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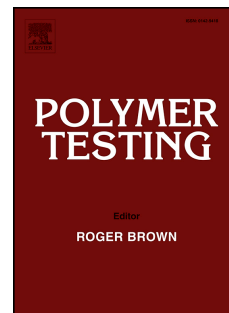
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Rheological, mechanical and morphological properties of poly(butylene adipate-co-terephthalate)/thermoplastic starch blends and its biocomposite with babassu mesocarp

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ABSTRACT

Poly(butylene adipate-co-terephthalate)/thermoplastic starch (PBAT/TPS) blends and a PBAT/TPS/babassu mesocarp biocomposite were prepared by melt mixing in a torque rheometer at different processing temperatures (150, 170, 190°C). Tensile test specimens were obtained by hot pressing. Torque rheometry indicated that molecular weight decreased with increasing processing temperature and TPS content in the blend, and this decrease was more intense with babassu mesocarp addition. PBAT mechanical properties were hardly affected by processing temperature while those of the blends decreased with thermoplastic starch content. Overall, increasing processing temperature led to lower mechanical properties, particularly at 190 °C. Fiber addition led to higher modulus and lower strength and elongation at break than the corresponding blend at all processing temperatures investigated. The differences observed on blend morphology as a function of processing temperature were minor. Some adhesion between TPS and PBAT is observed but adhesion between polymer matrix and babassu fibers is essentially non-existent.

Keywords: PBAT; TPS; blend; biocomposite;

1. Introduction

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