

Effect of Vinyl alcohol-phthalic anhydride on properties of low density polyethylene (LDPE)/tyre dust (TD) composites

Abstract

The effect of vinyl alcohol-phthalic anhydride as a coupling agent on the tensile properties, morphology, and thermal degradation of low density polyethylene/tyre dust (LDPE/TD) composites was studied. LDPE/TD composites with different tyre dust loading and the addition of vinyl alcohol-phthalic anhydride were prepared with Z-blade mixer at 180°C and rotor speed of 50 rpm. The result indicated that LDPE/TD_M composites with vinyl alcohol-phthalic anhydride show higher values of tensile strength, Young's modulus and mass swell, but lower elongation at break than LDPE/TD composites without vinyl alcohol-phthalic anhydride. The SEM micrographs showed that the tyre dust was more widely dispersed in the LDPE matrix with the addition of vinyl alcohol-phthalic anhydride as a coupling agent. It was also found that the addition of vinyl alcohol-phthalic anhydride offers better thermal stability in the LDPE/TD_M composites than LDPE/TD composites.