

General properties of kaolin geopolymers

Abstract

This paper reported the properties of kaolin geopolymers in term of the bulk density, compressive strength, qualitative observation and SEM analysis of the kaolin geopolymers. Kaolin geopolymers were synthesized through the activation of kaolin with mixture of 8 M NaOH solution and Na₂SiO₃ solution at kaolin/activator ratio of 1.00 and Na₂SiO₃/NaOH ratio of 0.32. The kaolin geopolymers were cured at 60 °C up to 3 days. Results showed kaolin geopolymers has bulk density in range of 1483 kg/m³-1605 kg/m³. The kaolin geopolymers have good volume stability in water. Compressive strength improved with increasing ageing. However, the strength development is very slow probably because of the limitation of the structure of kaolinite with low surface area and limited substitution of other element during reaction. Microstructures of kaolin geopolymers showed the formation of geopolymer gel and denser structure.

Keywords

Bulk density; Compressive strength; Geopolymers; Kaolin; Microstructure; Volume stability