



Chapter

Vinyl Ester-Based Biocomposites

Influence of Nanoclay on Thermal and Mechanical Properties

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ABSTRACT

Vinyl ester-based biocomposites are finding their applications in various sectors owing to its exceptional thermal, mechanical, and other properties. The effects of nanoclay on the thermal and mechanical properties of composites are discussed in this chapter. According to previous studies, adding nanoclay to the matrix increases the hardness, flexural strength, and tensile properties of vinyl ester/natural fibre-reinforced polymer composites. Further, the thermal analysis of these composites has reported that the glass transition (T_g) temperature analysed using differential scanning calorimeter (DSC) shows a remarkable increase with the rise in nanoclay up to a certain threshold level, beyond which the T_g decreases due to the micro-coring and aggregation of the nanoclay filler materials in certain localized regions. The chapter also discusses many types of biofibres that are commonly used in the production of vinyl ester-based biocomposites, as well as various additional treatments that may be employed to improve the biocomposites' properties.

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