

Crude Palm Oil As A Bioadditive In Polypropylene Blown Films.

ABSTRACT

Growing public concern about environment and potential risks to health in the polymer and plasticizer industry promises to increase the market for a safer alternative plasticizer such as a vegetable oil-based agent. The purpose of this study was to investigate the potential of crude palm oil as a bio-additive in polypropylene blown films. The polypropylene was blended with 1%, 3%, and 5% dosages of CPO using a twin screw extruder. The extruded samples were blown using the blown thin film technique. Mechanical, physical, and morphological properties were characterized. Modifying polypropylene with CPO showed good enhancement in the mechanical properties of the polypropylene. Tensile strength, elongation at break, impact strength, and tear strength all increased. The scanning electron microscopy photographs of the CPO-modified PP clearly supported the results from the mechanical strength tests. The presence of CPO in the PP matrices decreased the density and increased the melt flow rate. These findings contribute new knowledge to the additives area and give important implications for designing and manufacturing polymer packaging materials.

Keyword: Bio-additives; Crude palm oil; Polypropylene; Blown film; Mechanical properties; Twin screw extruder