



Report No. 4RS-MC-100244-R285976

**ASSESSMENT OF THREE FLOORING SAMPLES, SUPPLIED  
BY ZEST POLYURETHANES.**

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## **1. Introduction**

4-RAIL Services Limited was requested by Mr. Andrew Hearn of Zest Polyurethanes to carry out a laboratory slip resistance assessment of three flooring materials, as detailed below.

A brief description of the flooring samples, received on 12<sup>th</sup> July 2010 is given below:

<b>SAMPLE REFERENCE</b>	<b>DESCRIPTION</b>	<b>APPROX SIZE / MM</b>
100244/120710/1	Safekote	300 x 200
100244/120710/2	Protectakote Transparent PP	300 x 200
100244/120710/3	Safekote with Saftigrip	300 x 200

The samples will be retained for a period of one month from sample receipt, unless otherwise specified.

## **2. Test Methods**

### **2.1 Slip Resistance Assessment**

Slip resistance was measured in accordance with 4-RAIL Services Limited Test Procedure 4R-M126, which is based on the guidelines recommended by the UK Slip Resistance Group in the booklet 'The Measurement of Floor Slip Resistance' and BS 7976-2 – Pendulum Testers, Method of Operation.

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 4S) contact rubber as specified by the Rubber and Plastics Research Association.

Each 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.

### **2.2 Surface Roughness**

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**

**3.1 Slip Resistance**

Slip Resistance measurements were made on the samples on 13<sup>th</sup> July 2010.

The samples were tested under the following environmental conditions:

Air Temperature: 26.3 °C

Floor Temperature: 26.1 °C

Humidity: 41 %RH

SAMPLE NUMBER	TEST DIRECTION	TEST CONDITION	SLIP RESISTANCE VALUES	AVERAGE VALUE	OVERALL AVERAGE
100244/ 120710/1  Safekote	Principal Axis	Dry	69, 69, 69, 69, 70	69	<b>Dry: 69 Wet: 60</b>
		Wet	62, 61, 61, 61, 61	61	
	90° to Principal Axis	Dry	70, 70, 70, 70, 70	70	
		Wet	61, 60, 60, 60, 60	60	
	45° to Principal Axis	Dry	69, 69, 69, 69, 69	69	
		Wet	60, 60, 60, 60, 60	60	
100244/ 120710/2  Protectakote Transparent PP	Principal Axis	Dry	61, 61, 61, 61, 61	61	<b>Dry: 61 Wet: 50</b>
		Wet	50, 50, 50, 50, 50	50	
	90° to Principal Axis	Dry	61, 61, 61, 61, 61	61	
		Wet	51, 51, 51, 51, 51	51	
	45° to Principal Axis	Dry	61, 60, 60, 60, 60	60	
		Wet	51, 51, 50, 50, 50	50	
100244/ 120710/3  Safekote With Saftigrip	Principal Axis	Dry	75, 75, 75, 75, 75	75	<b>Dry: 75 Wet: 70</b>
		Wet	70, 70, 70, 70, 69	70	
	90° to Principal Axis	Dry	74, 74, 74, 74, 74	74	
		Wet	70, 70, 70, 70, 70	70	
	45° to Principal Axis	Dry	75, 75, 75, 75, 74	75	
		Wet	70, 69, 69, 69, 69	69	

The average surface roughness of Safekote is 19.1µm

The average surface roughness of Protectakote Transparent PP is 16.0µm

The average surface roughness of Safekote With Saftigrip is 40.2µm

#### 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:

<u>Slider 96 Pendulum Value</u>	<u>Potential for Slip</u>
25 and below	High
25 to 35	Moderate
35 to 65	Low
Above 65	Extremely Low

The criteria apply under both **dry** and **wet** conditions. Only flooring in the "Low" or "Extremely Low" categories are deemed acceptable for general pedestrian use.

Based on these guidelines the average slip resistance values achieved by Safekote places it in the Extremely Low potential for slip under dry test conditions and Low potential for slip under wet test conditions. Protectakote Transparent PP falls into the Low potential for slip category under both dry and wet test conditions and Safekote with Saftigrip falls into the Extremely Low potential for slip category under both dry and wet test conditions.

<u>Rz Surface Roughness</u>	<u>Potential for Slip</u>
Below 10	High
Between 10 and 20	Moderate
Above 20 and up to 30	Low
Above 30	Extremely 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.

Based on these guidelines Safekote and Protectakote Transparent PP fell into the Moderate potential for slip category and Safekote with Saftigrip falls into the Low potential for slip category.

Results are presented for final comment from Zest Polyurethanes and the ultimate client.