

Developing and prototyping of empty fruit bunch high density board high density board

Abstract

Empty fruit bunches and wastepaper together with urea formaldehyde (UF) were evaluated to figure out potential applications in engineering field. The purpose of this project is to determine the mechanical properties of a new high density board. This composite was manufactured by hot-press technique with 3 different ratios i.e. 10:0, 6.67:3.33 and 9.33:0.67. The mechanical properties were evaluated using the GOTECH/AI-7000M Electronic Mechanical Testing. Tensile tests were carried out according to ASTM D638. The results were analysed to calculate the tensile strength. Tensile strength at break ranged from 4.712 N/mm² to 12.941 N/mm² while hardness number obtained ranged from 6.76 RHN to 75.84 RHN. This fibreboard has better properties when reinforced with wastepaper compared to that of 100% empty fruit bunches. It is also found that the hardness number is higher, which means that this fibreboard can withstand any load not more than 75.84 RHN. Finally, through Scanning Electron Microscope (SEM), the surface structure of the new high density board has been studied in terms of their surface morphology.