

Polymer Testing

Propagation of a jam code signal in the conical-scan seeker processor

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Abstract

In this article distribution of nanoclay between the two phases of a new class of dynamically vulcanized TPV based on POE/EVA (Polyethylene octene elastomer/ethylene vinyl acetate copolymer) elastomers prepared with various amounts of organoclay (0.5, 1 and 3 wt%) using dicumyl peroxide (DCP) as vulcanizing agent by reactive melt blending process has been studied. Different specimens of POE and POE/EVA blend with and without clay were prepared. The effects of organoclay on mechanical properties, swelling kinetics, crystallinity, vulcanization characteristics, dynamic mechanical behaviour, electrical properties and morphology were studied. DMA and morphological analysis revealed the formation of a Thermoplastic vulcanizate. XRD analysis showed decrease in crystallinity on addition of EVA in POE matrix. However, morphological observation of the fractured surface suggested that the smaller EVA domain was quite uniformly distributed into the POE phase and the clay phase was predominantly dispersed in the EVA phase of the TPVs and 0.5% clay mainly improved the mechanical properties and elongation of the blends. Swelling characteristics, electrical properties and storage modulus were also improved with the clay in case of the blend containing higher EVA content which further supports the fact that nanoclay was preferably distributed in the more polar EVA phase.