Mechanical properties and microstructure of metroxylon sago fiber treared by sodium hydroxide

Hairul Abral, Author

Abstrak

In the present study, natural fibers located in thick outer woody rinds of the metroxylon sago (MS) tree were investigated. The investigation focused on measuring the mechanical properties and observing the microstructures of MS fibers before and after treatment with 5% sodium hydroxide. A scanning electron microscope was used to observe the microstructure of MS fiber, and the results showed that there was a decrease in fiber diameter after mercerization. A porous structure in the cross-section area of untreated fibers was clearly seen, and it was highly compressed after mercerization. The strength of MS fiber increased significantly after it was treated by 5% NaOH solution for two hours. The average ultimate strength of untreated MS fiber was recorded as 46 MPa; treatment with sodium hydroxide resulted in a significant increase in average ultimate strength to 163 MPa. Additionally, the elastic modulus of treated fiber was greater than that of untreated fiber.