

Effects of montmorillonite on the electron beam irradiated alumina trihydrate added polyethylene and ethylene vinyl acetate nanocomposite

Abstract

This study aims at investigating the effects of montmorillonite (MMT) nanocomposite on the electron beam irradiated alumina trihydrate flame retardant added polyethylene and ethylene vinyl acetate blends (FRLE). The addition of MMT into FRLE blends has increased the limiting oxygen index (LOI%), which corresponds the improvement of flame resistivity, whereas increasing amount of MMT and irradiation dosage were found moderately influenced LOI% of the blends. However, incorporation of MMT has shown reinforcing effect to the FRLE, where the tensile strength for the samples subjected to 150 and 250 kGy irradiation have increased for 10.7 and 27%, respectively. In addition, increasing loading level of MMT and irradiation dosage caused inferior effects to the surface and volume resistivity of FRLE as high as four folds. This is due to the enhancement of transportability of MMT ionic in polymer matrix that caused the reduction of resistivity of FRLE. *POLYM. COMPOS.*, 33: 1883–1892, 2012.