

A review on dynamic mechanical properties of natural fibre reinforced polymer composites

ABSTRACT

Dynamic mechanical analysis (DMA) is a versatile technique that complements the information provided by the more traditional thermal analysis techniques such as differential scanning calorimetry (DSC), thermogravimetric analysis (TGA), and thermal mechanical analysis (TMA). The dynamic parameters such as storage modulus (E'), loss modulus (E''), and damping factor ($\tan \delta$) are temperature dependent and provide information about interfacial bonding between the reinforced fibre and polymer matrix of composite material. The dynamic parameters were ominously influenced by the increase in fibre length and loading but not in a geometric progression. Dynamic loading conditions are frequently stumble in civil infrastructure systems due to sound, winds, earthquakes, ocean waves and live loads. Vibration damping parameters shows prime importance for structural applications in order to enhance the reliability, performance, buildings comfort and in the alleviation of bridges hazards. DMA also predicts the effects of time and temperature on polymer sealants viscoelastic performance under different environments. Present review article designed to be a comprehensive source of reported literature involving dynamic mechanical properties of natural fibre reinforced polymer composites, hybrid and nano composites and its applications. This review article will provides a perfect data to explore its industrial application primarily as cheaper construction and building materials for doing further research in this topic.

Keyword: Natural fibre; Composite; Dynamic mechanical analysis; Loss modulus; Storage modulus; $\tan \delta$