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Report No. 4RS-MC-160670-R564501

**SLIP RESISTANCE ASSESSMENT OF A PORCELAIN TILE
TREATED WITH OXON SURE GRIP.**

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Issue Date: 6th January 2017

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FURTHER INFORMATION.

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1. Introduction

4-RAIL Services Limited was requested by Sandy Joon of Oxon Technologies to carry out a slip resistance assessment of a porcelain tile treated with “Oxon Sure Grip”.

A brief description of the treated flooring sample received from the client on 29th November 2016 is given below:

SAMPLE REF	DESCRIPTION	APPROX SIZE / mm
160670/231216/1	Untreated half of porcelain tile (for comparison)	300 x 500
160670/231216/2	Treated with “Oxon Sure Grip” half of porcelain tile	

It is understood that “Oxon Sure Grip” is an acidic solution that works by etching floor surfaces to increase its slip resistance properties.

The solution is also manufactured by Oxon Technology Pvt Limited, (Plot No: 260, HUDA Sector 25, Part – 2, Panipat, Haryana, 132103, India).

2. Test Methods

Slip resistance and surface roughness (Rz) was measured in accordance with 4-RAIL Services Limited Test Procedure 4R-M125, which is based on the guidelines recommended by the UK Slip Resistance Group in the booklet ‘The Measurement of Floor Slip Resistance’.

Slip resistance was measured with a portable slip tester designed by the Transport Research Laboratory (TRL). Testing was carried out under both dry and wet conditions, using the standard slider 96 (previously known as 4S) contact rubber as specified by the Rubber and Plastics Research Association.

The sample was slip tested in three directions; along a defined principal axis and at 90° and 45° to the principal axis. Each individual test comprised testing of the flooring material eight times under both dry and wet conditions, with the first three readings being discarded and an average calculated from the last five.

Surface Roughness Measurements were taken using a Surtronic 10. Ten readings were taken in random locations on the surface of the test piece and the average calculated.

3. Results

Slip Resistance and surface roughness measurements were made on the samples on 23rd December 2016.

The flooring was tested under the following environmental conditions:

- Air Temperature: 20, 8°C
- Floor Temperature: 20, 3°C
- Humidity: 42%RH

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SAMPLE NUMBER	TEST DIRECTION	TEST CONDITION	SLIP RESISTANCE VALUES	AVERAGE VALUE	OVERALL AVERAGE
160670/ 231216/1 untreated	Principal Axis	Dry	64 64 64 64 63	64	Dry: 64 Wet: 14
		Wet	14 14 14 13 13	14	
	90° to Principal Axis	Dry	63 63 63 63 64	63	
		Wet	14 14 14 14 15	14	
	45° to Principal Axis	Dry	64 64 64 65 65	64	
		Wet	15 15 15 15 15	15	

The average Rz value of the sample (160670/231216/1) was determined to be 2,8µm.

SAMPLE NUMBER	TEST DIRECTION	TEST CONDITION	SLIP RESISTANCE VALUES	AVERAGE VALUE	OVERALL AVERAGE
160670/ 231216/2 treated	Principal Axis	Dry	75 75 75 75 75	75	Dry: 75 Wet: 56
		Wet	56 56 56 56 56	56	
	90° to Principal Axis	Dry	74 74 74 74 74	74	
		Wet	55 55 55 54 54	55	
	45° to Principal Axis	Dry	76 76 76 76 75	76	
		Wet	56 56 56 56 55	56	

The average Rz value of the sample (160670/231216/2) was determined to be 11,2µm.

4. Comments

The criteria generally accepted in the U.K. are given in the 'Guidelines Recommended by the UK Slip Resistance Group'. However, it should be noted that no single piece of information can be used to assess a floor's potential for slip. A brief summary is given below:

4S Pendulum Value

24 and below

25 to 35

36 and above

Potential for Slip

High

Moderate

Low

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The criteria applies under both **dry** and **wet** conditions. Only flooring in the “Low” categories are deemed acceptable for general pedestrian use.

<u>Rz Surface Roughness</u>	<u>Potential for Slip</u>
Below 10	High
Between 10 and 20	Moderate
Above 20	Low

The surface roughness values are applicable for water wet low activity pedestrian areas. Generally surfaces contaminated with pure water require a surface roughness of at least 10µm Rz to provide a reasonable level of slip resistance.

Results are presented for final comments from Oxon Technologies Limited and the ultimate client.