

Feasibility of producing wood fibre-reinforced geopolymer composites (WFRGC)

Abstract

Wood fibres have long been known as a fibre reinforcement for concrete. Due to its availability and low production cost, this natural fibre has been used in less developed country where conventional construction materials were very expensive. In Japan, the production of these types of composites such as high performance fibre-reinforced cement-based composite (HPFRCB), ultra high performance (UHPFRCB) and strain-hardening (SHCC) fibre-reinforced cement-based composite has been developed rapidly in last decades. Geopolymer, future composite and cement produced by the alkali-activation reaction is well known as a potential replacement to Ordinary Portland Cement. This study aims at studying the possibility to produce wood fibre-reinforced geopolymer composite (WFRGC). The various percentage of fibre have been made from 10% to 50% and cured at 60°C, tested for compressive strength for 7th and 14th day and the microstructure examined using SEM. The density and water absorption test have been performed. The results showed are encouraging and indicate the feasibility of producing a wood fibre-reinforced geopolymer composite (WFRGC).