

Effect of Boehmite Alumina Nanofiller Incorporation on the Morphology and Thermal Properties of Functionalized Poly(propylene)/Polyamide 12 Blends

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Abstract

A composite of boehmite alumina nanoparticles and a PP/PA12 blend is prepared. WAXD and SEM suggest that a low filler loading enhances the coalescence of PA12, whereas a higher loading reverses the situation. DSC, DMA and TGA reveal that the final properties of the blend composites such as crystallization temperatures, flexural storage moduli, or thermal degradation temperatures improve with increasing nanoparticle loading. The data are compared with the neat polymers and the compatibilized blend, and the results show that the compatibility increases only at high nanoparticle loading, and most of the thermal properties improve with increasing nanoparticle content in the blends. The presence of interfacial interactions between the polymer matrices and the filler was confirmed via FTIR.

Keywords:

- boehmite alumina;
- morphology;
- polyamide 12;
- poly(propylene);
- polymer blends

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