

The performance of Melamine Urea Formaldehyde (MUF) based particleboard with wheat flour as filler

Abstract

In this study, melamine urea formaldehyde (MUF) resin was used as wood adhesive. The MUF was synthesized in three stages. The MUF resin based particleboard was produced using wheat flour as filler. The parameters that have been used to evaluate the performance of MUF resin are: water absorption (WA), thickness swelling (TS), modulus of rupture (MOR) and modulus of elasticity (MOE). The data limits designed was analyzed by using response surface methodology (RSM). The models were developed for four response variables, i.e. WA, TS, MOR, and MOE. The range of temperature, pressing time and wheat flour filler content were 110-150°C, 80 to 250 sec and 10-20% (w/w) respectively. From the analysis of variance (ANOVA), the optimal conditions were established at 149.8°C of temperature, 250.0 sec of pressing time, and 10.0% (w/w) of wheat flour filler.