

Mechanical and water absorption properties of poly(vinyl alcohol)/sago pith waste biocomposites

Abstract:

A series of blends of sago pith waste (SPW) and poly(vinyl alcohol) (PVA) were prepared. Mechanical and water absorption properties of the composites have been investigated. In this study, variable amounts of plasticized SPW (pSPW) and PVA (pPVA) were processed in the presence of glycerol as plasticizers. Composites were compression molded and evaluated. The addition of pSPW reduced the tensile properties of the composites, lowering the elongation and increasing Young's modulus. The reduction in mechanical strength with the addition of pSPW was a general phenomenon due to the poor interfacial adhesion between the pPVA and Pspw, which can be proved by the scanning electron microscope observations. The percentage of water absorbed of the pPVA/pSPW biocomposites was higher than either the pPVA or pSPW alone while pSPW showed better water resistance compared to pPVA because of the restricted mobility exerted by the cellulose fibers. The incorporation of SPW into PVA decreased both the mechanical and water absorption properties.