

# Thermoplastic Starch/ Polyethylene blends prepared with terpolymers of poly(ethylene-co-vinyl acetate-co-vinyl alcohol)

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The thermoplastic starch (TPS) is the promising biodegradable product due to its wide availability, its low cost, its renewable and easy processing by conventional techniques commonly used in the plastics industry. However, TPS shows poor mechanical properties and high water sensitivity [1-4]. In order to improve TPS applications, several researches employed it blended with synthetic polymers [5-6]. In general these blends are produce with a non polar polymers and as a consequence they showed low compatibility, which results in weak functional properties. In the present work it was investigated the compatibilization between starch and polyethylene using a terpolymers of poly(ethylene-co-vinyl acetate-co-vinyl alcohol) as compatibilizer. The blends were processed in a 16 mm L/D 40 single screw extruder (AX Plasticos) with temperatures ranging from 100-130 °C. The blends were characterized for their physical and water absorption characteristics. All compositions tested were effective in the desestructuration and plasticization of starch, forming homogeneous blends with clear color and without any sign of degradation. The kinetics of water uptake displayed the typical increase with time until the equilibrium was reached. All samples showed decrease of water uptake if compared with TPS without additives.

Keywords: thermoplastic Starch (TPS), terpolymers of poly(ethylene-co-vinyl acetate-co-vinyl alcohol), polyethylene low density.

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