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Water Absorption Studies on Natural Fiber Reinforced Polymer Composites

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Abstract : In the recent years, researchers have drawn their focus on natural fibers reinforced composite materials because of their excellent properties like low cost, lower weight, better tensile and flexural strengths, biodegradability etc. There is little concern however that when these materials are put in moist conditions for long duration, their mechanical properties degrade. Therefore, in order to take maximum advantage of these novel materials, one should have a complete understanding of their moisture or water absorption phenomena. Various fiber surface treatment methods like alkaline treatment, acetylation etc. have also been suggested for reduction in water absorption of these composites. In the present study, a detailed review is done for water absorption behavior of natural fiber reinforced polymer composites, and experiments also have been performed on these composites with varying the parameters like fiber loading etc. for understanding the water absorption kinetics. Various surface treatment methods also performed to reduce the water absorption behavior of these materials and effort is made to develop a proper understanding of water absorption mechanism mathematically and experimentally for full potential utilization of natural fiber reinforced polymer composite materials.

Keywords : alkaline treatment, composites, natural fiber, water absorption
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