

Physico-Mechanical Properties of Innovative Staking Composite from Plastic Waste Granule (PWS) and Palm Kernel Shell (PKS)

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Abstract:

The current eco-sysytem dynamic of the environment requires holistic approach to combat recent challenges emanating from human activities. In this study, plastic waste granule (PWG) and Palm kernel shell (PKS) was used to produce stake for application in production of crop. The base materials were process following established standard and tested for both physical and mechanical properties. The mix ratios composition in % weight were 65/35 (A); 60/40 (B) and 55/45 (C) of Plastic waste granule (PWG) and Palm kernel shell (PKS). The results shows density ranging from 1.29×10^{-3} , 1.264×10^{-3} and 1.224×10^{-3} kg/m³ respectively for 65/35, 60/40 and 55/45 sample composition in % weight. The water absorption characteristic of the composite increases with duration of immersion in water. Similarly, there was no noticeable alkaline characteristic within the 7 days immersion in distill water but slightly alkaline in the 14 days range. Compressive strength decreases with increased PKS with values ranges from 27.50 – 18.34 N/mm³. The sample with the highest percentage of PKS (C-55/45) depicts the most wear characteristic. This innovative stake adoption in the farming domain will help to reduce the pressure on the forest biomass resources and promote sustainable food production.

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