

NATURAL FIBER AS ALTERNATIVE FOR ASBESTOS: PROPERTIES AND PERFORMANCE

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ABSTRACT

The use of asbestos has been banned from workplace in many countries because of their adverse health effects. Natural fibers are among the alternatives for asbestos and they have the advantages of low density, low cost, biodegradability, and its utilization not only adds value to wood, but also contributes to reduce environmental concerns regarding to the disposal of waste wood from industry and agribusiness. In this work several properties of different natural fibers sources were evaluated using chrysotile as reference. Dimensional, morphological (SEM), compositional (FTIR), and dispersion (SEM and stereomicroscope) features were studied. Also water absorption, alkaline resistance, and kappa number were measured for two by-products of cellulose industry, four commercial kraft pulp fibers, and a coconut fiber. The results have pointed out the major challenges associated with the utilization of these materials in fiber-cement: increasing of alkaline resistance, controlling fiber water absorption, and stabilization of fiber shape and dimensions.

KEYWORDS

Cellulose fibers, asbestos, alkaline resistance, SEM, FTIR.