

Friction Measurements on Three commonly used Floors on a College Campus
under Dry, Wet, and Sand-Covered Conditions
Kai Way Li, Yao-Wen Hsu, Wen-Ruey Chang, 林靜華
Industrial Engineering and System Management
Management
kate@chu.edu.tw

Abstract

Slipping and falling are common incidents not only in workplaces but also on school campuses. In this research, we measured the coefficient of friction of three floors commonly used on a college campus in Taiwan, under dry, wet, and sand-covered conditions using the Brungraber Mark II slipmeter. Leather, rubber, and polyvinyl chloride footwear samples without tread pattern were adopted in the friction measurement. The most surprising finding of this study was that there were significant friction reductions when the floors (terrazzo, ceramic and quarry) were covered by sand as compared with both dry and wet conditions. The grains of sand on the floor resulted in a friction loss ranging from 71% to 92% as compared with the dry non-contaminated surface, depending on the type of the footwear material and floor. The results indicated that effects of sand particles on the friction at footwear - floor interface were more significant than that of the wet conditions for most of the footwear material - floor combinations tested in this experiment.

Keyword : Slip and fall; Friction measurement; Brungraber Mark II; Sand-covered floor