

A model for evaluating and determining the most appropriate polymer matrix type for natural fiber composites

ABSTRACT

The process of determining the proper polymer matrix type, using a wide range of criteria, to form a natural fiber–reinforced polymer composite is still not established enough. This work introduces, for the first time, a model to select the proper polymer matrix type for natural fibers to enhance the sustainability of the automotive industry. The model was developed to rank different polymers and to determine their relative merits considering 20 different criteria simultaneously, including different physical, mechanical, chemical, environmental, and technical criteria. This work can support establishing a road map for proper selection of polymers in different engineering applications as well as increasing the reliability of the polymer selection process.

Keyword: AHP; Automotive industry; Bio-based composites; Date palm fibers; Polymer selection; Sustainable products