

Properties of Bioplastic sheets made from different types of starch incorporated with recycled newspaper pulp

Abstract

The use of biodegradable material based on natural polysaccharides, particularly starch helps to reduce the usage of non-degradable materials. In this study, three types of starch were used to produce the bioplastic sheets (cassava, corn and potato). The sheets were produced with the mixture of bioplastic (B) incorporated with recycled newspaper pulp fibre (N) at four different ratios (newspaper pulp fibres:bioplastic) N50%:B50%, N30%: B70%, N10%:B90% and N0%:B100%. Water absorption and tensile properties were investigated for these bioplastic sheets which were done in room temperature. Cassava-based bioplastic sheet had the worst water repellent while corn starch-based bioplastic sheets had the lowest water absorption percentage. Based on the ratios, bioplastic sheet N30%:B70% shows the lowest percentage of water absorption. Result also showed that as the amount of bioplastic ratio increase, the tensile strength decrease. The optimum mixture of fibres/bioplastic was N50%:B50% which obtained highest percentage of tensile strength. Elongation at break was increased as the bioplastic increased.