

An Alteration of the Boltzmann Superposition Principle to Account for Environmental Degradation in Fiber Reinforced Plastics

Authors : Etienne K. Ngoy

Abstract : This analysis suggests that the comprehensive degradation caused by any environmental factor on fiber reinforced plastics under mechanical stress can be measured as a change in viscoelastic properties of the material. The change in viscoelastic characteristics is experimentally determined as a time-dependent function expressing the amplification of the stress relaxation. The variation of this experimental function provides a measure of the environmental degradation rate. Where real service environment conditions can be reliably simulated in the laboratory, it is possible to generate master curves that include environmental degradation effect and hence predict the durability of the fiber reinforced plastics under environmental degradation.

Keywords : environmental effects, fiber reinforced plastics durability, prediction, stress effect

Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020