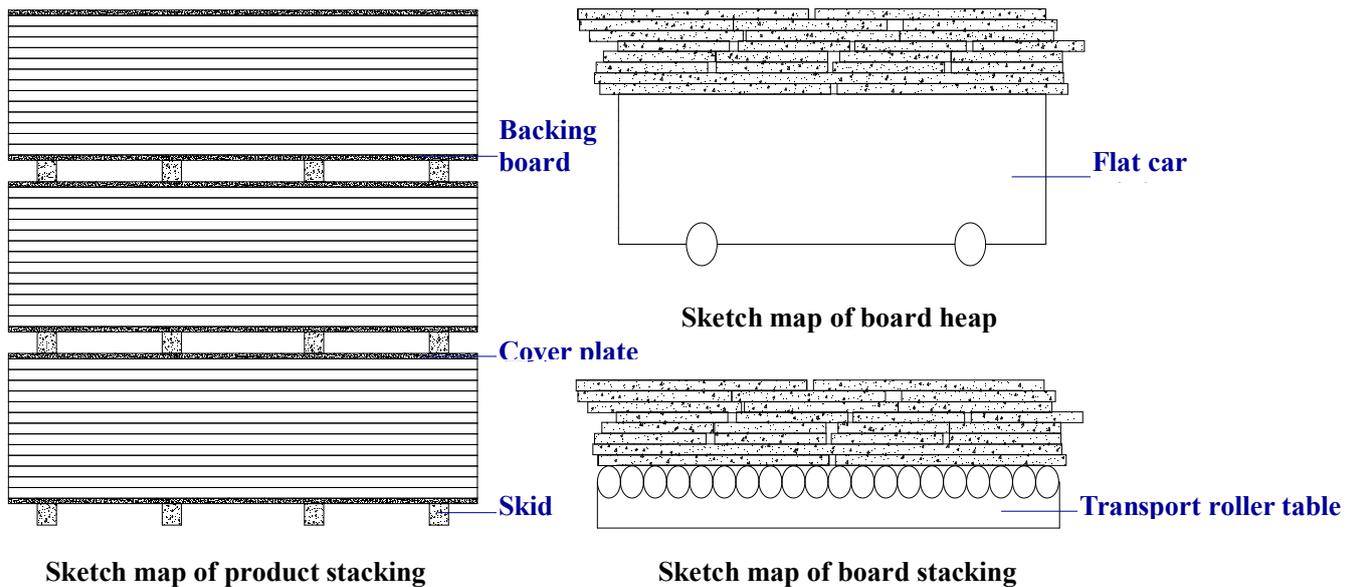


## Operation Instruction for Straw Board

### I. Storage

All artificial boards made from plant fiber as the raw materials have different board properties due to different manufacturing methods, plate thickness and densities, etc. The improperly processed stacking shall generate a certain influence on the physical and chemical properties and appearance quality of the product.

1. Indoor storage: the storage place shall be ventilated and dried to avoid sunlight illumination, prevent raining and liquid splashing.
2. The board must be levelly placed; the bottom is supported by 4-5 timbers with width not less than 100mm; the distance among the timbers is not greater than 600mm; the timbers for bearing and supporting the board must have consistent thickness; the surface is flat, smooth and dried; if the board is continuously stacked and laminated; and the timber for carrying the support must aim at the lead plumb.
3. When storing the stacking, one cover plate is respectively arranged at the top and bottom of the stacking to prevent wetting and scratching the top and bottom boards.
4. The naked plate for storing the stacking must be sealed by the plastic packing bag to ensure that the water content in the plate is balanced and stable during the storage process to avoid mold contamination and mildew. The veneered stalk board is stored in a sealing manner; and the stalk board can be used only after the plate temperature, moisture and environment temperature and humidity are balanced.
5. The processed board shall be levelly arranged on the transportation roller table, flat car or rack; and the suspension length at the two ends and the middle of the continuously stacked and laminated board is not greater than 300mm.
6. It can be placed obliquely for a long time under any condition.



## II. Melamine Impregnated Paper Veneer Processing

### (I). Requirements for processing equipment for melamine veneer

It is pressed by double-face hot pressing machine; the rated pressure of the press is not less than 1,200t; and the steel plate and cushion mat are well fitting the pressing board of hot press.

### (II) Processing technology for melamine veneer

The melamine impregnated paper veneer is processed by the resin fusion, flowing and solidifying the impregnated paper to form the uniform and sealing surface. Under the correct matching of temperature and pressure, the firm adhesive strength and well surface performance can be obtained. Three factors are very important, namely, adhesive unit pressure, solidifying temperature and solidifying time.

#### 1. Pressure

The suitable pressure can ensure well combination of paper and board, so that the resin in the impregnated paper has uniform flowing to form sealing and imporous surface. The uneven and thickness tolerance on the surface of base material are made up. The stress is uniformly distributed on the whole board as far as possible. Due to poor resin flowing, pressure per unit area must reach 2MPa. When planar pattern surface decoration and common relief pattern surface decoration are adhered, the range of pressure per unit varies from 2.5 to 5MPa; When the deep raised pattern surface decoration is carried out, the range of pressure per unit varies from 3 to 5MPa. The calculation formula of pressure per unit area is as follows:

$$\text{Pressure per unit area (MPa)} = n \cdot \pi \cdot D^2 \cdot P_0 \div 4F$$

n -- number of feed cylinder

$P_0$  -- maximum pressure value on the pressure meter when processing the veneer of the hot press, MPa;

F -- area of veneered artificial board, mm<sup>2</sup>

D--Diameter of the oil cylinder, mm.

The fusion resin on the impregnated paper will be quickly solidified in the condition of high-temperature, so the pressure is quickly applied when veneered; the speed of the press from the closing to step-up in place must be controlled within four seconds, even less time, so that the press closing and pressure rising must reach to the process requirement. The quality defect of veneer caused by early solidifying of the resin under non-pressure or low-pressure state is avoided.

## 2. TEMPERATURE

The veneered temperature of the stalk board is 185-195°C.

## 3. Date

When processing the melamine veneer of stalk board, the suggested hot pressing time is to be controlled within 22-30S; and it shall be suitably adjusted according to the actual solidifying speed of the melamine impregnated paper. The solidifying speed of melamine impregnated paper depends on the pre-solidifying and hot pressing temperature of the impregnated paper; the higher the pre-solidifying degree of the impregnated paper, the quicker of the solidifying speed, and the needed hot pressing time is shorter accordingly. The higher the hot pressing temperature, the quicker of the solidifying speed and the needed hot pressing time is shorter accordingly.

## 4. Health maintenance

After being processed by melamine impregnated paper veneer, the stalk board shall be processed for health maintenance; and the board must cool to the normal temperature; The internal temperature and moisture of the board must keep complete balance; After the board temperature and moisture are balanced with the environmental temperature and humidity, the health maintenance being finished and it can be used by then.

## III. Wood Veneer Processing

### (I) Glue selection

The stalk board is subjected to veneer processing by environmentally friendly white glue, urea resin, etc; the glue and gluing amount are the same as the common wood artificial board; and there is no special requirement.

### (II) Veneering process

The parameters of the hot-pressing process are as follows: A. Hot pressing temperature: 120°C ; B. Pressure per unit area 80Kgf/cm<sup>2</sup> ; C. Hot pressing time: 3min; the hot pressing time can be suitably adjusted according to the solidifying speed of the glue.

#### **IV. Cutting and Processing**

##### **(I) Cutting and processing equipment**

The stalk board can be cut and processed by sliding table saw, reciprocating saw, CNC saw, carving machine and machining center.

##### **(II) Saw Blade**

Each sliding table saw, reciprocating saw, and CNC saw is with two saw blades; the front feeding and cutting board is marking saw; and on the back is the main saw blade. The marking saw adopts down milling method; namely, the cutting direction is consistent with the feeding direction of the board; the vertical force of the cutting force is upwards pushed to prevent the veneering layer on the surface of the saw blade forming broken edges. The main saw blade adopts ladder flat alloy saw blade cutting (the main saw adopting the diamond saw blade is not suggested). The marking saw adopts the reverse-ladder diamond or alloy saw blade cutting (select the diamond firstly); For the alloy saw blade, the Lanzhi brand is suggested; while for the diamond saw blade, the Yellow Cyclone and Lanzhi brand are suggested.

##### **(III) Cutting speed**

It is confirmed according to the calculation of cutting amounts of the single saw teeth; and the calculation formula is as follows: Maximum cutting speed (m/min) = revolving speed of saw blade (r/min) \* tooth number\* cutting amounts of single saw teeth (mm)/1000; the cutting amounts of single saw teeth is controlled within 0.02-0.1mm; and it does not exceed 0.15mm.

##### **(IV) Adjusting saw blade**

The material and glue adopted by the stalk board are different from the common artificial board; the board hardness is different from the common artificial boards; in order to ensure better cutting effect, the saw is adjusted by the stalk board before cutting the stalk board; and the marking saw is greater 0.2-0.3mm than the main saw path. The height of the main saw blade extending the board does not exceed 60mm.

##### **(V) Maintenance for saw blade**

When getting off in each day, check whether the saw blade is damaged or deformed or not; and the damaged or deformed saw blade is wasted. Check whether the saw tooth is rust or not; and the rust saw

blade is repaired timely. Check whether the saw blade is adhered to the foreign matter or not, if so, the saw blade is dismantled and soaked and cleaned by the diesel oil.

#### (VI) Notes

Check whether the dust collection effect is better or not when cutting and processing in each day; if the dedusting effect is poor, it shall have great influence on the environment, cutting effect and service life of tools. The dedusting effect is poor, the saw blade is heated quickly; the heat cannot emit quickly; the temperature of the sawing piece is high; and it shall result in saw blade deformation and rust speeding-up directly. Its dedusting effect is poor; the generated dust cannot be extracted timely during the cutting process; the dust is absorbed and sintered on the sawing piece, so that the angle of the sawing piece is changed; the friction force and impact force are increased to result in broken edge.

Many boards stacked when cutting is not suggested

## **V. Edge Banding Processing**

### (I) Edge banding processing technology

A process that to seal the sides of the cutting board together and the feeding speed of the edge banding machine does not exceed 32m/min. Main processes: Milling, pre-heating, gumming, pressing edge banding, cutting edge banding, front and rear truncation, upper and lower rough dressing, upper and lower refining, tracking dressing, scraping dressing and shoveling glue layer;

### (II) Milling processing

The edge banding part is milled and processed by diamond pre-milling cutter to remove the cutting mark; the processing face is flatter to avoid the glue defect; and the milling processing amount is controlled within 0.5mm.

### (III) Control of gluing amount

The gluing amount of the edge banding hot glue is subjected to the glue part extruded from the extraction glue; and it is not greater and not smaller. If it is greater, the edge banding has a black line which affects the appearance; If it is smaller, the gluing strength is not enough.

### (IV) Control of edge banding time

After the board is cut, the edge banding should be timely banded; the interval from the cutting to edge banding does not exceed 4 hours to avoid expanded board.

## **VI. Drilling Holes Punching Processing**

### **(I) Tool and process requirement**

The sharp alloy drill is adopted to punch and process the hole in low speed; and if the broken edge and expanded edge appears on the hole edge, then the tool must be timely replaced.

### **(II) Other notes**

The furniture parts are connected in three-in-one or four-in-one connection piece; and the two-in-one connection piece is forbidden.

## **VII. Slotting Machining**

### **(I) Slotting machining of the sliding table saw**

The slotting machining is carried out by sharp and hard alloy saw blade; the board must have uniform speed and be smoothly pushed during the processing; breaking must be avoided during the pushing process; the fitting speed must be the same as the cutting speed of the board; and it is calculated according to the calculation formula of the cutting speed.

### **(II) Slotting machining of carving machine and processing center**

The slotting machining is processed by sharp and hard alloy milling cutter or diamond milling cutter; and the tool feeding speed adopts low speed during the processing.

## **VIII. Design, Installation and Maintenance Notes**

### **(I) Design notes**

1. Try not to use the stalk board when making plate door with height exceeding 800mm; but if the stalk board with height exceeding 800mm must be adopted when making it, the door plate straightener is suggested to be installed at the back; hinges are installed to avoid deforming the door.
2. The design and installation must ensure that there is enough gap among the four sides of the furniture and the wall; the minimum gap is not lower than 5mm; and the deformation caused by wall or furniture influence, size changes and furniture pressing should be avoided. After the furniture installation being finished, the reserved gap can be filled with elastic joint mixture, such as glass cement or foam rubber.
3. During the design and installation process, make sure that the gaps among the drawer, rack and door are big enough to avoid not opening the furniture of different size later.
4. The laminate is designed to be fixed type as far as possible; the design span is not greater than 800mm;

if the span is greater than 800mm, the back nail is needed to fix and connect with the backboard.

5. The furniture, and furniture part with greater weight, such as bookcases, wine cabinet and the like must be made by the board with a thickness not less than 25mm; after the board is designed to be the fixed laminate and being installed, then nailing on the back board to fix it; and the nailing distance of the back board should be controlled within 400mm.

6. The wall-hung cabinet is designed to be single-wall type; it is in breaking design with the bottom cabinet of the furniture and the wall-hung cabinet on the bottom cabinet; 18P plate is used as the back plate; and it is punched on the back plate to connect with the wall fixedly.

7. The external wall, such as toilet, wash room with poor waterproof treatment is not suitable for installing the stalk board furniture; and it must be avoided during the design process.

8. When designing the furniture, due to the limited fixing and connecting points, the edge for hanging cloth is easy to deform; one side for hanging the long clothes is designed to be near to the wall position; one side with more laminates, rack, drawers and L frames are designed to be polishing faces.

9. The drawers and racks must be fixedly installed on two side plates; it is not suspended on the laminate to avoid increasing plate loading and deformation.

10. The four sides of all furniture must be processed by edge banding.

11. The stalk board is made from the stalks, so the board has the smell of stalk; if the owner is sensitive to the smell, the owner can select the mobile door as the cabinet door to reduce the stalk smell.

#### (II) Other notes

1. When the furniture is levelly installed, it must be flattened by the plastic sheet or tile not absorbing the moisture to avoid gasket moisture and deformation.

2. After the ceiling and wall coating are dried, the furniture can be installed. And the furniture deformation caused by the moisture influence of buildings, such as wall, ceiling, etc should be avoided.

3. Three-in-one connection hole is to be sealed by furniture hairdressing paste to avoid the releasing of the stalk smell from the furniture.

#### (III) Maintenance notes

1. The door and window must be opened to ventilate; when meeting the damp days, the air conditioner must be turned on to remove the moisture. After a storm comes to an end, the furniture, door and window must be ventilated to discharge the moisture; the expansion, deformation and mildew caused by the air humidity influence must be avoided.

2. When the furniture surface has water or heavier moisture, it must be wiped by dry cloth; the room door and window should be opened to ventilate to be dry; and the expansion, deformation and mildew caused by the air humidity influence must be avoided.
3. The furniture must be kept dry and clean for a long time; choose a piece of dry cloth to wipe the dust during cleaning; or clean it with solid cleaning paste.
4. If there is no person for a long time at home, the furniture door and partial room doors and windows must be opened to ventilate to avoid the great moisture in the room; and it must avoid the furniture deformation and mildew caused by non-discharging moisture.