Application of Straw Man-Made Board in Design

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Abstract—As a new type of environmental protection material of straw based panel, we want to raise awareness to full attention, this article through to the overview and analysis of the status quo of straw based panel, puts forward we should make full use of in the design to promote the development of straw based panel, it points out the development prospect of straw man-made board.

Keywords—Straw Man-Made Board; Environmental Protection; Design

I. INTRODUCTION

Due to the shrinking of natural forest resources, wood supply tension. Implementing natural forest protection policy, and effectively promote the sustainable development of forestry industry in China, but in the rapid development of panel industry, the shortage of raw material also more and more prominent, in order to alleviate this contradiction, we need to find alternative raw material of lumber, besides bamboo resources, crop straw as raw materials for the industry is a strategic resource with great potential.

II. AN OVERVIEW OF STRAW BASED PANEL

With crop stalks, straw, rice straw, corn stover, cotton stalk, reed, etc.) or the residues in agricultural products processing chip (bagasse, hemp, rice husk, peanut shell, etc.) as raw material, processed into various materials unit, (or not applied) adhesive and other additives, set of billet of hot-pressing glue plate or molding products, including particle board, fiber board, composite board and surface after decoration products, generally referred to as the crop straw man-made board(as shown in Figure 1).

![Figure 1: Straw man-made board](image)

According to the density of straw based panel specification can be divided into: low density series of straw, straw medium density series, high density of straw.

Low density straw series: refers to the density of 0.35 g/cm³ after 0.50 g/cm³ after low density straw man-made board, used for door core board, insulation board, drawing board, white board.

Straw medium density series: refers to the density of 0.65 g/cm³ after 0.80 g/cm³ after medium density straw man-made board, used in furniture manufacturing, architectural decoration, vehicle manufacturing, packing and shipping of the ship.

Straw high-density series: refers to the density of 0.80 g/cm³ after above the high density of straw man-made board, used for the field of medium density series, floor, sound-absorbing board, decorative wall hanging plate.

III. THE PRESENT SITUATION OF STRAW BASED PANEL

Straw board characteristics can be summarized as: small size, high strength, rigidity, good seismic performance, but also good heat preservation, heat insulation, sound insulation and fire resistance, the biggest advantage is that do not contain free formaldehyde of straw based panel, in addition, the ratio of straw based panel ordinary particleboard processing performance is good, processing performance is close to wood density board, but the utility ratio of straw based panel far less wood man-made board. The reason boils down to:

- Raw material collection, the straw is to plant all the year round, seasonal, loose texture, easy to corrosion, mildew and rot, insect material collection, transportation and storage problems.
- Adhesive cost, mainly used in the process of production of straw based panel isocyanate adhesive, the cost is higher.
- Mass production, the production of straw based panel basic traditional wooden man-made board production mode, extensive technology, lack of sufficient theoretical support.
- Product use, due to the limitation of traditional ideas and related standards, people still cannot completely replace the wooden man-made board of straw based panel.

IV. THE APPLICATION OF IN THE DESIGN OF STRAW BASED PANEL

Crop stalks as an alternative wood raw material, we should have approved the material in notions, especially as a designer, want to use more and more attention, as a kind of environmental material of straw based panel, is the development trend of the future design, designers must set up the idea. Discover the advantages of straw based panel, design a good product of straw based panel, improve the utilization of straw based panel. See more people in life and nature also have this consciousness.

- Crop stalks as an alternative wood raw material, we should be in notions we kind of material can be combined with other materials or products, give full play to its strengths, and other materials to make up for the shortcomings of straw based panel. Can make full use of the advantages of of straw based panel, thus improve the added value of straw based panel.
- As a kind of environmental material of straw based panel, especially do not contain the characteristics of free formaldehyde, we want to full play in the design of this kind of characteristics, to increase the utilization rate of the products and value-added, and to be psychologically, bring a healthy and comfortable feeling.
- In addition to design products, we also can be applied to the product packaging of straw based panel, interior decoration, construction, use this kind of material, more people will accept on conception and the faster.
CONCLUSION

At present this kind of wood in comparison with the factory of man-made board of straw based panel or less, because risk is bigger, easy to cause a loss. So we need to solve its problems in the production of straw based panel on one hand, for example, the adhesive; On the other hand to improve the utilization of straw based panel in real life. We can through the following ways.

To the relevant departments and enterprises, to report and propaganda into panel, objective evaluation the performance of straw based panel, with support from the government and the enterprise investment. The technology of straw man-made board for testing and actual development.

Can through the institutions of higher learning and scientific research units and enterprises cooperation, to study the practical problems and difficulties of straw based panel, through scientific and technological innovation, find from the production and application of the solution. So for institutions of higher learning and scientific research units, to solve a practical problem; For enterprises to solve the problem can increase efficiency, the best of both worlds.

Each discipline, also can form a team of researchers an interdisciplinary research group, and solve the problem of their professional, and put forward Suggestions according to their own specialty to the other, to study together.

All in all, as a new type of environmental protection material of straw based panel, the future has very big development space, we must first pay attention to this kind of material, especially for designers, developed a new type of material is not easy, we must make the discovery and excavation of the use of the space of straw based panel, through this material to our design and color, also through our design make this material.

References