



WOOD FINISHING

Types of Finishes

The term "finish," when used with reference to furniture or similar wood products, refers to the film forming coatings applied to the surface of the wood to protect it and to highlight its appearance. There are four basic types of finishes used in woodworking:

1. Penetrating finishes
2. Varnish (including polyurethane)
3. Shellac
4. Lacquer

Of the various types of finishes, the penetrating sealers are the easiest for the novice to use. Some of these sealers also contain a stain so that the wood can be stained and finished in one application. An advantage to using the penetrating oil finishes is that they are easy to restore; the finish will never have to be stripped. The big disadvantage of these finishes is that a truly great finish may require 10 or more coats.

Varnishes are the old standard of the home finishing market. They provide a tough, durable finish that is resistant to most household chemicals. The newer poly urethane varnishes are extremely durable; however, they may not be compatible with the stain, sealer or filler coats you plan to use and you cannot rub the finish to obtain a particular luster or gloss. Polyurethane, however, does come in a satin and high gloss finish. Read the manufacturer's label for details. All varnishes are relatively easy to use. If you decide to use a varnish, make sure it is formulated for floors or furniture. **Never use an exterior finish varnish for interior uses as it never dries completely.**

Shellac forms a hard, tough finish but it is not resistant to water or alcohol. White spots will form when water comes in contact with a shellac finish. It is however, easy to apply and works good as a sealer or even a finish coat where water and alcohol resistance is not important. Always use a fresh can of shellac. White shellac has a very short shelf life (about 6 months) after the can has been opened. Old shellac will not dry properly.

The fourth type of finish used on furniture is **lacquer**. The lacquer finishes are very tough, hard, and durable but are difficult to apply. Lacquers are really formulated for spraying operations and should not be used by the inexperienced. For this reason, we will not discuss the application of lacquer finishes.

Precautions

Any restoration, finishing or refinishing process involves the use of hazardous chemicals. Inhalation of fumes and skin contact with some chemicals can be hazardous. Special precautions are necessary to insure their safe use and to protect you - the user. Always read the manufacturer's label and follow their recommendations when using hazardous chemicals. Some basic precautions to keep in mind are:

1. Always work in a well-ventilated area (preferably outdoors or in a work area with an exhaust fan).
2. Do not smoke or work near any open flames when working with solvents, stripping liquids, or finishes. Most of these chemicals are flammable.
3. Handle all chemicals with care. Replace caps immediately after pouring solvents and other finishing chemicals. If chemicals are splashed on you, flush area immediately with plenty of water.
4. Wear solvent or chemical resistant rubber gloves and safety goggles when working with solvents or stripping chemicals.
5. Store Solvents and stripping chemicals in original containers away from heat sources and out of reach of children.
6. Dispose of oily rags properly; they may combust spontaneously. Keep oily rags submerged in water until you can dispose of them.
7. Dispose of used solvents properly. The recommended disposal for any liquid hazardous waste is to soak up all liquids with an absorbent material, such as cat litter, rags or paper towels. Put the solvent-soaked litter into a leakproof container and dispose of it with normal household trash. These solvent-soaked materials can be burned in a safe incinerator, but **never** put the solvent container in a fire--it will explode!

Methods of Finish Application

Before you begin applying a wood finish, there are a few basic conditions that should be met to guarantee a successful effort.

- Work in a well-ventilated, low-dust environment.
- Don't use varnish unless the temperature is above 65 degrees F.
- Clean wood surface thoroughly.
- Always apply the finish with a strong light in front of you. The reflection of light off of the surface will aid you in finding "missed" spots.

The two common methods of applying wood finishes are the hand rubbed application and brushed application. These terms are very descriptive of the process and require little definition.

- Hand rubbing - This method is often recommended for applying the penetrating finishes; in fact, it is the preferred method for applying a linseed oil finish. It will not work for shellac, varnish or lacquer. Although hand rubbing is hard work, it can be very rewarding to the "pursuit" in that it gives you a real feel of the wood and results in a remarkable finish. The theory is that the warmth of your hand helps the oil to penetrate the wood. The following steps will give you a very attractive hand-rubbed finish with linseed oil, tung oil, Danish oil or other penetrating oil finishes. The trick to a hand-rubbed finish is to apply many thin coats of finish over a long period of time.
 - a. Brush oil finish generously onto wood surface.
 - b. Allow linseed and Danish oils to penetrate for 30 minutes. For faster drying penetrating oils, proceed immediately to step 3.
 - c. Rub oil into wood with the palm of your hand (or soft pad or cloth).
 - d. Wipe off all excess oil with clean rags.
 - e. Allow finish to dry thoroughly (about 1 week for linseed oil, overnight for other penetrating oils).
 - f. Smooth dried surface by gently rubbing with grade 000 steel wool.
 - g. Clean surface thoroughly with a dry, clean rag.
 - h. Repeat steps 1-5 until a lustrous finish is achieved (at least 3 coats, preferably more, 30 coats is not unheard of).
 - o. Brushing - all of the wood finishes can be applied with a brush; it is the recommended method for shellac and varnish finishes. The big advantage of the brushing method is that it is fast. However, the same degree of lustrousness will not be achieved by brushing the penetrating oils as can be obtained by hand rubbing.

The type of brush you use is important, but the size and shape is really a personal preference. Of the many brush types available, the China bristle brushes are the best all purpose brushes for wood finishing. Camel's hair brushes are also excellent, but probably not worth the extra expense. Inexpensive natural fiber brushes are made of various types of hair. These brushes do not hold up well in finishing projects and are not recommended. Nylon brushes are readily available and can be used for some finishing operations such as staining and varnishing. Do not use a nylon brush, however, with shellac or lacquer. Many solvents used in finishing will react with the nylon - destroying the brush.

Shellac and varnish will achieve a good lustrous finish with only about 3 coats and, because they dry relatively fast, the finishing operation can be completed in about 3 days (10 coats of linseed oil would take about 2 months). Avoid excessive brushing, work quickly and in small areas at a time - always try to apply the finish at a uniform thickness.

The following steps will result in a good brushed finish:

1. Thin the finish liquid for the first coat.
2. Brush finish onto wood. Rapidly drying finishes such as shellac should be brushed along the grain. Varnish should be brushed across the grain.
3. Smooth out the coat by brushing lightly with the grain.
4. Allow coat to dry thoroughly (shellac will dry in about 2 hours, varnish should be left to dry overnight).
5. Smooth the surface by gently rubbing with grade 000 steel wool.
6. Clean the surface thoroughly with a dry, clean rag.
7. Repeat steps 2-6 until a lustrous finish is achieved (at least 3 coats).

FINAL RUBBING

The last step in finishing wood is to rub it to achieve the degree of gloss you desire. Shellac, varnish and lacquer all dry to a high gloss. Linseed oil and tung oil dry to a satin finish. The other penetrating oils may dry to a satin or glossy finish, depending on their formulation (read the label). However, you can get any degree of gloss you desire by rubbing with pumice and oil or with different grades of steel wool. The only finish that cannot be rubbed is a polyurethane finish. The gloss of a finish is heightened by using finer grade steel wool as follows:

<u>Steel wool grade</u>	
very dull	00
dull glow or stain	000
gloss	0000
high gloss	00000

After you have chosen the correct grade of steel wool for the degree of gloss you want, proceed to rub the finish. Rub with the grain, using moderate to light pressure on the steel wool. Continue rubbing until the surface has a uniform gloss. A "hand-rubbed" finish is obtained by rubbing the finish with pumice. Pumice is pulverized volcanic ash with good abrasive characteristics. Use a fine pure form of pumice (FFFF) and sift through it to make sure no large particles or foreign matter is present. Pumice must be mixed with a lubricant to be used in rubbing a finish. Water can be used but a light weight mineral oil is recommended because it gives the best control of the abrasive

action. Prepare a paste by mixing the pumice in oil and apply this paste to the finished surface with a felt or burlap pad (some blackboard erasers are felt pads). Rub the surface with moderate pressure in the direction of the grain. Use a clean soft cloth to remove the grim that accumulates. Repeat the rubbing process until the desired effect is achieved.

After the finish has been rubbed to the desired gloss, dust the surface thoroughly. If you used pumice and oil, clean the surface thoroughly with turpentine. Now stand back and admire your accomplishment - congratulations, you are now the owner of a very fine wood product. Not only does it have a beautiful finish, but it has achieved its beauty only through your efforts. With proper care, it will dazzle the eye of many generations.

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