MANUFACTURE OF FIBER BOARD FROM ARECA SPATHE AND HUSK

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ABSTRACT

This project focuses on the manufacturing of a fiber board mainly consisting of two main components wiz. Areca spathe and rice husk. This fiber board consists of all natural ingredients also including the binding material used which a thick paste is made by grinding the wheat grains with adequate amount of water to it. The board is formed by crushing dry leaves of Areca Spathe & rice husk which are then bounded together by the wheat grain paste. In addition to it the board is then covered by a sheath of coconut tree which provides a protective layer to the board. This board overcomes other boards in most of the aspects as it is cost effective and the most important it is made up of all natural ingredients so zero risk of side effects.

Keywords*: Areca Spathe, Rice Husk, Fiber Board, Grinding .*

INTRODUCTION

Fiberboards are nowadays used for many purposes in manufacturing industries, carpentry. It is used widely in the industry on larger scale. Medium density fiberboards are stronger than ordinary plywood's hence can sustain to relatively large force than plywood's. Medium density fiberboards are flat, smooth, hard which makes it ideal for veneering. Various durable and strong things can be made using these fibers. These fiberboards can be crafted, laminated and special type of screws can be used on it. It is best substitute for medium density fiberboards.

INGREDIENTS

Ingredients used in manufacturing of fiber board are Areca Palm Leaves, Wheat, Rice Husk, Water, Coconut Stem dry mesh, coconut husk fiber. All these ingredients are easily available, non polluting, biodegradable .All these ingredients are natural.

- Areca palm leaves: These leaves are few centimeters long having many leaflets, Areca palm leaves used for fiber board are Dry and fibrous. They are naturally fallen down and handpicked.

- Wheat: Wheat used in manufacturing is used for making sticky mixture like substance which acts as glue, which binds the material of fiber board?
- Rice husk: Rice husk is hard protective fibrous covering of rice grains, due to its fibrous Nature it is one important material of fiber board. It is easily available as it is the waste product and of no use. It is a good insulator. It contains lignin and silica which makes it hard.

- Coconut stem dry mesh: It is sheet of coconut fibers which are very strong and hence mesh is used to

Provide support for mixture during manufacturing as well as outer surface of fiber board.

It is a good insulator.

- Coconut husk fibers: coconut husk fibers are naturally occurring hard fibers, these are also known as

Coir. They are also used in doormats. These fibers are made up of sclerenchyma tissue.

- Water: Water is used while making sticky mixture.

(CLOSE LOOK OF FIBER)

IDENTATIONS

Indentations/ Working:-

The ingredients/raw materials are mixed in following proportions—

1) Wheat- 150 grams.
2) Rice husk- 1 bowl.
3) Dry Areca palm leaves cut into small pieces- 1 bowl

The mixture is ground to coarse powder. Then it is taken in a large bowl and two table spoons of Maida is added. Water is added slowly with constant stirring till a thick paste is made.

The dry coconut stem mesh is cut into two pieces of 10 by 5 square inches. One piece is kept on the tile. The paste is spread evenly on the surface of the mesh to about 1 cm thickness. The other piece of mesh is kept on it. The extra paste is removed from the sides to get uniform finish to corners and sides. It is dried in hot sun for two days.

Wheat contains a protein called Gluten (in Latin gluten means glue). It comprises of 47% of wheat proteins. When wheat flour is mixed with water, Gluten forms viscous-elastic network. Gluten is made up of two proteins namely- Glutenin and Gliatine.

Glutenin confers high levels of elasticity and stickiness and polymers are stabilized by intermolecular Disulphide bonds. Since Gluten is water insoluble protein, in hydrated form it acts as a binder. It enhances adhesion between inner and outer surfaces of fibers. It increases mechanical properties like strength, elasticity and decreases modulus of rupture.

(IMAGE OF FIBER BOARD)

WHY IS IT BETTER THAN ORIGINALLY EXISTING TECHNOLOGY?

The main aim of the project was to replace fiber boards made of thermosetting plastics.

These thermosetting plastics are of various qualities varying form cheap grade to high grade however no matter what grade this plastic is of it contains harmful chemicals

Some of these chemicals are:-Silica, Synthetic or cellulose pulp, Silica Fume, Metakolin, Fly ash, calcium silicate, flocculants etc.

A) Side effects of these chemicals can be seen in our daily life. Some of the most common side effects are :-

1.) Being non-biodegradable they last for excess of 1000 years in landfills and water bodies.

2.) These chemicals can be cause of many abnormal growth and cancer if exposed to for long period of time such as labourers working in manufacturing factories and people using water contaminated by these chemicals

B) Along with these side effects the boards are also expensive and take a of time and expensive instrumentation for manufacturing.

Hence we made a board using complete natural ingredients like Areca Spathe (palm leaf), rice husk, thick wheat paste and coconut sheath as board comprising of these components can overcome the above problems A and B.

As it is made using 100% natural components it is 100% bio degradable and doesn't pose any carcinogenic threats to anyone who gets associated with it be it the manufacturer or the user.

CONCLUSION

The finished product is fiber board. It is almost completely natural. The process is cheap and no Complex machines are required. The mainly required ingredients are only areca Palm, water, coconut husk, wheat and White Flour. The final product is of very good quality and can be sold in the market in various form. Strength and cheap cost of the fiber board produced in the price is marketable. This fiber is ideal for toys and other important household things. It can also be molded into different shapes which will give very comparable strong product compared to other fibers. These fibers can be very useful in rural areas as they are cost effective and it is affordable to each and every one.

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