THE EFFECTS OF DYNAMIC VULCANIZATION AND COMPATIBILIZER ON PROPERTIES OF PAPER SLUDGE-FILLED POLYPROPYLENE/ETHYLENE PROPYLENE DIENE TERPOLYMER COMPOSITES

Abstract:

The effects of dynamic vulcanization (DV) and dynamic vulcanization plus compatibilizer (DVC) of paper sludge (PS) filled polypropylene/ethylene propylene diene terpolymer (PP/EPDM) composites on torque development, mechanical properties, water absorption, morphology, and thermal properties were studied. Results show that DV and DVC composites exhibit higher stabilization torque than unvulcanized composites (UV). The dynamic vulcanized (DV) and dynamic vulcanized plus compatibilizer (DVC) composites exhibit higher tensile strength, elongation at break, and Young's modulus but lower water absorption than unvulcanized composites. The scanning electron microscopy (SEM) study of tensile fracture surface of DV and DVC composites shows the improved interfacial interaction between PS and PP/EPDM matrix. The DV and DVC composites also exhibit better thermal stability and higher crystallinity than unvulcanized PP/EPDM/PS composites.