

Effects of aging to the mechanical properties of geopolymer concrete with addition of hooked steel fibers cured at ambient temperature

Abstract

The development of compressive and flexural strength versus aging time for steel fiber reinforced geopolymer concrete (SFRGC) cured at ambient temperature was studied. SFRGC is produced by mixing of Malaysian fly ash, alkali activator, aggregates, and hooked steel fibers. At the first stage, the addition of steel fibers in geopolymer concrete are by volume fraction which are 0 %, 0.5 %, 1.0 %, 1.5 %, and 2.0 % and cured at room temperature for 28 days. The optimum addition of steel fibers will be selected for further investigation related to the mechanical properties versus aging days. Chemical composition of Malaysia fly ash shows this fly ash is classified as class F. Result indicates 1.0 % of steel fibers addition exhibit the best performance for both compressive and flexural strength. Aging days show an improvement to mechanical properties where the compressive and flexural strength increases as the aging day increased. These mechanical properties improvement is almost similar to the mechanical growth exhibited by OPC concrete.