Research paper

A noble additive cum compatibilizer for dispersion of nanoclay into ethylene octene elastomer

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Abstract

This paper introduces a poly(ethylene-co-octene)-poly(ethylene-co-vinyl acetate) double network hybrid as a noble additive cum compatibilizer for poly(ethylene-co-octene) (POE). The addition of only 0.5 mass% of the hybrid into POE has raised the net crystallinity from 29% to 59% and consequently improved both static (tensile strength, modulus and elongation at break) and dynamic (stress relaxation and hysteresis) properties of the virgin POE. As compatibilizer for organically modified montmorillonite (OMt) most of the properties further improved at a minimal loading of both OMt (0.5–1.0 mass%) and compatibilizer (1–2 mass%) owing to the establishment of a dominant intercalated structure. Although the die swell is slightly increased in the presence of both double network hybrid and OMt, the extruded profiles exhibit remarkable improvement in appearance compared to the virgin POE.