PROPERTIES OF PARTICLEBOARD FROM *ACACIA MANGIUM* IN RELATION TO TREE HEIGHT PORTIONS

MUHAMMAD BADRAN BIN SALEH

Final Year Project Paper Submitted in Partial Fulfillment of the Requirement for Bachelor of Science (Hons.) Furniture Technology
Faculty of Applied Sciences, Universiti Teknologi MARA

JULY 2015

ACKNOWLEDGEMENT

السلام عليكم ورحمة الله وبركاته

Alhamdulillah, all praises to Allah for His blessing and permission gives for me that I could complete my final year project about "Properties of Particleboard from *Acacia mangium* in Relation to Tree Height Portions". It was not easy to complete this thesis, but with permission from Allah S.W.T and guidance from all peoples involve, this thesis is finally completed.

In this opportunity, I would like to express my special thanks especially to my advisor, Assoc. Prof. Dr. Wan Mohd Nazri Wan Abdul Rahman for all his though and guidance. He was never stop to give guide and support to me and also being with me since the early stage of my project. Without guidance from him, it could not possible for me to finish this project. A lot appreciate goes to Dr. Shaikh Abdul Karim Yamani Bin Zakaria as tutorial lecturer who had guiding me in writing this final year project. Also thanks to Mr.Tajuddin, Mr Shahril Izani and others DIP staff's for the kindness in helping me in difficulties regarding the any technical problem.

My special deep appreciation goes to my beloved parents. Saleh Bin Arshad and Normalia Binti Ramli for their pray, support, encouragement and advices. Thanks to my siblings and other family members. Thank also for my member in AS247 and post graduate student for their helped, sharing, kindness, and experiences in accomplishing this thesis. All of your kindness will never been forgotten for whole of my life.

TABLE OF CONTENT

PROPERTIES OF PARTICLEBOARD FROM *ACACIA MANGIUM* IN RELATION TO TREE HEIGHT PORTIONS

MUHAMMAD BADRAN BIN SALEH

JULY 2015

ABSTRACT

This study was conducted on juvenile *Acacia mangium* to determine its effects of tree portion, resin content, basic properties, and moisture content. Ten pieces of 5 to 7 year-old acacia were obtained from the UiTM Jengka in Pahang. The trees are divided into three parts they are top, middle, and bottom portion. Urea Formaldehyde (UF) was used as a binder with three ratio resin content 8%, 10% and 12%. The properties of bending strength, internal bonding (IB), thickness swelling (TS) and water absorption (WA) were evaluated based on BS EN standard. The basic properties and moisture content determined carried out according to the Technical Association of the Pulp and paper Industry Standard (TAPPI). From the result, it showed that MOR and MOE value were perform better with particleboard using middle and bottom portion with 12% resin content. The IB strength was parallel with bending strength except for board using resin content 8% with top portion bonded with UF. TS and WA rate showed lower in particleboard using resin content 8% with top portion. The basic properties result showed that bottom part higher value compare to another. The middle and bottom part have same value and higher for moisture content. In conclusion, the portion of trees and resin content be used affected the properties of particleboard manufactured from *Acacia mangiun*.