



Effects on Clay addition on properties of LDPE flexible films

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Keywords: DSC, LDPE, Clay.

Studies have indicated that the addition of nanoparticles in flexible films improves performance flexible packaging, leading to better mechanical, thermal and barrier properties. Clay is an abundant mineral, inexpensive, easy to process, and provide considerable enhancements on the properties of polymers. Titanium dioxide (TiO₂) is widely used for its efficiency in scattering visible light, and imparting whiteness, brightness, and high opacity when incorporated into a plastic formulation. Low density polyethylene (LDPE) is generally used as a packaging material due to its good resistance, easy processing, low cost and high hardness. The objective of this study was to evaluate the effects of clay and TiO₂ nanoparticles addition on the properties of LDPE flexible films. LDPE with 1 wt % of TiO₂ addition and 1-3 wt. % of green Brazilian Clay, from Cubati, Pb, Brazil were prepared by melt extrusion process, using a twin-screw extruder Haake Rheomex P332 with 16 mm and L/D = 25, from Thermo Scientific. Then the LDPE/Clay nanocomposite was transformed into thin films using an extrusion blown film, single screw machine with 25 mm diameter and specimen test samples were obtained. The specimen samples were characterized by mechanical tests, UV-VIS, DSC, TG and FE-SEM analysis.

