

Mechanical and thermal properties of poly(vinyl chloride)/ poly(butylene adipate co-terephthalate) clay nanocomposites

ABSTRACT

Polymer nanocomposites of poly(vinyl chloride) (PVC)/poly(butylene adipate-co-terephthalate) (PBAT) and organically modified montmorillonites (OMMT), namely ODA-MMT and DDOA-MMT were prepared by melt intercalation using a Brabender internal mixer. Further studies on the effect of clay on PVC/PBAT composites have been verified to show that there is an essential correlation between mechanical and thermal properties. Tensile strength was improved compared to pure PVC/PBAT composites at 0.5 and 1 wt% of OMMT loadings. PVC/PBAT nanocomposites exhibited a single glass transition according to dynamic mechanical analysis results which supports the complete compatibilization between PVC and PBAT. An increase in thermal stability was also observed with the presence of OMMT.

Keyword: Nanocomposite; Organically montmorillonite; Poly(butylene adipate-co-terephthalate); Poly(vinyl chloride)