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Effect on strength and hardness of clay ceramic substrate after treatment using koalin based geopolymer glaze

Abstract

Geopolymerization is an alternative for ceramic industry by using clay based material such as kaolin or calcined kaolin geopolymer. Geopolymer paste is initially produced by alkaline activation of calcined kaolin with NaOH and Na_2SiO_3 solution), dried at 80oC for 4 hours, pulverized and sieved to fixed particle size powder. The parameters involved in this processing route (alkali concentration, kaolin or calcined kaolin to activator ratio, alkali activator ratio and heating conditions) are investigated. Geopolymeric powder is added with water to produce slurry to be coated on the surface of clay ceramic. It undergoes heat treatment at high temperature to produce glaze on the surface. Flexural strength and hardness analysis are studied. Result evidences the processing show of incresing strength value between 8-10% after treatment with geopolymer glaze and also the Vickers hardness values of geopolymers improved.

Keywords; Alkaline Activator, Calcined Kaolin, Geopolymer, Glaze, Kaolin