

LDPE-Isophthalic Acid-Modified Egg Shell Powder Composites (LDPE/ESP₁)

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Abstract: *The effects of chemical modification on the mechanical properties, morphology and water absorption of low density polyethylene/egg shell powder composites were studied. The mechanical and morphological properties of low density polyethylene/egg shell powder (LDPE/ESP/) composites with and without modifications (NaOH-isophthalic acid) have been characterised by an Instron machine and by scanning electron microscopy (SEM). The composites were prepared by using a Z-blade mixer at 180°C and at a rotor speed of 50 rpm for 6 min. The interfacial adhesion has enhanced the tensile strength and water absorption resistance of the LDPE/modified egg shell powder composites (LDPE/ESP₁), as compared to LDPE/unmodified egg shell powder composites (LDPE/ESP). Both the introduction of interfacial adhesion to composites and better interaction adhesion between LDPE and egg shell powder are responsible for the improvement of the mechanical properties of the LDPE/ESP₁, as evidenced by SEM on the tensile fracture surface of the composites.*

Keywords: egg shell powder, low density polyethylene, isophthalic acid, chemical modifications, mechanical properties