

**EFFECT OF AGE AND HEIGHT ON THE SILICA CONTENT IN  
BULUH SEMANTAN (*GIGANTOCHLOA SCORTECHINII*)**

by

**NOR ASIKIR BINTI MAMAT**

Under the supervisions of

**Encik Jamaludin Kasim**

**Dr. Suhaimi Muhammed**

Submitted in partial fulfillment of the requirements for the Bachelor of  
Science (Hons.) in Applied Chemistry,

Faculty of Applied Science  
Institut Teknologi MARA

**October 1998**

## ABSTRACT

The study of ash and silica content is important since it is known to cause blunting of saw tooth and problems during chemical recovery of black liquor in the manufacture of chemical pulps. Thus, knowledge on the ash and silica content of the pulping materials would enable a mill to take positive measures in their effort to avoid or minimize such problems. Ash and silica contents are determined by using the dry ashing technique. From the results achieved in this experiment, the ash and silica content were significantly affected by the age and but not by bamboo portion. Correlation analysis further revealed that there was no significant relationship between ash and silica content with bamboo age and portion. However silica content was observed to have a highly significant correlation with ash content.

## **ACKNOWLEDGEMENT**

First and foremost my prayer and glory be to Allah SWT, The Most Gracious and Most Merciful, for given me the strength and ability towards the completion of this thesis report.

In the process of completing this thesis, my gratitude goes to various people who in one way or another have helped in making this project successful. My heartfelt appreciation goes to my supervisors, En. Jamaludin Kasim and Dr. Suhaimi Muhammed, for being very patience in their advice, constructive criticisms and comments. Their constant supervisions and guidance are indeed very helpful and invaluable.

I also wish to thank the lecturer at the Department of Wood Technology, Associate Professor Haji Ashaari Abd. Jalil for helping me with the computer programs especially SPSS for my data analysis and the assistant laboratory, Encik Mohd. Nor Jurimi. A lot of thanks also mentioned to Nor Atikah Ahmad, Tuty, Wan and all my classmates, who were involved directly or indirectly, thanking them for their help and support.

Last but not least, I would like to convey my deepest gratitude and special thanks to my beloved parents for their patience, support, advice and constant prayer when I needed most at time of hardship which finally lead to success.

# TABLE OF CONTENTS

	<b>Page</b>
ABSTRACT	i
ACKNOWLEDGEMENT	ii
TABLE OF CONTENTS ✕	iii
LIST OF FIGURE	v
LIST OF TABLES	vi
CHAPTER	
1 INTRODUCTION	1
2 LITERATURE REVIEW	4
2.1 Bamboo In General	4
2.2 Bamboo In Peninsular Malaysia	5
2.3 Buluh Semantan ( <i>Gigantochloa scortechinii</i> )	6
2.4 Properties of Bamboo	7
2.5 Uses of Bamboo	10
2.6 Dry Ashing technique	12
3 MATERIALS AND METHODS	14
3.1 Reagents	14
3.2 Material References	14
3.3 Analytical Procedure	14

## TABLE OF CONTENTS (CONTINUED)

	<b>Page</b>
3.3.1 Ash Determination Method	15
3.3.2 Silica Determination Method	15
3.4 Experimental Design	16
4 RESULTS AND DISCUSSION	17
4.1 Ash and Silica Content In <i>Gigantochloa scortechinii</i>	17
4.2 Effect of Age on Ash and Silica Content	19
4.3 Effect of Portion on Ash and silica content	20
4.4 Correlation Coefficients of Age and Portion on Ash and Silica Content	21
5 CONCLUSION AND RECOMMENDATION	23
REFERENCES	25
APPENDICES	29
APPENDIX A : Determination of Moisture Content (MC) and Oven-Dry (OD) Factor For Air-Dry (AD) Factor	30
APPENDIX B : Determination of Ash and Silica Content	30
APPENDIX C : Analysis Data By using SPSS Software	31
APPENDIX D : Material Safety Data Sheet (MSDS)	42