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MECHANICAL PERFORMANCE AND BARRIER PROPERTIES OF ECOBRAS/BENTONITE FILMS

Ana Nery Mattos Costa¹, Arthur Rafael Albuquerque Araújo¹, Eduardo Luis Canedo², Laura Hecker de Carvalho¹
²ITEP, ¹ UFCG
heckerdecarvalho@yahoo.com.br

Current environmental problems resulted in the search for new “eco-friendly” biodegradable materials prepared with feedstocks from renewable resources. The current work, concerned with the preparation and characterization of Ecobras/organobentonite films, is part this effort. Ecobras, a commercial blend of thermoplastic starch and a copolyester, is a biodegradable, compostable polymer with more than 50% material from renewable resources. Bentonite is a widely distributed clay whose major component is the expandable layered silicate mineral montmorillonite. In the present work, masterbatches of Ecobras with sodium bentonite clay, both in natural form and purified and organically modified, were prepared in an internal mixer, and let down in a single-screw extruder with mixing elements to obtain compounds with 1%, 3%, and 5% clay by weigh. Plane and blown films were extruded and tested for mechanical properties and permeability to water vapor. To ascertain the state of nanodispersion of the clay loading into the polymer matrix the morphology of the compounds was studied by x-ray diffraction, infrared spectroscopy, and other analytical techniques.