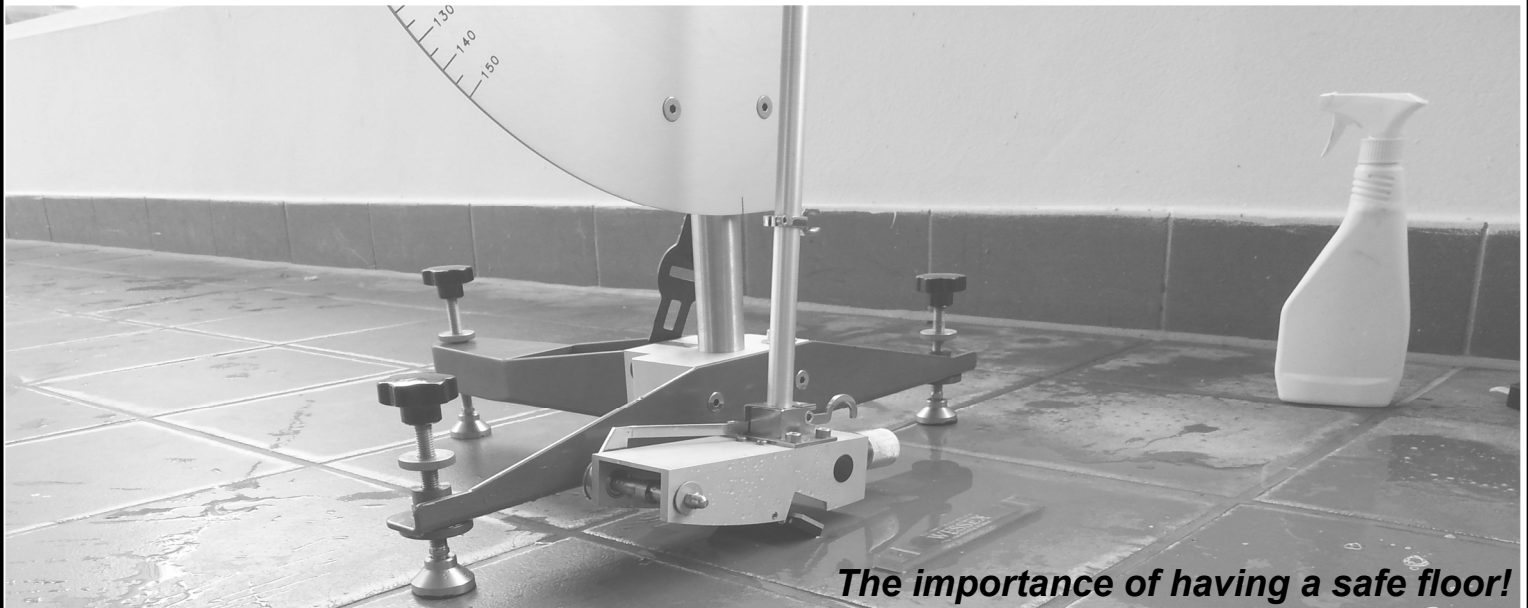




Floor Safety Consultants



Slip Test Report

Produced for:



Smartawood Endurance Plastic Products

www.safestepuk.co.uk



BS 7976:2 PENDULUM SLIP TEST REPORT

RECYCLED PLASTIC DECK/BOARD SAMPLES

Company:
Plastecowood Ltd
2 Expressway Business Park,
Bodelwyddan,
LL18 5SQ

Contact:
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Report carried out by:
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Safe Step UK Ltd
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Date of Test:
Wednesday, 18th February 2015

Test Conducted:
Safe Step UK Ltd
Unit 22,
Cwm Cynon Business Park,
Mountain Ash,
CF45 4ER



Slip Test Report — Plastecowood Ltd

A series of slip tests were carried out in accordance with H & S guidelines, using a Pendulum Slip Tester. I confirm that I have been trained by the manufacturer of the Pendulum Slip Tester, and that I carried out the tests in a manner recommended by them.

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 Safe Step (UK) Ltd report procedure.

The Pendulum COF test forms the basis of the coefficient of dynamic friction 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” rubber (standard simulated shoe sole) and is designed to replicate the most common slipping motion experienced by pedestrians wearing shoes. A softer more malleable rubber (TRL rubber) may be used to simulate a barefoot or casual shoe slip. 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.

A site assessment is an important component in determining the slip risk of any given floor. The HSE pedestrian slip potential model highlights important environmental factors in a slip. Contaminating substances, frequency and methods of cleaning, types of footwear and likely pedestrian behaviour all affect the potential for a slip incident.

The above assessment was carried out by Safe Step UK Ltd adhering to UKSRG, HSE and CIRIA guidelines on pedestrian slip risk assessment. The results given are accurate representations of data acquired on site and through the client. The results have been interpreted to give slip risk classifications based on parameters recommended by the UKSRG and HSE.

Key to pendulum test results (as per HSE guidance sheet ‘Slips and Trips’)

| | Pendulum test value (PTV) |
|-------------------------|---------------------------|
| High slip potential | 0 – 24 |
| Moderate slip potential | 25 – 35 |
| Low slip potential | 36 and over |

Date of Test: 18th February 2015



Slip Test Report – Plastecowood Ltd

Theory ~ Roughness Test

Continued.....

The surface roughness test was also conducted using the Suretronic duo. An indication of slipperiness in water-contaminated conditions may be simply obtained by measuring the surface roughness of flooring materials. Roughness measurements may also be used to monitor changes in floor surface characteristics, such as wear.

Research has shown that measuring the Rz parameter allows slipperiness to be predicted for a range of common materials. Rz is a measure of total surface roughness, calculated as the mean of several peak-to-valley measurements.

Surface micro roughness data is used to supplement pendulum test data, if pendulum test data is not available it could be used with the SAT slips assessment tool) via the HSE website.

Key to Rz test results (as per HSE guidance sheet 'Slips and Trips')

| Slip Potential | Rz Surface Roughness |
|-------------------------|----------------------|
| High slip potential | Below 10 um |
| Moderate slip potential | 10 — 20 um |
| Low slip potential | 20 + um |

Date of Test: 18th February 2015

Areas Tested/Observations – Plastecowood Ltd

(#1) Sample 1

A black, grooved sample piece of recycled plastic lumber deck/ board is tested in wet & dry conditions.



(#2) Sample 2

The same material is noted as the one above but this sample this has not got the grooves/ribbed feature therefore creating a smooth, seamless attribute which could be easily kept clean and inhibit the rapid growth of lichen, moss, algae as opposed the above sample.





Summary of Dry Test Results – Plastecowood Ltd

| Test area | Maintain and monitor | Maintain and monitor closely | Near failure. Consider remedial work before incident occurs | Failed. Take immediate action to resolve |
|---------------------------------|----------------------|------------------------------|--|---|
| | Low slip potential | Moderate slip potential | | High slip potential |
| # 1 Sample 1 Grooved side | 59 | | | |
| # 2 Sample 2 Smooth Side | 58 | | | |

Detailed Dry Test Results – Plastecowood Ltd

| Test area | Test Result Values | | | Mean PTV |
|-----------|--------------------|----|----|-------------|
| # 1 | 54 | 63 | 59 | 58.6 |
| #2 | 57 | 58 | 60 | 58.3 |

Test equipment is calibrated by a BSI approved calibrator. Test results produced by Safe Step (UK) Ltd.



Summary of Wet Test Results – Plastecowood Ltd

| Test area | Maintain and monitor | Maintain and monitor closely | Near failure. Consider remedial work before incident occurs | Failed. Take immediate action to resolve |
|---------------------------------|----------------------|------------------------------|---|--|
| | Low slip potential | Moderate slip potential | | High slip potential |
| # 1 Sample 1 Grooved side | 46 | | | |
| # 2 Sample 2 Smooth Side | 46 | | | |

Detailed Wet Test Results – Plastecowood Ltd

| Test area | Test Result Values | | | Mean PTV |
|-----------|--------------------|----|----|-------------|
| # 1 | 45 | 44 | 48 | 45.6 |
| #2 | 46 | 46 | 46 | 46.0 |

Sufficient water was applied to the floor area to simulate a spill in accordance with the Pendulum manufactures' instructions. Test equipment is calibrated by a BSI approved calibrator. Test results produced by Safe Step (UK) Ltd.



Summary of Rz Test Results – Plastecowood Ltd

| Test area | | | | |
|--------------------------|--------------------|-------------------------|--|---------------------|
| | Low slip potential | Moderate slip potential | | High slip potential |
| Sample 1 Grooved side | 27 | | | |
| Sample 2 Smooth Side | 36 | | | |

Detailed Rz Test Results – Plastecowood Ltd

| | | | | | | | | | | | |
|-----|------|------|------|------|------|------|------|------|------|------|-------------|
| # 1 | 43.3 | 29.5 | 13.3 | 7.7 | 29.3 | 71.9 | 28.8 | 15.7 | 18.1 | 12.5 | 27.0 |
| # 2 | 43.5 | 43.0 | 29.3 | 13.2 | 30.7 | 21.2 | 35.9 | 42 | 51 | 46 | 35.6 |

Please Note:

Roughness test results supplements pendulum test data. These results should not be used on their own for measurement of slip risk following a slip accident or claim.

Calibration Certificate

Manufacturer's Machine ID Number **SK1762**
Item Tested **TRRL Type Skid Tester**
Calibration Certificate Number **C2677**
Customer Name **Safe Step UK Ltd**
Date Calibrated **12/11/2014**
Expiry Date **11/11/2015**

We certify that this machine has been calibrated in accordance with BS EN 1097-8 : 2009, BS EN 13036:part 4:2003 and BS7976:Part 3:2002

The procedures used are contained in the company's Quality Manual, which has been accredited under ISO 9001:2000

Findings and adjustments are recorded in the Customer Report Form supplied with this Certificate.

The instrument should be re-calibrated within one year of the calibration date.
(BS EN 1097-8:2009 Clause D.1.1 & BS7976 -3 2002 Clause 4 note 2)

Authorised by



WESSEX TEST EQUIPMENT LTD



Conclusion/Recommendations – Plastecowood Ltd

Both samples tested, in-house identifies a '**Low**' slip risk, whilst tested in '**Dry**' & '**Wet**' conditions, in accordance to HSE guidelines (*as per HSE slips information sheet*).

Although Sample 1 had a better resistance going across the grooved ridge (in 1 direction), Sample #2 provided 3 consistent readings taken in the 3 directional swings.

It is my opinion that Sample #2 could be easily kept clean, if appropriate cleaning measures are adopted by the client/end user.

All product contamination, can have the biggest impact to dramatically reduce the pendulum test values and would therefore suggest the client/end user to adopt a suitable, vigorous cleaning regime when this type of floor surface is installed to minimise the future risk of slipping.

Test conditions were carried out on ex-factory recycled plastic samples in controlled laboratory conditions. A comparison was made between these samples and an untreated wooden deck board which had been previously tested in-situ by Safe Step UK Ltd and which achieved a moderate risk while wet compared to the recycled plastic samples which achieved a low risk while wet.

If these products are specified for typical external applications, seasonal and weather conditions need to be taken into consideration to minimise slip risks. Whilst sample no 2 is less likely to retain water, ice, moss or lichen and will dry more quickly, additional mitigation measures such as grit or rocksalt are recommended, whenever required.

I would suggest a test be carried out in-situ once installed and after 3 months of usage to show further compliance to HSE guidelines.

Should you require clarification or further information on the report procedure do not hesitate to contact me.

Yours faithfully,

P.L. Collins

Phil Collins

Managing Director Mobile: 07990 030 474 E-mail: info@floorsafetyconsultants.co.uk

Associate Member:



Date of Test: 18th February 2015