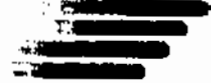




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**SLIP RESISTANCE TESTING OF TERRAZZO TILES TREATED
WITH 'PROTECTOSIL® ANTIGRAFFITI', SUPPLIED BY
DEGUSSA AG.**

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QUERIES SHOULD BE ADDRESSED TO THE AUTHOR.

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1. **Introduction**

4-Rail Services Limited was requested by Mr. Bryan Kennedy of Degussa Limited to carry out a laboratory slip resistance assessment of a terrazzo tile treated with *Protectosil® Antigraffiti* in comparison with a similar untreated terrazzo tile.

A brief description of the floor tile samples, received on 2nd August 2002 is given below:

SAMPLE REF	DESCRIPTION	APPROX SIZE / mm
024353/A	Terrazzo tile treated with <i>Protectosil® Antigraffiti</i>	300 x 300
024353/B	Untreated terrazzo tile	300 x 300

It is understood, that the terrazzo tiles used in this assessment were supplied by Infraco JNP Limited, as being representative of the types of terrazzo tiles commonly found on London Underground Stations.

The aim of this slip resistance assessment is to determine whether the application of the *Protectosil® Antigraffiti* to the supplied terrazzo tiles has any detrimental effect with respect to slip resistance performance.

2. **Test Methods**

Slip resistance was measured in accordance with 4-Rail Services Limited Test Procedure 4R-M125 Issue 3, which is based on the guidelines recommended by the UK Slip Resistance Group in the booklet 'The Measurement of Floor Slip Resistance' Issue 1 - June 1996 and Issue 2 - June 2000.

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

3. **Results**

Slip Resistance measurements were made on the sample on 6th August 2002.

The sample was tested under the following environmental conditions:

- Air Temperature: 26.3 °C
- Tile Temperature 25.9 °C
- 53% Relative Humidity

SLIP RESISTANCE ASSESSMENT OF TERRAZZO TILES TREATED WITH 'PROTECTOSIL® ANTIGRAFFIT', SUPPLIED BY DEGUSSA AG.

Sample Number	Direction of Test	Condition	Slip Resistance Values	Mean Slip Resistance Value
024353/A	Along principal axis,	Dry Wet	65, 65, 64, 64, 64 50, 50, 50, 50, 50	Dry: 64 Wet: 50
	90° to principal axis	Dry Wet	71, 70, 70, 70, 70 50, 49, 49, 49, 48	Dry: 70 Wet: 49
024353/B	Along principal axis,	Dry Wet	60, 60, 61, 60, 60 56, 57, 55, 55, 55	Dry: 60 Wet: 56
	90° to principal axis	Dry Wet	59, 59, 59, 59, 59 54, 54, 53, 52, 52	Dry: 59 Wet: 53

4. Comments

The mean slip resistance values obtained on the untreated terrazzo tile, under dry test conditions were 59 and 60 and under wet test conditions 53 and 56. The untreated terrazzo tile had a very slight profile on its surface, which when tested along two perpendicular directions produced slightly different results.

The mean slip resistance values obtained on the treated terrazzo tile, under dry test conditions were 64 and 70 and under wet test conditions 50 and 49.

From the slip resistance values obtained, the *Protectosil® Antigraffiti* has had the following impact on the terrazzo tile base:

- Increased the slip resistance values under dry test conditions by between 5 and 11 units.
- Decreased the slip resistance values under wet test conditions by between 3 and 7 units.

The generally accepted slip resistance criteria in the UK are given in the June 2000 Guidelines recommended by the UK Slip Resistance Group, which are as follows:

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

Although the application of *Protectosil® Antigraffiti* to the supplied terrazzo tile has resulted in a decrease in the mean slip resistance values obtained under wet conditions, the results obtained still fall within the 'Low Potential for Slip' range as given in the June 2000 Guidelines recommended by the UK Slip Resistance Group.

SLIP RESISTANCE ASSESSMENT OF TERRAZZO TILES TREATED WITH 'PROTECTOSIL® ANTIGRAFFITI', SUPPLIED BY DEGUSSA AG.

4-RAIL Services Limited understand that a proposed application for the product *Protectosil® Antigraffiti* is to protect existing flooring surfaces within London Underground Limited station premises. LUL Engineering Standard E 3406 A5 states that flooring should achieve a slip resistance value of greater than 40 under wet test conditions.

The slip resistance values achieved by the terrazzo tile sample coated with *Protectosil® Antigraffiti* met the requirements of LUL Engineering Standard E 3406 A5. However, it should be noted that *Protectosil® Antigraffiti* is a protective coating designed to improve the graffiti resistance properties and cleanability of flooring surfaces; it is not intended for use as an 'anti-slip' treatment.

From the slip resistance assessment undertaken, 4-RAIL Services Limited recommend that *Protectosil® Antigraffiti* may be suitable for its proposed application. However, 4-RAIL Services Limited recommend that the anti-graffiti and cleanability properties of the material should be assessed prior to use.

Results are presented for final comment by Degussa Limited.