



# Carrier Bags From Mango-sheets



## Mzumbe Secondary School

Shekhan Mohamed Mwangala and Nadhiru Jumbe Alawi

### Introduction

In present world of modern science and technology, scientists do care much about environment and how to preserve and maintain its natural standard. This is done by inventing alternative materials to substitute the material that have been affecting the environment for many years. Among the materials that have been affecting the environment for years is plastic which is used for manufacture of plastic bags and plastic related products.

Our project mainly concerns the production of mango-sheet carrier bags so as to substitute the plastic bags as an alternative materials. The mango sheets easily produced and can be done both domestically and at industrial level for large production. Here we shall focus on domestic procedures to produce the mango sheets but they are almost similar to those at industrial level



Img 1: Spreading the mango pulp

Img 2: Peeling off the mango sheet

### Method

After making the sheets from mango pulp, the experiments to test the effectiveness of the sheets followed. In this project we experimented on strength and permeability. Thus this part is split into two parts, that is, experiment-1 to test the strength and experiment-2 to test the permeability.

Experiment-1 (Strength):

Aim;

The aim of experiment-1 is to determine the strength of the mango sheet and the effect of water on the strength of the sheets.

Materials;

The materials necessary in this experiment are 5 strips of mango sheet, water, trough or vessel to soak the strips, string and weights. Method; In experiment-1 of the experiment part, the strength of the mango sheet was tested. Here we tested strength of the sheet and the effects of water on the strength of the sheets. Firstly the real Strength of the sheet was measured. Then the strips of mango sheet were soaked in water for different duration of time varying for 10 minutes. In measuring the strength of the strips, we measured for the maximum mass that the sheet can sustain. Here a strip of mango sheet was tied in one end to a fixed object and the other to weights. The weights were added till the strip breaks and the mass was recorded. Then the strip was changed to the one soaked for more time than the previous until all the strips are finished.

### Results

The results obtained from the above experiments are shown in this part. Here the result of experiment-1 and experiment-2 are categorized into their respective experiments. The results are as follows:-

Experiment-1; In this experiment, the mass sustained by the strip which was not soaked was recorded and then the mass sustained by the soaked strips was also recorded as shown in the following table.

The mass sustained by a strip which was not soaked is greater than that of the soaked strips. The mass sustained decreases rapidly as the time in which the strip was soaked increases. This indicates that the mango sheet carrier bags function best in dry condition and for carrying dry materials.

Also the mango sheet got softer as they stay longer in the water such that it reduces its strength. This condition can be restored by drying the sheet again in a dehydrator or in the sun.

Experiment-2;

Here the permeability of the mango sheet was measured. It was observed that the mango sheets are slightly permeable to water. At the commencement the amount of water let through by the sheet was low but increased at a time. The results obtained were as follows

Time soaked (minutes)	0	10	20	30	40
Mass sustained (kilogram)	1.6	1.2	0.5	0.2	0.2

Table 1: A table showing effect of water on strength of mango strips.

Time (minutes)	0	10	20	30
Amount of water (cm <sup>3</sup> )	0	0	0	50

Table 2: A table showing the permeability of mango sheet to water.

### Conclusions

Mango-sheets carrier bags help substitute the plastic bags at a great extent as they can be recycled over and over again. For this case it helps to increase the abundance of materials for making carrier bags and hence facilitating the campaign to completely ban the use and production of plastic bags. Just like other carrier bags, mango-sheet bags function and serve the same in carriage of items.

Mango-sheet bags are strong enough and thus can be used to carry slightly heavy gadgets Unlike plastic bags, mango-sheet carrier bags are totally non hazardous to living organisms like animals. Even when swallowed by animals, it does not block the digestive tract but digested and incorporated among food substances. In animal keeping, the used mango sheets can be recycled as animal food by cutting the sheet into very small pieces and mixed with other animal folder.

### Acknowledgments

The project "CARRIER BAGS FROM MANGO SHEETS" is a result of combination of efforts and ideas of many potential people in their respective fields. We kindly acknowledge the following people for their support:-

Our project teacher, Mr. M Suka for his guidance throughout the steps as we operated in our project.

Our fellow students at mzumbe sec. school for their constructive ideas.

Our parents for their inspiration and encouragement throughout the project.