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Assignment #5 – Instructions
Date

How to Make Plywood

Wood furniture is a part of our everyday lives and comes in many different types from all around the world. While most of us use this beautiful finished wood product, not everyone knows how exactly it is made. The whole process of making a sheet of plywood can be done within just a few hours when all the components of the process are in the same building and if the process is being run efficiently. During this assembly process, the sheets of plywood will go through many different stages before it gets to the finished form, and are shipped out to be created into the intended result.

The process of making plywood is divided into 6 different steps: (1) obtaining the veneer, (2) assembling the sheets, (3) pressing the sheets, (4) cutting the edges of sheets, (5) puttying knots, (6) coloring and sanding

Equipment Needed

To complete the process of making plywood you will need the following equipment:

Lathe
Glue
Spreader
Hydraulic Press
Saw Line
Conveyor Belts (putty line)
Sander

All this equipment is found within a mill so, in order to actually see this process, you will need to tour a Plywood Manufacturing Mill.

Peeling the Veneer

Plywood is made from a core veneer and a face veneer. The core veneer is made by peeling a tree, most commonly douglas fir, into sheets a little over 8 feet long and 4 feet wide. The following steps to cut the veneer include: (1) a lathe, (2) sorting line, (3) industrial dryer,

1. Logs are taken from the log yard and dropped into an area where the lathe is positioned. The lathe is a large, sharp, metal sheet, that sits in a steady place while the log is spun against it. This is a very fast process and usually hundreds of logs are cut every hour.
2. The core of the tree is sent down a conveyor line where it is automatically cut to size and sent to the sorting line and stacker. The sheets used for the plywood are sent straight to stackers which then stack the sheets based on grade and thickness.
3. Since the core of trees are wet, each stack is then sent through an industrial dryer that will dry out the veneer so it will be ready for the finishing process.

The Spreaders

The spreaders are where the veneer core and thin veneer paper like face come together. This is one of the most important processes because it involves glue that if not compressed in time, will dry out. The steps of a spreader include: (1) roller that applies glue, (2) core and face veneers.

1. Veneer is sent through rollers that apply glue to the top and bottom of the sheet. Depending on the specifics of the load, either a 4x8 sheet is sent through the spreader, or two 4x4 sheets are sent through then put side by side.
2. Depending on how many veneer layers or ply's it is (3 ply, 5 ply, 7 ply), there will be different amounts of glued and dry sheets of veneer. For a 3 ply you will use a face and back (such as oak) with only one glued layer in the middle. For a 5 ply the order is a back (oak), glued core, non-glued core, glued core, and face (oak). 7 ply is the same order as the 5 but with 3 glued layers and 2 non-glued layers.

The Pre-Press and Hot Press

To dry the plywood, it is sent through a pre-press and hot press. This is the final stage of assembling the plywood and is important because if done wrong, the plywood will not stay together. Steps included are: (1) pre-press, (2) hot press charger, (3) hot press.

1. From the spreader, the load will go into a pre-press. This is the first time the load is compressed together for the glue to hold together. A hydraulic plate is pressed down onto the load for approximately 10 minutes giving the glue time to hold.
2. The load is then loaded into a charger 20 feet high where each sheet is separated and straightened by sweeper arms and plates on the sides, so it can be loaded into the hot press.
3. The hot press is a series of plates that open and close, like an accordion, using hydraulics pushing from the ground up. These plates are heated to 250 degrees Fahrenheit and press each sheet individually to varying pressures depending on the type. The most common pressures used are 1860 psi and 1680 psi for 5 minutes and 15 seconds. This completes the drying process and the plywood is now completely dry and ready to go through the final stages

Saw Line

Each sheet of plywood comes out of the hot press a few inches larger than the required dimensions. This allows for the sheets to go through the saw line so they can be precisely cut to the exact measurements needed. Steps to cut these are: (1) saw line, (2) stacker

1. The loads of plywood are set under a vacuum tube that will lift each sheet and and send it down the conveyor belt. Laser eyes will line up the sheets so they can be accurately trimmed to the exact dimensions.
2. The stacker will automatically restack the cut sheets back into their original loads

Putty Line

Every load is sent through the putty line where workers will putty in knots on the face and back veneer. This adds a cleaner look to the sheets and prevents peeling from the knot holes. The steps for this process include: (1) conveyor belts with putty, (2) stacker.

1. Conveyor belts move the sheets down a line where people stand on each side and putty every knot on the face sheet. The sheet then gets rotated by a machine and people then putty the back sheet.
2. The sheets are then stacked again and sent to the last section

Color Line and Sander

The final step in the plywood process is coloring and sanding each sheet. Not all orders are colored but, they all get sanded. Steps for the final process include: (1) sanding, (2) painting or finishing.

1. Sheets go through a sander that will help smoothen the sheets and sand out any defects. Often in this process, there are pieces of veneer or debris that get pressed into the face or back and the sander will sand these down and remove them from the sheet.
2. If the plywood is getting a finish on it, it will go through the color line. The color line will either put a paint on the sheets or put a glossy finish on them giving them a very smooth and beautiful look.

Once the plywood is made it is turned into furniture such as cabinets, tables, desk, and many other household uses. Everyone enjoys the benefits of wood products as they usually can be found in every house, school, workplace, or any other building.