we have been involved in it has been the 36+PTV "low risk of slip" classification which has been of interest in determining whether a floor surface is safe or slippery.

The Workplace Health Safety and Welfare Regulations 1992 state that floors shall be suitable for their purpose, and shall not be slippery so as to expose a person to a risk to their health and safety.

The Management of Health and Safety at Work Regulations 1999 states that employers shall make suitable and sufficient assessment of the risk to health and safety of both employees and those in connection with their undertaking.

The Health and Safety at Work Act 1974 states more generally that it shall be the duty of every employer to ensure, so far as is reasonably practicable, the health, safety and welfare of those affected by their work.

Whilst the Enterprise and Regulatory Reform Act 2013 has removed civil liability for breaches of health and safety, it is typical that the Courts will regard breaches of health and safety regulations as evidence of negligence.

## Additional Information (Continued)

### Slip Resistance Over Time

Slip resistance changes over time with the effects of wear, cleaning and contamination. Even surfaces initially achieving values comfortably within the 'low risk of slip' classification can drop to non-compliant levels quickly where subject to significant footfall, or if contamination overtakes cleaning. Whether the surface is a standard floor, specialist anti-slip, or subject to an anti-slip treatment, it will generally change over time at a rate that is impossible to predict.

Where surfaces are tested 'ex-factory' prior to being laid they give a good indication of the performance of the finished surface in most cases, however variations can occur in production, and installation processes can change the surface, altering the slip risk classification. A common problem with newly installed floors is an ineffective builder's clean, preventing a suitably specified anti-slip floor from ever providing adequate grip, and creating the dangerous condition of a floor assumed to be safe and so being free from any control measures, whilst presenting a slip hazard in contaminated conditions. It is recommended that surfaces are tested and certified post-installation in order to provide an accurate measure of the supplied, finished, in-situ surface, and ensure it is performing as expected.

This test report provides a record of the slip risk of a surface at a single point in time. A single test showing a compliant surface is effective in defending slip accident claims, and demonstrating that duty of care has been fulfilled, only around the point of time of the test/installation. Post installation and subsequent periodic testing provides evidence of compliance for the full period between the times of testing. Repeat testing also serves to demonstrate an ongoing concern for the safety of staff/visitors.

Slip and fall accident claims, spurious or legitimate, can arise after a lengthy period of time, sometimes with those in the firing line having no knowledge of any accident even occurring. We regularly provide expert witness test reports on behalf of lawyers/insurers dealing with such cases around 3 years after the accident. As slip resistance changes over time, an independent and impartial expert report generated at the time of the slip (or at times before and after the slip) will carry far greater weight in court than an expert witness report generated at the time of the claim, several years after the slip. The reports we generate in risk assessments are identical in content to those that we conduct in an expert witness role. The reports we generate in sample tests are undertaken with the same equipment to the same standards, but cannot take into account any changes to the surface in installation or use, nor can they consider whether values achieved are suitable for the subsequent end use environment.

In order to maintain a record of safe, compliant floors it is essential that slip testing is conducted on a periodic basis. This ensures that a continuous record of compliance, with records relevant to the likely period of time of a slip accident claim. If surfaces have declined to unsafe levels, retesting permits prompt remedial action to prevent future slips and associated claims. Such actions are often as simple as an effective clean, changes in surface management, or renewal of an anti-slip treatment.

Reassessment should be conducted at least annually, but we will recommend shorter periods between assessment where values lie close to the cut off for a low risk of slip, or there are factors contributing to a greater propensity for the surface to change through wear or contamination.

## Additional Information (Continued)

### Further Reading

If you have any questions regarding this report or slip testing/slip risk assessment in general please do not hesitate to contact us directly, we will be happy to help. Please note that we are unable to discuss particular results/findings with anyone other than the client, unless their permission has been given.

Our website, [www.grip-potential.com](http://www.grip-potential.com), aims to answer all questions about slip resistance, slip test methods, reducing risk, cleaning, treatments, etc.

The HSE has a slips mini site, [www.hse.gov.uk/slips](http://www.hse.gov.uk/slips), and offers a web based tool giving an overview of slip risk assessment, [www.hse.gov.uk/slips/step](http://www.hse.gov.uk/slips/step).

The UK Slip Resistance Group is the UK's leading independent authority on slip resistance and is continually working towards furthering the understanding of slip resistance. They issue guidelines underpinning the best practice methodology for the assessment of slip risk, amongst other publications aimed at reducing slip accidents, which are available for download from their website, [www.ukslipresistance.org.uk](http://www.ukslipresistance.org.uk).