

ABSTRACT

The sustainable development is the substantial intent of the ongoing era. To achieve this goal, the concept of geopolymer has evolved in the conventional concrete. Geopolymer is a kind of concrete which has some environmentally friendly specialities. It consists of fly ash as a replacer of cement and alkaline solution as an activator. The fly ash is the by-product of thermal coal power plant. It is hazardous to the environment, so using it in the construction will be beneficial to the environment. To enhance the geopolymer capabilities towards structural properties, an innovative technology such that engineered cementitious composite (ECC) is introduced towards the geopolymer because ECC has some special properties such that it has more ductility. ECC consists of fibres which increase its flexural strength. Hence, indulgence of ECC with geopolymer brings out the concept of geopolymer fibre reinforced cementitious composite (GFRCC). In this study, the response of GFRCC has been appraised by determining compressive and flexural strengths of four different mix designs. The total 12 beams and 12 cylinders were casted in which 9 beams and 9 cylinders having 3 different fibres (poly propylene, polyvinyl alcohol & polyethylene terephthalate abbreviated as PP, PVA & PET respectively) compared with the control mix (without fibres). The samples were cured at 80 °C. The flexural strength has increased by 19.85% in PVA and by 35.3% in PET, whereas the compressive strength has decreased by 13.98% in PVA and by 8.1% in PET.