



STRUCTURE AND PERFORMANCE OF NANOCOMPOSITES BASED MULTILAYER FILMS

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In this study, we investigated the structure and some properties of multilayer films with a core layer of nanoclay filled PA-6, MXD6, PP or PLA and side layers of polyethylene (PE) that were obtained from the extrusion cast or blowing process. The structure of the films was investigated using microscopy and X-ray diffraction. The properties that are studied are the mechanical properties in terms of modulus, strength and elongation in addition to tear and haze for films and barrier properties. The effect of nanoclay content in the range of 1 to 7.5 wt% is investigated. In terms of structure, it was found that the clay platelets aligned in the films plane. Exfoliation was observed for the PA-nanoclay system, some intercalation was observed in the case of PLA-nanoclay and no change in the clay spacing was observed in the case of PP-nanoclay system. For the performances, it was generally found that the presence of clay enhanced the modulus, tear and barrier properties, but little change was observed in the other properties. Multilayer films with MXD6 nanocomposites show high barrier to oxygen permeation.