



Understanding the Basics of Wood Floor Finishes

Wood floor finishes fall into two categories: surface finishes and penetrating finishes. Surface finishes are layers of finish film sitting on the surface of the wood flooring. Penetrating finishes are finishes that are absorbed into the surface of the wood flooring, and are also referred to as penetrating sealers. Another distinction of wood floor finishes is between site finished and the factory finished. This article will address site-finished wood flooring; factory-finished materials will be covered in a future article.

The finish material is always applied to a prepared surface which has been sanded and/or scraped. Sanding is the technique used with nearly all floors. Scraping is performed only by a few specialists. The sanding processes can have a significant influence on how the finish performs. For this article, let's assume the floor has been smooth sanded with a uniform scratch pattern from wall to wall.

Penetrating Finish System

This the oldest type of finish system. The finish is generally made of linseed oil, tung oil, and/or other oil-like manufactured polymers. This finish should not be applied where wetting is a frequent occurrence because water spotting can occur. Kitchens, therefore, are not a candidate for this system. First, the finish manufacturer's instructions should always be followed. Always read the label. This system requires a minimum of three coats, two seal coats and an application of wax or a third seal coat. Additional seal coats should be applied where high traffic is expected or a deeper looking finish is desired.

The general application method is to thoroughly wet areas of the floor with finish, allow a short time for absorption and then thoroughly wipe up the sur-

face excess. Generally, the finish should dry overnight. A second coat is then applied. After the second coat is dry, a third coat of the finish or a thin coating of wax may be applied. Waxing should be followed by buffing. Waxing is not a choice for high traffic commercial applications. As described, the application of this finish is relatively easy, with the wipe on, wipe off, buff out method.

The penetrating finish gives a low

sheen or nearly matt looking finish. This system can be a very good choice for high traffic areas where abuse often occurs. The low sheen doesn't highlight or reflect the abuse. Commercial applications without wax such as dance studios where tap dancing is performed, retail sales areas, or areas where a rustic look is preferred are good choices for this system. Penetrating systems with wax produce a low satin sheen and can be an ideal choice for residences and low-traffic offices. These finishes both waxed and unwaxed can be touched up in worn or scratched areas and can generally be renewed without re-sanding. The key to performance is proper instruction on maintenance. Protect from grit and grime with entry walk off rugs or mats, sweep, vacuum, buff to restore sheen; re-wax only when sheen cannot be restored; refurbish and re-wax when ground in dirt and grime cannot be removed.

Applying a water-based finish



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Surface Finish System

As the name suggests, this type of finish lies on top of the wood. The first types were shellac and varnish. Later, lacquer and then polyurethane were developed and used. Today shellac, varnish, and lacquer are not generally used. The most often used finishes are the polyurethanes. Polyurethanes come in different formulations: oil, water and moisture curing. Some other available surface finishes are the conversion varnishes and acrylic polyurethanes. As finish categories for flooring, they are all considered very moisture resistant and durable finishes.

Why then choose one over the other? Appearance, performance, and application issues are generally considered the determining factors. These finishes can be very specific for application technique and thus the manufacturers

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instructions must be followed or performance issues are a likely occurrence. Most of these finishes come in all the gloss levels – matt, satin, semi-gloss and gloss.

Oil-based Polyurethane

This is the most widely available finish, and is considered the easiest of the top coats to apply. It ambers with time, adds shading (softens the look) to the flooring, and wears well, but is not bullet proof. With the oil-based polyurethane finish, the learning curve for application technique is generally short; the working time is longer than the other finishes; and mistakes and minor misapplications can be fixed during application. Thus is the perception of being easiest to apply.

Water-based Polyurethane

This is the second most available finish. These finishes require additional learning and specific techniques of application which are different from an oil-based poly. They are considered non-yellowing clear finishes, and as such allow wood coloration and color contrast to show through the finish or brighten the look. These water-based finishes also come in different formulations, acrylic polyurethane, polyurethane acrylic and

urethane. As such, the finishes with the greatest urethane content are considered the most durable and abuse resistant, and are the most specific for application technique. The recommended coverage rates are a critical variable for these finishes and should be followed; thicker is not always better. The finish is fairly fast drying and the window for touch-up and repair of application mistakes is short. Some amount of grain raise will occur with water-based finishes. This can become a performance issue and produce roughness in the finish when the proper techniques of application and between coat preparation are not followed.

Water-based Acrylic

This is a finish generally included as a less expensive choice by the water-based polyurethane manufacturers. The finish is considered non-yellowing, and is not as application specific as a water-based urethane. The finish look is similar to

the water urethane, and is generally considered to be less durable and abuse resistant than the urethane finishes.

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Conversion Varnish (Swedish Finish)

This finish requires specific application techniques and more involved safe-

ty procedures than the previous mentioned finishes. It is a clear finish which is slow to amber; and the film build imparts a depth to the finish's appearance. These finishes have been called Swedish finishes based on their origin. Use of approved respirators and the issue of flammability are specific cautions with these finishes. The learning curve for development of proper application technique is generally longer than other finishes. Application requires experience with the product to get the top performance. The finish is fast drying and unforgiving of mistakes, particularly during application.

Moisture Curing Urethane

This finish also requires very specific application techniques. The finish is quite different from other finishes in that it dries by reacting with available humidity in the air. The more humid, the quicker the drying; the less humid, the slower the drying. The finish is



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clear, non-yellowing, and is generally restricted to the high gloss levels. Moisture cure finishes require that extra precaution be taken regarding skin exposure, as well as respiratory protection. These finishes are generally considered the toughest of the site-applied finishes. They are good choices for rental units and high traffic areas.

In General

All the surface finishes require at least a three-coat application. The first coat is a sealing coat. This coat can be either a penetrating sealer or in some cases the top coat finish itself. When penetrating finish is as a sealer, it must be absolutely dry before application of the top coats. This applies particularly where water-based finishes are applied. Most of these finishes also require some type of abrasion between coats for a proper mechanical bond between coats. After the sealer is applied, two additional coats are required for the three-coat system.

When an additional coat is desired or requested, the preferred addition is an extra seal coat. Each layer/application of finish must be dry before the next is applied. Another very important issue

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is ventilation. The volatile materials must be allowed to evaporate for finishes to properly dry and cure. As drying occurs, it is a must that the air laden with the evaporatives be exhausted

from the space between each coating application or performance will be an issue. Some of the issues caused by poor ventilation are soft finish, rough finish, peeling finish, etc.

To recap, always read and follow the manufacturer's instructions; finish systems on properly sanded flooring require a minimum of three coats; become familiar and practiced with the finish you use; be sure to ventilate after application; use only materials recommended for the system used; and don't mix different manufacturers' products. ♦

About the Author: Mickey Moore is currently the technical director of the Wood Flooring Manufacturers Association (NOFMA), a position he has held since 1988. Prior to joining NOFMA, Moore worked as a remodeling sub-contractor and QC inspector for a general contractor. Moore is a graduate of the University of Memphis with a degree in wood working technology and biology.

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