Oil palm trunk polymer composite: Morphology, water absorption, and thickness swelling behaviours.

ABSTRACT

In this research, impregnated oil palm trunks (OPT) and polymer composites were prepared from a combination of dried oil palm trunks with phenol formaldehyde (PF) and urea formaldehyde (UF) resin in different resin percentages using an impregnation method. Time of impregnation was a parameter used to control the percentage of resin content in the oil palm trunks. These studies investigated the effect of resin content and types of resin on the physical properties of impregnated OPT. Water absorption tests revealed that OPT polymer composite with 75% PF resin loading had increases of 21% and 26% for OPT polymer composites with 75% UF resin loading. The thickness swelling of OPT polymer composites with 75% PF resin loading exhibited the lowest value of 3.30% as compared with OPT polymer composite with 75% UF resin loading, which exhibited a value of 4.30%. The dimensional stability of the OPT polymer composites with the highest resin loading was slightly lower when compared to rubberwood. Scanning electron micrographs show that PF resin placement in OPT polymer composites was better, and resin penetration retained the original dried OPT structure.

Keyword: Oil plan trunk composite; Impregnation; Water absorption; Thickness swelling.