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Certificate 37237/F

Date of Receipt
13/8/07

SLIP RESISTANCE TESTING USING THE PENDULUM TESTER

BS 7976:Part 2:2002

Project:	Walkover Map of Scotland
Date of Test:	13 August 2007
Rubber Slider Type:	'96' (formerly 4S)
Material Under Test:	Forex PVC with direct printing (O S Map), 310 x 310 x 4mm

Sandberg Sample Ref.	Surface Finish	Surface Roughness[1] R_z,	Surface Temperature, °C	Orientation	Pendulum Test Value (mean)	
					Dry	Wet
F68077	Printed	15.2	23	A	65	31
				90° to A	62	30

The TRL pendulum tester has a range of readings from 0 to 150, high values indicating good slip resistance. Guidance on the interpretation of results using the Four S Slider is suggested by the UK Slip Resistance Group[2] as follows:-

Potential For Slip	**Pendulum Test Value**
High	0 to 24
Moderate	25 to 35
Low	36+

The surface roughness measurements are a guide to slip resistance particularly in borderline regions. It is recognised that increased roughness of the floor surface can give an improvement in slip resistance in wet conditions. Surfaces contaminated with pure water generally require a surface roughness of at least 10µm R_z to provide a moderate level of slip resistance and at least 20µmR_z to indicate low slip potential: more viscous contaminants require higher surface roughness. Roughness measurements should not be solely relied upon to evaluate the potential slip resistance of a floor.

Client	Map and Marine Ltd PO Box 24 Main Street Taynuilt Argyll PA35 1WU For the attention of Suzanne Hills	Signed	For Sandberg LLP
		Name	Richard Rogerson
		Position	Department Manager
Reference	Note with samples received 13 August 2007	Date	15 August 2007

The results reported here relate to the surface as tested. It should be noted however that the slip resistance of surfaces in service can be changed by various factors such as abrasion, polishing and contamination. Overall assessment of the potential for slip should take into account conditions of use and the environment, in addition to test results. Materials, samples and test specimens are retained for a period of 2 months from the issue of the final report. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.

1 Surface roughness is not covered by our UKAS accreditation.

2 The measurement of floor slip resistance guidelines recommend by the UK Slip Resistance Group, Issue 3, 2005

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Slip Resistance of Floor and Paving Surfaces

Floor and paving materials must satisfy a variety of both physical and aesthetic requirements. Slip resistance under both dry and wet conditions is a crucial performance quality essential to the safety of pedestrians and vehicular traffic. For vehicular traffic the term skid resistance is used.

There is an ever increasing range of materials available for internal and external floor and paving surfaces including those listed below:

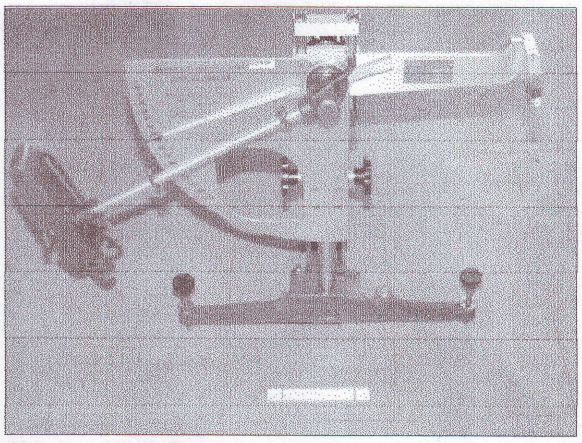
- High strength wearing screed
- Polymer modified concrete
- Resin finishes (epoxy, acrylic)
- Natural stone
- Terrazzo
- Ceramic
- Clay or concrete pavers
- Mastic asphalt
- Timber
- Flexible (vinyl, rubber, PVC)
- Glass

The most commonly accepted and specified method of measuring slip resistance is by use of the TRL Pendulum Tester incorporating a rubber slider. Sandberg have UKAS accreditation for site and laboratory measurement of slip resistance using the Pendulum Tester to BS 7976-2.

Slip resistance of surfaces in service can be changed by various factors such as abrasion, polishing and contamination. Overall assessment should take into account conditions of use and the environment, in addition to the test results.

Sandberg offer a comprehensive service of slip resistance testing ranging from advice regarding new materials to accident investigations. Below are listed some of the services available:

- In situ testing in various locations for example shopping malls, station concourses, lift lobbies and reception areas.
- Measurement of surface roughness (Rz) using a micro-roughness meter.
- Laboratory testing of proposed flooring materials including assessment of different finishes such as honed, etched or polished.
- Interpretation of results, the Pendulum Test Value (PTV) and calculation of the coefficient of friction (μ).
- Advice on remedial measures to improve the slip resistance of floor and paving surfaces.



TRL Pendulum Tester

To discuss your needs please contact
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