

Novel slip characteristics of conglomerate tiles

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The following report outlines the results of laboratory based slipperiness assessments to investigate the novel slip resistance behaviour of conglomerate tiles. All measurements were carried out using HSL standard procedures, in line with The UK Slip Resistance Group Guidelines where applicable.

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EXECUTIVE SUMMARY

The following report outlines the results of laboratory based slipperiness assessments to investigate the novel slip resistance behaviour of conglomerate tiles. All measurements were carried out using HSL standard procedures, in line with The UK Slip Resistance Group Guidelines where applicable.

Objectives

It has been noted from previous work that the slip potential of conglomerate stone floors can change significantly and rapidly during and after installation. Previous investigations have demonstrated a reduction of up to 35% in PTV (Pendulum Test Value) over 12 test repetitions on conglomerate stone surfaces. The principal aim of this study was to assess the pedestrian slip potential, via pendulum and surface microroughness analysis, of a selection of conglomerate floor tiles, from the ex-factory condition until consistent slip resistance results were achieved. The second aim was to ascertain the causes of this change, and to suggest methods or modifications to existing methods to enable accurate assessment of the slip resistance of new conglomerate floors.

Main Findings

This study found that the slip potential of many conglomerate stone floor tiles changed after comparatively little wear. Decreases of up to 30% in the measured slip resistance of floor surfaces in both dry and water-wet conditions were observed. Although this was a rapid change that tended to level out, it showed a difference between the ex-factory slip resistance and that of the installed floor. This could lead to duty holders having a false impression of the slip resistance of the floor under their management, potentially leading them to provide unsuitable control measures for the management of slip hazards.

*The rapid change measured on the **as-new** samples suggests that **ex-factory samples may give unsuitable slip test results**, and in order for duty holders to make a truly informed decision about the anti-slip performance of conglomerate flooring they need to obtain **pendulum data for the installed condition**.*

Wherever possible flooring specification should be based on data generated from long term workplace trials to give a realistic impression of the slip performance of the flooring in-situ, and after installation and wear.

A relatively small difference in the PTV of a wet floor can make a significant difference to the control measures required to properly manage the floor to prevent pedestrian slip accidents. A suitable monitoring programme should be considered in all situations.

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APPENDIX B – ROUGHNESS PARAMETER DEFINITIONS

Ra

Ra is the arithmetic mean of the absolute departures of the roughness profile from the mean line.

Ry

Ry is the distance between the maximum peak height (Rp) and the maximum valley depth.

Rz

$Rz = Rp + Rv$ and is the mean value of the maximum peak to valley height of the profile within the sampling lengths.

Rq

Rq is the Rms parameter corresponding to Ra.

Rt

Total height of the profile. Rt is the maximum peak to valley height of the profile in the assessment (evaluation) length.

Rp

Maximum profile peak height. Mathematically the largest peak deviation of the roughness profile from the mean line within a sampling length. When more than one sampling length is analysed Rp is the mean value of the individual Rp values for each sample.

RPc

RPc is the peak count. It is the number of local peaks which project through a selectable band centred about the mean line.

Rmr

Rmr is the length of bearing surface (expressed as a percentage of the evaluation length) at a given depth below the highest peak.

R3z

R3z is the vertical mean from the third highest peak to the third lowest valley in a sample length over the assessment length.

RS

RS is the mean spacing between local peaks. (A local peak is an upward convex portion of an assessed profile which has concavities on both sides).

Rsm

Rsm is the mean spacing between profile peaks at the mean line, measured within the sampling length. (A profile peak is the highest point of the profile between an upwards and downwards crossing of the mean line).

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