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# The effect of silane treatment on tensile properties and morphology of polypropylene/recycled acrylonitrile butadiene rubber/rice husk powder composites

**Abstract**

The effect of silane treatment on tensile properties and morphology of recycled acrylonitrile butadiene rubber(NBRr)/polypropylene(PP)/rice husk powder(RHP) composites has been studied. Polypropylene/recycled acrylonitrile butadiene rubber/rice husk powder (PP/NBRr/RHP) composite were prepared by melt mixing technique at 180º C for 9 minutes and 50rpm rotor speed using an internal mixer. Five different composites compositions (70/30/0, 7030/5, 70/30/10, 70/30/15 and 70/30/30), with silane treated RHP(treated) and without silane treatment(untreated) was studied. The specimens were analyzed by different techniques i.e. tensile test and scanning electron microscopy (SEM). The result obtained showed lower tensile properties with increasing amount of NBRr content. Lower tensile strength and tensile modulus was exhibited with increasing NBRr content. However higher tensile strength, greater tensile modulus and lower elongation at break in PP/NBRr/RHP was exhibited for silane treated RHP composites compare with untreated RHP. PP/NBRr/RHP composite was found to become more brittle with strong attachment between PP/NBR matrix and RHP filler with silane treatment. Good adhesion between silane treated RHP filler and PP/NBRr matrix was confirmed by the morphological studies.

**Keywords;**

Compatibilization; Morphology; Polypropylene; Recycled acrylonitrile butadiene rubber; Rice husk powder; Silane; Tensile properties