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FORMATION OF PP/EPDM/PA6 TERNARY BLENDS: EFFECT OF PROCESSING CONDITIONS

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Ternary polymer blends based on polypropylene (PP)/Polyamide6 (PA6)/Ethylene Propylene Diene Monomer (EPDM) (70/15/15) were prepared by melt blending using twin screw extruder. EPDM-g-MA was also added to the system as the compatibilzer. According to the literature, Three different morphologies are possible in ternary polymer blends: separated disperse, core/shell and acorn type. There are some models predicting the final morphology of ternary systems. Relative Interfacial Tension method (RIE) values and Spreading Coefficients were calculated to predict the morphology of prepared samples. Effect of processing parameters including barrel temperature, screw speed and blending sequence on the formation of ternary polymer blends were investigated by choosing three different levels of Temperature (220 ºC, 235 ºC, 250 ºC) and screw speed (50 rpm, 100 rpm, 150 rpm). The three different blending sequences was chosen to be as: A: Simultaneous mixing of the three components (PP+EPDM+PA6), B: preparing master batch of (EPDM+EPDM-g-MA+PA6) before blending this master batch with PP and C: blending (PP+EPDM-g-MA) master batch with EPDM and PA pellets. Blend morphologies were characterized using Scanning Electron Microscopy (SEM). Results depicted that the processing conditions do effect the dispersion of disperse phase within the matrix and not the type of morphology.