

Effect of fiber orientation on the mechanical properties of laminated polymer composites

ABSTRACT

This article presents a review and proof of concept through experiment of the general idea of the effect of fiber orientation on the tensile properties of laminated polymer composites. The research methodology includes the fabrication of woven fabric glass epoxy composite laminates with 90, 60, and 45° orientation. The mechanical testing was conducted through a tensile machine. It was found that the maximum load, the ultimate tensile strength (UTS), the Young's modulus, and the modulus of toughness were the highest in the sample with 90° orientation. While the maximum load and ultimate tensile strength are lowest in 60° orientation and the Young's modulus and also the modulus of toughness are lowest in 45° orientation. As a conclusion, the orientation plays an important role in determining the optimum property for each application.

Keyword: Composite; Fiber orientation; Mechanical property