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ABSTRACT

This paper presents an experimental study to assess the effects of food chemicals and temperature on the mechanical performance of glass fiber reinforced bio-based polyamide. The diffusion of food chemicals was mainly driven by thermal energy, following Arrhenius law in all tested environments. Degradation of mechanical properties and decrease in reliability were assessed, due to the plasticization of polymer matrix. Secondary but not negligible effect on flexural strength degradation is given by the different chemical interaction between polymeric chains and molecules of food chemicals. Colour change was measured and resulted to be positively correlated to diffusion.

Keywords

A. Polymer-matrix composites (PMCs)

B. Environmental degradation

C. Statistical properties/methods

D. Mechanical testing