

Investigation of the mechanical properties of glass fiber – chicken feather hybrid composite

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Abstrak

The production and/or worldwide consumption of chicken at an industrial or domestic level lead to a considerable quantity of chicken feather residue as a waste by-product. Chicken feathers have a possible application in preparing lightweight composites. The use of chicken feathers as a constituent to prepare hybrid composites leads to a solution for disposal of the feathers. In this study, chicken feathers were used as filler material to prepare hybrid composites. Different varieties of composites were prepared by a chicken feather hand-layup technique, and by varying the percentage weight of the chicken feathers. Specimens were prepared and tested according to ASTM standards. The 10 wt. % chicken feather-filled hybrid composites indicated the maximum tensile strength (193 MPa), flexural strength (148 MPa) and impact strength (3.65 Joules). Scanning Electron Microscopy (SEM) analysis was carried out to find the fracture and interfacial characteristics of the composites. The results indicated that, these composites can be used in domestic, automobile and structural applications which carry nominal loads.