

Recent advances in epoxy resin, natural fiber-reinforced epoxy composites and their applications

ABSTRACT

The versatile characteristic of epoxy and its diversity made it suitable for different industrial applications such as laminated circuit board, electronic component encapsulations, surface coatings, potting, fiber reinforcement, and adhesives. However, the pervasive applications in many high-performance field limited the epoxy use because of their delamination, low impact resistance, inherent brittleness, and fracture toughness behavior. The limitations of epoxy can be overcome by incorporation and modification before their industrial applications. Currently, modified epoxy resins are extensively used in fabrication of natural fiber-reinforced composites and in making its different industrial products because of their superior mechanical, thermal, and electrical properties. Present review article designed to be a comprehensive source of recent literature on epoxy structure, synthesis, modified epoxy, bio-epoxy resin, and its applications. This review article also aims to cover the recent advances in natural fiber-based epoxy composites and nanocomposites research study, including manufacturing techniques and their different industrial applications.

Keyword: Applications; Bio-composites; Epoxy resin; Nanocomposites; Natural fibers