

Abstract

This work deals with design and development of false ceiling board from polyvinyl-acetate (PVAc) composite reinforced with false banana fibres and filled with sawdust. The aim was to develop a light weight and good strength performance false ceiling board using raw materials that are fully biodegradable including sawdust, thus solving the problem of its disposal. The false banana fibres were characterized for its tensile strength, elongation, and moisture content since these parameters affect the composite properties. Hand lay-up method combined with compression molding followed by curing was utilised in the manufacture of the false ceiling composites. The optimum proportions of the raw materials were identified using central composite design software, and the results were 40% sawdust, 40% binder (PVAc), and 20% fibres. The mechanical properties of the developed composite board were evaluated in terms of its tensile strength, flexural strength, and compressive strength. In addition, the composite physical properties were also evaluated including its density and moisture absorption. The optimum results obtained were tensile strength of 12.54 N/mm^2 , compressive strength of 7.03 N/mm^2 , and flexural strength of 5.13 N/mm^2 .