# Mechanical and Thermal Properties of Compatibilized Waste Office White Paper-Filled Low-Density Polyethylene Composites


## Abstract

The effect of maleic anhydride-g-polyethylene compatibilizing agent on mechanical and thermal properties of waste office white paper (WOWP)-filled low-density polyethylene (LDPE) composites was investigated. Results showed that compatibilized LDPE/WOWP composites have higher tensile strength, Young's modulus than uncompatibilized LDPE/WOWP composites, but lower on elongation at break. Thermal analysis results exhibited that compatibilized LDPE/WOWP composites have higher thermal stability, and degree of crystallinity ($X_c$) compared to uncompatibilized LDPE/WOWP composites, but melting temperature ($T_m$) did not change significantly. Scanning electron microscope and Fourier transform–infrared spectroscope studies revealed that the addition of compatibilizing agent enhanced dispersion of filler in polymer matrix as an evidence of covalent bonding between WOWP filler and compatibilizing agent.