

Strength and Microstructural Properties of Mechanically-Activated Kaolin Geopolymers

Abstract

Kaolin geopolymers exhibit low strength properties due to its plate-like nature which contribute to smaller surface area for geopolymerization reactions. Layered kaolin structure only allows very little, if any, substitution of other elements. Therefore, mechanical activation is an alternative way to break the kaolin structure to become finer to change the morphological features to smoother surface, and to cause edge distortion to the kaolin particles. Rounded particles also can be produced using this technique. This mechanically-activated kaolin was used to produce mechanically-activated kaolin geopolymers in this study. From the results, compressive strength increased as mechanical activation time increased and the compressive strength increased with the ageing day. The SEM micrograph showed that the mechanically-activated kaolin geopolymers have denser structure which complies with the compressive strength measured.

Keywords: Geopolymer, Geopolymerization, Kaolin, Mechanical Activation