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INFLUENCE OF SINTERING TEMPERATURE ON THE PORE STRUCTURE OF AN ALKALI-ACTIVATED KAOLIN BASED GEOPOLYMER

Abstract

Kaolin-based geopolymers are alternatives for producing high-strength ceramics for construction materials. Creating high-performing kaolin ceramics utilizing the regular technique requires a high handling temperature (higher than 1200°C). Thus, the structure and properties such as pore size and distribution are affected at higher sintering temperatures. Along these lines, information with respect to the sintering system and related pore structure is essential for advancing the properties of the previously mentioned materials. This study investigated the microstructure and the density of a kaolin-based geopolymer at various sintering temperatures. The unsintered sample has the highest density of 1610 kg/cm3, while the samples sintered at 1100°C haves the lowest density of 1203 kg/cm3. The result also shows that increasing the sintering temperature to 1100°C resulted in increasing the water absorption of the kaolin-based geopolymer ceramic.

Keywords

Density; Geopolymer; Pore; Sintering; Water Absorption