

Calcined Kaolin Geopolymeric Powder: Influence of Water-to-Geopolymeric Powder Ratio

Abstract

This paper describes the synthesis of calcined kaolin geopolymeric powder from the alkaline activation of calcined kaolin followed by solidification and pulverizing process. The geopolymeric powder was used by just adding water to produce resulted geopolymer paste. In this paper, the effect of water-to-geopolymeric powder ratios on the properties of the resulted geopolymer paste was studied. This water-to-geopolymer powder ratio was similar to that of water-to-cement ratio in the case of ordinary Portland cement (OPC). However, the concept used here was based on geopolymerization process. The compressive strength, setting time and SEM analysis of the resulted geopolymer pastes were conducted. Highest strength was achieved at water-to-geopolymer powder ratio of 0.22. The resulted geopolymer paste could be handled up to 120 minutes and reached final setting after about 4 hours of setting. Microstructure showed the formation of geopolymeric gel after the addition of water to the geopolymeric powder.