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POLYESTER COMPOSITE MATERIAL PRODUCTION USING WASTE OF PET WATER BOTTLES AND PINE

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Plastic bottles are made from a petroleum product known as polyethylene terephthalate (PET), and the mass numbers of plastic bottles consumed throughout the world, most of them are not recycled. They either end up lying stagnant in landfills, or they are found on sidewalks, in parks, and even if you chop them into tiny pieces they still take more than a human lifetime to decompose. Recent interests in reducing the environmental impact of waste materials and forest cover enhancement have led to the development of composites. This paper deals with production of PET bottle waste and pine cone powders reinforced polyester hybrid composite and their mechanical properties. The polyester composites/PET bottle wastes and pine cone powders are prepared with various weight ratios (0:6, 6:0, 6:6, 9:6 and 12:6) for comparison with natural and plastic filler effect and then by moldings technique to form composites. The flexural, impact and water absorption tests were carried out using polymer composite samples. This study shows that addition of PET bottle waste in pine cone powders / polyester composites influenced to mechanical properties. Impact and bending strengths, strain decreased with increase PET bottle waste in filler. Results showed that the pine cone powders/ the polyester composites with a modified PET bottle wastes had a distinctly lower hygroscopicity than the pine cone powders/ the polyester composites with unmodified PET bottle wastes. These findings could be used to develop alternative materials for the furniture industry.

Keywords: Composites, PET bottle wastes, pine cone powders.

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