

Effect of Nanoclay Loading on the Thermal and Mechanical Properties of Biodegradable Polylactide/Poly[(butylene succinate)-co-adipate] Blend Composites

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ABSTRACT: Polylactide/poly[(butylene succinate)-co-adipate] (PLA/PBSA)-organoclay composites were prepared via melt compounding in a batch mixer. The weight ratio of PLA to PBSA was kept at 70:30, while the weight fraction of the organoclay was varied from 0 to 9%. Small angle X-ray scattering patterns showed slightly better dispersion in PBSA than PLA, and there was a tendency of the silicate layers to delaminate in PBSA at low clay content. Thermal analysis revealed that crystallinity was dependent on the clay content as well its localization within the composite. On the other hand, thermal stability marginally improved for composites with <2 wt % clay content in contrast to the deterioration observed in composites with clay content >2 wt %. Tensile properties showed dependence on clay content and localization. Composite with 2 wt % clay content showed slight improvement in elongation at break. Overall, the optimum property was found for a composite with 2 wt % of the organoclay. This paper therefore has demonstrated the significance of the clay content and localization on the properties of the PLA/PBSA blends.