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Evaluation of thermal and mechanical properties of Low-Density Poly Ethylene (LDPE) - Corn Flour (CF) composites

Sameer Ahmed Awad*, Eman Mohammed Khalaf

College of Education for Pure Science.University Of Anbar, Anbar- Iraq.

Abstract : The current research aims to improve the thermal and mechanical properties and water absorption resistance of low-density polyethylene (LDPE) as matrix material. The corn flour (CF) powder weight content in the consistent particle size (300μ m) and different weight ratios 5, 15, and 20wt. %. The mechanical measurements such as tensile strength, modulus of elasticity, and elongation at break % were analyzed to compare the effects. The obtained results displayed that the addition 5-20% of CF powder to LDPE led ofraising the tensile strength, modulus of elasticity, and a decrease in elongation at break (%). The results of the thermal gravimetric analysis (TGA) exhibited a significant improvementin thermal stability when adding different concentrations of CF in pure LDPE because interfaces between CF and pure LDPE caused of decreased the brittle behavior and enhanced the high crosslinking of pure LDPE.

Keywords : Mechanical properties. Low-DensityPolyethylene (LDPE), Corn Flour (CF).

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