

**CHEMICAL PROPERTIES OF NAPIER GRASS PAPER
USING SODA AQ PULPING**

**NURAIN IZZATI BINTI JAMALUDIN
(2019630936)**

**BACHELOR OF SCIENCE (HONS) FURNITURE TECHNOLOGY
FACULTY OF APPLIED SCIENCE
UNIVERSITI TEKNOLOGI MARA**

AUGUST 2021

ABSTRACT

REVIEW CHEMICAL PROPERTIES OF NAPIER GRASS PAPER USING SODA AQ PULPING

Napier Grass was known as the non-woody materials who were actually an excessive population. Thus, Napier Grass was being selected to produce a paper to replace the non-woody plants. The properties of Napier Grass are different than woody plants, nevertheless Napier Grass shown the greatest procedure and the speciality in terms of characteristics and the benefit towards the environment. The purpose of the study is to determine the chemical properties of fiber and mechanical paper properties of Napier Grass and other lignocellulosic fiber. The approach that was employed was mechanical characteristics, which included tear testing, burst testing, freeness testing, and tensile testing on the paper itself. Another option for pulping is to utilise a soda AQ pulping procedure, which is more environmentally friendly. The study was resulting that Napier Grass are the most quality raw materials that can offered in terms of ease to get the population and the best method of pulping was been offered.

Keywords: Napier Grass, chemical properties, soda AQ pulping

ACKNOWLEDGEMENTS

In the name of Allah, the Most Merciful and The Greatest. I would like to take this opportunity to show my gratitude to all people that help to complete this research project. I would like to thank all of my family, my friends, and my lecturers for guidance and truly support me physically and mentally especially during this Online Distance Learning (ODL)

I would like to thank my special thanks and greatest gratitude to my supervisor, En. Amran Bin Shafie who give me all the support and guidance to complete this research project. Without all of his guidance I could not complete this research project excellently. All of his advice towards my progress during these two semesters encourage me to be a stronger and boost my energy to complete this research project properly. I would like to thank to him for his spirit in teaching me during the final year project.

Next, I would like to thank my coordinator of FSG 661, Dr. Zalifah Bt. Mahmood who always lend all of us an excellent guidance and template from day one. Without his guidance and teaching skills, I think most of us are barely know nothing about the purpose of final year project. My appreciation to all Furniture Technology lecturers whose gives all the support and encouragement to complete this project.

Lastly, I would like to take this opportunity to give a greatest thank to my family and friends especially to my mother who clearly give all the support in terms of advice when things do not go on the way to complete this research project. My appreciation to all my classmates who never get tired to share all of ideas and guidance towards me. Special thanks to my friends which is Amirul Hakim, Siti Nur Aisyah and Nur Anis whose always give a physical and mentally support during the hard time. My last appreciation thanks to my friends Amir Yazid who always give the endless support during this online degree session. Thank You Very Much.

TABLE OF CONTENT

	Page
ABSTRACT	iii
ABSTRAK	iv
ACKNOWLEDGEMENTS	v
TABLE OF CONTENT	vi
LIST OF TABLES	viii
LIST OF FIGURES	ix
CHAPTER 1 INTRODUCTION	1
1.1 Background of Study	1
1.2 Problem Statements of Study	2
1.3 Significance of Study	3
1.4 Objectives of Study	3
CHAPTER 2 LITERATURE REVIEW	4
2.1 General pulp and pulping sources	4
2.2 Napier Grass	6
2.2.1 General	6
2.2.2 Chemical composition and fiber morphology	8
2.2.3 Properties	9
2.3 PULPING	11
2.3.1 General	11
2.3.2 Soda AQ Pulping	13
2.4 EXPERIMENTAL ANALYSIS	14
2.4.1 Raw Material Preparation	14
2.4.2 Fiber Morphology	16
2.4.3 Fiber Maceration	17
2.4.4 Fiber measurement	19
2.5 Pulping	20
2.6 Hand sheet Making	22
2.7 Testing	23
2.7.1 Freeness	23
2.7.2 Tensile	24
2.7.3 Burst	24
2.7.4 Tear	25
2.8 Data Collection and Data Analysis	26
2.8.1 Pulping and Bleaching Experiment	27

2.8.2	Mechanical properties of Napier Grass paper and other mechanical paper properties.	30
CHAPTER 3 CONCLUSION		33
3.1	Conclusion	33
3.2	Recommendation	34
REFERENCES		35