

# **RHEOLOGICAL EVALUATION OF FLAME RETARDED PC/ABS BLEND WITH HYBRID OF TRIPHENYL PHOSPHATE AND NANOCLAY**

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The rheological characteristic of PC/ABS (Polycarbonate/Acrylonitrile butadiene Styrene) blends containing Triphenyl Phosphate (TPP), commonly used as flame retardant, also montmorillonite nanoclay and hybrid of them are investigated in this study. The blends were prepared in a twin- screw extruder. Morphological properties were characterized by Scanning Electron Microscopy (SEM), X-ray Diffraction (XRD) and Transmission Electron Microscopy (TEM). The complex viscosity and storage modulus are only slightly affected by TPP content whereas they are remarkably affected by nanoclay content. The complex viscosity of the blends containing both TPP and nanoclay is higher than that of the blends containing either TPP or nanoclay. Also, these blends show different viscosity values at low frequencies, depending on TPP/nanoclay ratios. The storage modulus of the blends containing TPP/nanoclay is improved in comparison to other blends. The effect of TPP/nanoclay hybrid on  $\tan\delta$  is revealed that the hybrid system leads to a further increase of melt elasticity of PC/ABS blend as compared to nanoclay-contained blend. It can be conclude that the rheological behavior of PC/ABS/TPP/Nanoclay blend is mainly controlled by the presence of nanoclay rather than TPP. The results for the variations of complex viscosity ( $\eta^*$ ) with angular frequency ( $\omega$ ) showed a good agreement with those obtained from Carreau model.