DEVELOPING A COMPOSITE BOARD USING RICE HUSKS, COIR PITH AND PHENOL FORMALDEHYDE RESIN

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ABSTRACT

In the present, with the industrial growth and technological development, rice and coconut industries are growing rapidly and they are caused to generate huge amount of unwanted waste. Through this research a composite board was developed by using coir pith and rice husks as an alternative for wood and Medium Density Fibre board while giving a solution for highly accumulated rice husks and coir pith from respective industries. Some of the physical and mechanical properties were measured including density, hardness, internal bonding and the water absorption. Phenol formaldehyde resin was used as the binding agent and the sheets were allowed to cold press by hand press and then sample was compressed under high pressure at 20 MPa and 175 ^{o}C temperature by using the hydraulic press machine. This experiment was designed into three treatment levels with three replicates by changing the proportions of components. Market available Medium Density Fiberboard was taken as the control. The composite sample boards were subjected for tests to take its mechanical properties. The tests of the coir pith sample boards gave a mean value of 0.6833 kg/m3 in density, 476.67 pounds in hardness, 1.0333 MPa in internal bonding and 12% of water absorption .Rice husk boards gave 0.63333 kg/m3 in density, 416.67 pounds in hardness, 1.0000 MPa in internal bonding and 14% of water absorption. This experiment appears to be a viable solution not only to the environmental problem but also to the problem of the economic viability by taking as a wooden board substitute.

Key words: waste material, coir pith, rice husk, phenol formaldehyde, composite board