

Study on fly ash based geopolymer for coating applications

Abstract

Geopolymer is cementitious binders that do not require the presence of ordinary Portland cement (OPC). Fly ash with geopolymer formulations prepared with mixing aluminosilicate with the alkaline activator solution has been applied as protective coating material that suitable for high temperature applications such as fire resistant panel. Geopolymer coating samples were cured at 70 °C for 24 hours before sintered using temperatures range from 600 °C to 1500 °C in order to increase strength and improve thermal properties. Curing conditions also have a significant effect on the development of mechanical strength in most cementitious systems. The chemical compositions, microstructure and FTIR were studied. Geopolymer coating samples cures to a glassy texture and effectively used to create a resistant surface. Fly ash geopolymer coating was improved the compressive strength of the coatings materials as high as 40 MPa. This technology develop a geopolymeric mix design that superior use as cementitious coatings with high thermal application.

Keywords

Coating material; FTIR; Geopolymer