

The Effect of Addition of Dioctyl Terephthalate and Calcite on the Tensile Properties of Organoclay/Linear Low Density Polyethylene Nanocomposites

Authors : A. Gürses, Z. Eroğlu, E. Şahin, K. Güneş, Ç. Doğar

Abstract : In recent years, polymer/clay nanocomposites have generated great interest in the polymer industry as a new type of composite material because of their superior properties, which includes high heat deflection temperature, gas barrier performance, dimensional stability, enhanced mechanical properties, optical clarity and flame retardancy when compared with the pure polymer or conventional composites. The investigation of change of the tensile properties of organoclay/linear low density polyethylene (LLDPE) nanocomposites with the use of Dioctyl terephthalate (DOTP) (as plasticizer) and calcite (as filler) has been aimed. The composites and organoclay synthesized were characterized using the techniques such as XRD, HRTEM and FTIR techniques. The spectroscopic results indicate that platelets of organoclay were well dispersed within the polymeric matrix. The tensile properties of the composites were compared considering the stress-strain curve drawn for each composite and pure polymer. It was observed that the composites prepared by adding the plasticizer at different ratios and a certain amount of calcite exhibited different tensile behaviors compared to pure polymer.

Keywords : linear low density polyethylene, nanocomposite, organoclay, plasticizer

Conference Title : ICCCE 2016 : International Conference on Construction Materials and Civil Engineering

Conference Location : Havana, Cuba

Conference Dates : November 24-25, 2016