

Flame retardancy and mechanical properties of kenaf filled polypropylene(PP) containing ammonium polyphosphate(APP)

ABSTRACT

The effects of ammonium polyphosphate (APP) as flame retardant and kenaf as fillers on flammability, thermal and mechanical properties of polypropylene (PP) composites were determined. Test specimens were prepared by using a co-rotating twin screw extruder for the compounding process followed by injection molding. The flame retardancy of the composites was determined by using limiting oxygen index (LOI) test. Addition of flame retardant into kenaf-PP composites significantly increased the LOI values that indicated the improvement of flame retardancy. Thermogravimetric analysis was done to examine the thermal stability of the composites. The addition of kenaf fiber in PP composites decreased the thermal stability significantly but the influence of APP on thermal properties of the kenaf-filled PP composites was not significant. The flexural strength and modulus of the composites increased with the addition of APP into kenaf filled PP composite. The addition of APP into kenaf filled PP causes increase in the impact strength while increasing the APP content in the kenaf filled PP composite show decrease in impact strength.

Keyword: Flame retardancy; Mechanical properties; Natural fiber polymer composites.