

Bi-layer hybrid biocomposites: Chemical resistant and physical properties

Abstract

Bi-layer hybrid biocomposites were fabricated by hand lay-up technique by reinforcing oil palm empty fruit bunch (EFB) and jute fibre mats with epoxy matrix. Hybrid composites were prepared by varying the relative weight fraction of the two fibres. The physical (void content, density, dimensional stability), and chemical resistant properties of hybrid composites were evaluated. When the jute fibre loading increased in hybrid composites, physical and chemical resistant properties of hybrid composites were enhanced. Void content of hybrid composites decreased with an increase in jute fibre loading because jute fibres showed better fibre/matrix interface bonding, which leads to a reduction in voids. The density of hybrid composite increased as the quantity of jute fibre loading increased. The hybridization of the jute fibres with EFB composite improved the dimensional stability of the hybrid composites. The performance of hybrid composites towards chemical reagents improved with an increase in jute fibre loading as compared to the EFB composite. The combination of oil palm EFB/jute fibres with epoxy matrix produced hybrid biocomposites material that is competitive to synthetic composites.