Effect of Organoclay and Preparation Methods on the Mechanical Properties of Microcellular Injection Molded TPO-Clay Nanocomposites

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Abstract: Thermoplastic olefin elastomers (TPO)/MMT nanocomposites prepared by kneader and melt compounding methods were used in this study. The organoclay TPO nanocomposites were then injection molded by conventional and microcellular methods. Nitrogen was used as the blowing agent. The effect of organoclay content and preparation methods on the mechanical/thermal properties was investigated. The results show that the mechanical properties increase as the clay content increased for both the kneader and melt compounding processes. The foaming by kneader had better cell density than that of melt compounding, and cell size decreased as the clay loading increased. The addition of MMT also improved the thermal stability of the TPO/clay nanocomposites. The XRD results show that the nanocomposites having an intercalated layered structure.