



**OPTIMIZATION OF CUTTING PARAMETER FOR THE DRILLING OF MEDIUM
DENSITY FIBERBOARD**

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"I declared that this thesis is the result of my own work except the ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidate of any degree."

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ABSTRACT

Medium density fibreboard (MDF) consists of woods fibre pieces compress with pressure and addition of adhesive. Drilling MDF always emerge the occurrence of the delamination appear as a defect after the drilling process. The delamination in drilling of MDF significantly reduces the performance and aesthetical aspects of the final product. Furthermore, delamination contributes bad tolerance to the final assembly of the products. Therefore, a study in understanding the delamination tendency and parameters affecting the same is essential for controlling the delamination factor. The present study investigates and to determine the relationships and parametric interaction between three controllable variables, namely as feed rate, cutting speed, and drill bits diameter on the delamination factor at the entry and exit of the holes in drilling of MDF and considering a single quality characteristic which are the smallest the better. The experiment conducted and planned according to design of experiment (DOE) of Taguchi's method. Experiment run guided by L_{27} Taguchi's orthogonal array (OA) with interactions. The results are then transformed into signal-to-noise (S/N) ratio to measure the quality characteristic deviating from the desired value. Analysis of variant (ANOVA) is performed to measure percentage of contributions of each process parameters. With S/N ratio and ANOVA analysis, the optimal process parameters obtained. From the study, delamination occur after drilling process in MDF can be reduced by using large diameter (12mm) of the drill bits, high cutting speed (10000mm/min) and slow feed rate (100mm/min) while drilling in MDF.

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