WEIBULL ANALYSIS OF PORTLAND CEMENT PASTE AND LUFFA FIBERS COMPOSITES

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Abstract: Luffa fiber is a green renewable resource with applications such as materials reinforcement, prosthesis, arts, and other uses. In this research, luffa fibers from Colombia were exposed at two different treatments: acidic and alkaline solutions, and tested as individual fibers and in a cement matrix. Thermal stability was evaluated by thermogravimetric analysis and microstructure was evaluated by optical and scanning electron microscopy. It was found that fibers treated in the acidic solution significantly deteriorated and consequently fibers treated with the alkaline treatment had better performance in the cement composites. The Weibull statistics was conducted for fibers and for its composite and the corresponding moduli was obtained.

Keywords: cement, luffa fibers, composites, Weibull modulus