

Development of Glassy Hard Wearing Glaze for Floor Tiles

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Glaze is a decorative layer on the tile surface and mainly there are three types, gloss, matt and rough. In Sri Lanka, most of people would like to use gloss tiles than matt or rough. Gloss glazes easily bounce the light and render adorable surface of the tile. However, gloss glazes can be easily scratched and wearable. Therefore, hard wearing gloss glazes are very important in Sri Lankan tile industry. However, Sri Lankan ceramic industry is not producing any glazes and all raw materials for production of glazes are importing. The main problem is lack of technology and high production cost. In this work, we developed a new glaze with increasing the surface hardness using TiO_2 , ZrO_2 , V_2O_5 , and Al_2O_3 /corundum as suitable additives without change the composition of frit, glossiness and firing temperature. In addition, fast firing cycle with single firing system was used for this research. The study was carried out changing the composition of above materials and checked the surface abrasion. In our results, Al_2O_3 was shown positive results for increasing wear resistance among other materials. Further, dry glazes made here used to remove unwanted organic materials and other impurities, and also reduced the surface defects on the tiles. In addition, we show that the abrasion class was increased by glaze when it added as in particle form, since it helped to reduce the contact area on the tile surface.

Keywords: Glaze, Frit, Alumina, corundum, surface abrasion