
Study of the effects of organoclays in the blending of Polyethylene/Polystyrene

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Résumé

There is increasing interest in blending polymers as the major tool for designing and improving polymeric materials. However, the immiscible blends often have poor mechanical properties compared to their components. The mechanical properties of the immiscible blends, with poor interfacial adhesion and high interfacial tension between the dispersion and continuous phases, can be improved with the addition of the compatibilizer agent. Polyethylene is the fast-growing commodity polymer widely used in various fields because of its excellent performance-processability-price relations. Polystyrene is a commodity plastic with many good properties, low cost and formulating versatility. A major problem in blending PE and PS is their immiscibility in which the poor interfacial adhesion and high interfacial tension were existed. The interfacial adhesion between the phases strongly influenced the final properties of the materials. The focus of our study were in one hand on the investigation of the compatibilizing effect of maleic anhydride (MA) grafted with styrene-butadiene-styrene (SBS-g-MA), as a component, to improve the interfacial adhesion between the PE/PS phases and stabilize polyethylene against thermal oxidation and in the other hand on the investigation of thermoplastic nanocomposites based on blends of PE/PS and modified by nanoparticles. The morphology was examined by scanning electron microscopy; wide angle X-ray diffraction and the thermal properties were characterized by thermogravimetric analysis. The mechanical and rheological properties were also evaluated.

Mots-Clés: Compatibilization, HDPE / PS, nanocomposite nanoclay / polymer, polymer blend.

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