

Clancy's Commercial

HIGH PERFORMANCE COATINGS

THE WOOD GUIDE

General Information

The term “wood” is broken down into two groups – softwood and hardwood. These terms relate to the structure of the wood. The structure of woods is classified as:

1. Softwoods	Non-porous	Pine, Cedar, Redwood
2. Hardwoods	Semi-porous Porous	Birch, Maple Gum Oak, Walnut, Mahogany

Surface Preparation

1. All surfaces should be sanded smooth with the grain, NEVER ACROSS IT. Each subsequent sanding should use a finer grit paper than the previous. A typical system would involve using 100 grit followed by 150, and 180 grit, then touch up with 220 grit. The spread between grit sizes should be close enough so as not to leave sand scratches from the first sanding that cannot be removed by the next.
2. All sanding dust must be removed by using either a tack rag or a blast of clean air from a spray gun.
3. If any dirt or grease attaches to the surface before actual finishing, it must be removed by solvent wiping.

MDF – MEDIUM DENSITY FIBERBOARD

General Information

MDF is produced from wood particulates that have been processed and then mixed with glue and pressed into sheets. MDF is available in various densities with the most common being in the 45-55 lb. range.

MDF is used, both as a finished material which can be shaped and coated, and as a core for wood veneer.

Surface Preparation

Surface preparation of MDF shaped parts, should consist of these 3 steps:

1. Routed and cut parts should be sanded to remove rough fibers.
2. Sharp routed corners should be rounded to eliminate possible MDF cracking due to coating stress.
3. Surface scuff sanding to remove contaminants.

THE NATURE OF WOOD

Wood in its many forms – plywood, particleboard and hardboard, is the primary substrate used for manufacturing household furniture, kitchen cabinets, paneling, church furniture, trim, store fixtures, novelties and many other items that must be finished with chemical coating products to make it the most versatile and useful substrate on this planet.

The first step in finishing is a knowledge of the substrate and preparing it for finishing. The wood substrates are in many forms, shapes, designs, and are contained in products earmarked for many end uses.

The material supplier is one who should supply the end user with the following:

1. Substrate knowledge
2. Coatings technology
3. Systems
4. Application expertise
5. Expected results

Forest products means wood in our business; wood that needs coatings.

Webster defines wood as, “the hard, fibrous substance that makes up the greater part of stems or branches and trunk of trees”. This description may be satisfactory for general purposes, but for wood uses, as they pertain to furniture manufacturing, we should investigate a little more thoroughly.

To the Botanist, wood is cellulose and lignin arranged in a complexity of vessels, fibers, wood rays, etc., all of which are cellular or tubular in structure. The density and size of these rays or cells varies with different woods, ranging from large cells, down to little or no noticeable cellular structure.

Two Chief Types

For all practical purposes, we may classify woods used in wood finishing into 2 broad categories:

1. Lumber from broad-leaf trees, i.e. hardwood
2. Lumber from coniferous (cone bearing) trees, i.e. softwood

Lumber from some broad-leaf trees, e.g. oak, mahogany and walnut, contain large vessels and therefore are very porous. When the lumber from these logs is cut and planed at the mill, either in the case of solid cuts or veneer cuts, the tubular cells are ruptured, leaving what constitutes minute troughs running lengthwise, particularly in the case of hardwoods, having vessel members, however, such members are so small, they do not usually require any filling. Actually, the latter group could be considered semi-porous. Softwoods from coniferous trees, such as pine, cedar and redwood, are devoid of vessels, and therefore, are grouped as non-porous.

From the Botanist's standpoint, cellular structure determines softness or hardness. For example, basswood, while being soft to the touch, is classified as a hardwood by Botanists.

WOOD POROSITY

Is it Porous, Semi-Porous, or Non-Porous?

It is necessary to know the porosity of the wood to determine whether or not a filler is required. Whether to use a filler or to eliminate it, depends upon the finisher's judgment as to the porosity of the wood and the ultimate finish desired by the customer.

The porous hardwoods most commonly used by the wood finishers are mahogany, oak and walnut. The semi-porous hardwoods most commonly used are maple, birch and gum. Pine and redwood are used occasionally and are non-porous.

Practically all furniture manufacturers use both porous and semi-porous woods in the same piece of furniture. This does not necessarily affect the quality of the furniture in any way. For example, a topgrade dining table may have a mahogany veneer top with a poplar or soft maple core, while the legs may possibly be of maple or birch.

Some of the more beautifully grained woods, classified as hardwoods, do not offer the structural strength and must be supplemented by other woods of less desirable grain to produce a piece of furniture of uniform colour, tone and depth.

Basic Operations In Wood Finishing

Actually, the finishing of most furniture offers no particular problems other than those encountered in producing a desirable finish on a good-grade cabinet. There are several systems used in the finishing of cabinets, however, the most commonly accepted schedule is as follows:

Oak Cabinets (Porous)

1. Stain
2. Sealer
3. Sand
4. 1st Topcoat
5. 2nd Topcoat (Optional)

A piece of oak furniture could be, and very often is, finished in exactly the same manner. There would probably be another step, in this instance, which would be the 6th operation, that of steel-wooling or hand-rubbing.

Wood finishing systems on all woods are basically the same as the foregoing oak cabinet system. Some variations are used, depending upon the quality of the furniture being finished. Each wood manufacturer puts into operation the system which he has found to be the best possible procedure to produce the results desired, at a cost which his market will allow.

For example, there may be four steps used, or as many as 14 steps, in the finishing of furniture, depending upon the quality desired:

Short System (4 step system)

1. Stain
2. Sealer
3. Sand
4. Finish Coat

Note: Generally used on semi-porous or non-porous woods in lower-priced furniture

White Wood Sanding And Surface Preparation

A good and acceptable furniture finish, starts with proper surface preparation. This holds true for all substrates from the direct print system on particleboard or

MDF (Medium Density Fiberboard) to the most elaborate veneer or solid wood finishing system.

Finishers do not and won't use the same sanding sequence in preparing similar wood surfaces, but they will agree that each subsequent sanding operation be of a finer grit and that the spread between grit size can be close enough so as not to leave sand scratches from the first sanding that can't be removed by the next, etc. Typically power sanding of wood, either solid or plywood, would use the following sanding sequence – 100, 150, 180 grit followed by touch-up sanding with 220.

Today, most plants should be utilizing wide belt sanders, and that sanding takes place on flat components prior to assembly. It is important to obtain the correct scratch pattern to compliment the finish. Over-polishing maple or birch with too fine of sandpaper, can result in poor bit of the wiping stain, thus detracting from the final finish colour and effect. In contrast, not enough polishing of oak or walnut, will result in fuzzy grain, which will mean a muddy finish area because of wipe stain hang-up.

Refer to the sandpaper tables for additional information. Subsequent sanding operations should not have more than a 2 grit jump.

Proper surface preparation, before finishing begins, certainly will result in a better job of finishing, consistently, piece after piece.

Steps To Follow In Hand Sanding

1. Begin sanding new wood with coarse paper at an angle with the grain. This will level the ridges and remove the glue stains and other discolourations. The coarse abrasive will leave fine scratches over the entire surface of the wood.
2. Start with a grit coarse enough to accomplish the rough work, then, move on to a finer grit, and still finer grit, until the desired smoothness is obtained. It is wise, when proceeding from coarse to fine paper, never to skip more than 2 grit numbers at a time.
3. Next, follow with a medium abrasive, sanding with the grain. (If the wood is coarse and open-grained, like chestnut or oak, sand at a slight angle to the grain to avoid enlarging the pores of the wood by rounding their edges.)
4. Change to a fine grade of paper and sand directly with the grain.

5. The trick in producing a true, flat surface by hand sanding, is to adopt a sanding stroke of uniform length and equalized pressure.
6. When you are sanding to an edge, do not allow the sanding block to extend beyond the edge more than one quarter its length on each stroke, otherwise a rounded edge will result.
7. To sand the edges and ends of such items as the tops of tables and cabinets, use only very fine abrasive papers, regardless of the step in finishing.
8. After sanding, clean the surface by brushing and wiping with a clean, soft cloth. It is a good practice to clean the surface with a tack rag.
9. It is a good practice to locate a finishing room removed from the sanding area, due to dust problems that can arise.