A relationship between microstructure and surface paintability of PP/EPDM/organoclay nanocomposites interfacially compatibilized with ethylene vinyl acetate

Ali Asghar Katbab, Ramin Yousefzadeh Tabasi*

Amirkabir University of Technology - Tehran - Iran

Thermoplastic olefins(TPO)/ Clay nanocomposites with improved surface paintability and pull off strength using ethylene vinyl acetate(EVA) as interfacial compatibilizer have been prepared via melt mixing process. XRD analysis exhibited that incorporation of EVA with both polar functional group and rubber-like behavior into the pre-blended PP/EPDm prior to the feeding of nanoclay facilitates the intercalation level and dispersion of the clay nanolayers. EVA showed to be effective in controlling the polar component of the surface tension and γp hence tailoring the surface paintability of the TPO nanocomposite. The smoothness of the painted surface and pull off strength found to be influenced by the clay microstructure and the micromorphology of the dispersed rubber droplets. Qualitative analysis by AFM and SEM revealed reduction in the size of EPDM droplets by inclusion of the clay particles in the presence of EVA, leading to the increased impact resistance of the TPO nanocomposites.