



**BUSITEMA
UNIVERSITY**
Pursuing Excellence



FACULTY OF ENGINEERING
DEPARTMENT OF TEXTILE AND GINNING ENGINEERING
FINAL YEAR PROJECT REPORT
PROJECT TITLE
ENHANCING LIGHT WEIGHT PAPER CRETE WITH BANANA FIBER.
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A final year project report submitted to the Department of Textile and Ginning Engineering as a partial fulfillment of the requirements for the award of a Bachelor of Science in Textile Engineering

ABSTRACT.

The construction industry is responsible for the depletion of large amounts of nonrenewable resources. This activity generates not only millions of tons of mineral waste but also millions of tons of carbon dioxide gas emissions. Therefore, research about building materials based on renewable resources like vegetable fibers is needed. The availability of paper Crete and banana fibers as raw materials, low energy consumption and the simplicity of the production process will justify their extensive usage as primary housing material. Fiber inclusion enhances the strength and performance of the construction blocks. Cement, sand, paper Crete and banana fiber in the mix proportion of 1:1:0.8:0.2, 1:1:0.8:0.35, 1:1:0.8:0.50 and fiber length of 20mm,35mm and 50mm were used. For each of the mix proportions considered, water absorption and compressive strength increased with increasing fiber content. Highest compressive strength of 8.99N/mm² was recorded at 50mm length and 0.20% fiber quantity. Density of paper Crete decreased with increase in the quantity of fiber. Paper Crete was recommended to be an effective and sustainable material for the production of light weight and fire-resistant solid blocks to be used to make partition walls of especially high-rise buildings.

DECLARATION.

I **Imotoga Jetu** declare to the best of my knowledge that the piece of this project is a result of my research and effort and it has never been presented or submitted to any institution or university for an academic award.

DATE

SIGNATURE

APPROVAL

This project has been submitted for examination with approval from the following supervisors:

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MAIN SUPERVISOR

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CO-SUPERVISOR

Date:

DEDICATION.

I dedicate this final year project to my lovely parents Mr. Obwana Benard, Mrs. Akasegere Mary and my brothers who have enabled me to see the light of education. God bless you.

ACKNOWLEDGEMENT.

I express my deepest gratitude to my supervisors madam Tusiimire Yvonne, Mr. Sendawula Charles, lecturers at the department of Textile and Ginning Engineering Busitema University for their guidance and support throughout this work.

I would like to thank my class mates, friends for their practical help during the synthesis of the work.

Finally, unconditional love, support and encouragement from my family members to continue working tirelessly even in difficult times was wonderful, they deserve much love and thanks.

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ABBREVIATION OR ACRONYMS

BS..... British Standard

OPC..... Ordinary Portland cement

ACI..... American Concrete Institute

LC.....Classes of concrete

CCF..... Central composite face centered

ANOVA..... Analysis of variance