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ABSTRACT

Four processing methods were employed to control the localization of intumescent flame-retardant (IFR) and clay in linear low-density polyethylene/nylon 6 (LLDPE/PA6) blends and the effect of IFR and clay localization in blends on flame retardancy was investigated. The results obtained from the LOI and UL-94 tests showed that the flame retardancy in the blends with clay localization in the LLDPE phase was better than that of the blends with clay localization in the PA6 phase. Cone calorimeter test results demonstrated that IFR localization in the PA6 phase caused lower peak heat release rate (PHHR) than in the LLDPE phase. The combined effect resulted in the best flame retardancy exhibited in the blends with localization of IFR in the PA6 phase and clay in the LLDPE phase in comparison with the blends with other localization of IFR and clay. Scanning electron microscopy showed that clay localization in the LLDPE phase and IFR localization in the PA6 phase promoted the formation of an integrated and highly expansive char layer. It is believed the

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