

## Utilization of Nanoclay to Reinforce Flax Fabric-Geopolymer Composites

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**Abstract :** Geopolymer composites reinforced with flax fabrics and nano-clay are fabricated and studied for physical and mechanical properties using X-Ray Diffraction (XRD), Fourier Transform Infrared Spectroscopy (FTIR) and Scanning Electron Microscope (SEM). Nanoclay platelets at a weight of 1.0%, 2.0%, and 3.0% were added to geopolymer pastes. Nanoclay at 2.0 wt.% was found to improve density and decrease porosity while improving flexural strength and post-peak toughness. A microstructural analysis indicated that nanoclay behaves as filler and as an activator supporting geopolymeric reaction while producing a higher content geopolymer gel improving the microstructure of binders. The process enhances adhesion between the geopolymer matrix and flax fibres.

**Keywords :** flax fibres, geopolymer, mechanical properties, nanoclay

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