

PROPERTIES OF LOW DENSITY POLYETHYLENE (LDPE) / EGGSHELL POWDER (ESP) COMPOSITES: THE EFFECT OF ETHYLENE DIAMINE-ISOPHTHALIC ACID

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ABSTRACT

The effect of ethylene diamine-isophthalic acid on tensile properties, morphology properties, water absorption, and thermal properties of the low density polyethylene/eggshell powder composites were studied. The both composites, low density polyethylene/eggshell powder (LDPE/ESP) and low density polyethylene / modified eggshell powder (LDPE/ESP_M) composites were prepared with Z-Blade Mixer at 180⁰C and rotor speed of 50 rpm. The results indicate that the addition of ethylene diamine-isophthalic acid increased the tensile strength, Young's modulus, glass transition temperature (T_g), melting temperature (T_m), and water absorption resistance but lower percentage of crystallinity and the elongation at break of the LDPE/ESP composites. The micrographs of SEM showed that the eggshell powder was more widely dispersed in the LDPE matrix with the addition of ethylene diamine-isophthalic acid as a coupling agent.

KEYWORDS: Low Density Polyethylene, Ethylene Diamine-Isophthalic Acid, Eggshell Powder