

The Effect of MAPE Compatibilizer Agent on the Tensile Strength of Recycled PET/HDPE Plastic Composite

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Abstract:

This paper reports the effect of compatibilizer agent, polyethylene-grafted-maleic anhydride (MAPE) on the tensile strength of recycled polyethylene terephthalate (rPET)/high density polyethylene (HDPE) plastic composite. The 10% rPET/90% HDPE plastic composites with and without the addition of compatibilizer agent MAPE were prepared by using hot pressing machine. The tensile test was performed using universal testing machine. The result shows that the tensile strength of rPET/HDPE composite with the addition of MAPE increased up to 156.3 MPa, about 6 times higher than pure HDPE (24.26 MPa). The increased tensile strength seen in rPET/HDPE/MAPE composite can be suggested due to the compatibilizer agent MAPE increased the interfacial bonding between rPET and HDPE, which consequently increased the strength of the composite. The finding was supported by the SEM analysis done on the fractured surface and FTIR analysis presenting the intermolecular bonding of rPET/HDPE composite.

Keywords: Polyethylene Terephthalate (PET); High Density Polyethylene (HDPE); Polyethylene-grafted-maleic anhydride (MAPE)

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